Using Dictionaries to Manage Data Within a Modeling Framework System

Title Page
Legal Notice
Summary
Table of Contents
Acknowledgments
Abbreviations and Acronyms
Glossary
Introduction
Background
Understanding Dictionaries
Creating Dictionaries
References
Further Reading
Appendix

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Title Page
Legal Notice
Summary
Table of Contents
Acknowledgments
Abbreviations and Acronyms
Glossary
Introduction
Background
Understanding Dictionaries
Creating Dictionaries
References
Further Reading
Appendix

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Using Dictionaries to Manage Data Within a Modeling Framework System

Title Page
Legal Notice
Summary
Table of Contents
Acknowledgments
Abbreviations and Acronyms
Glossary
Introduction
Background
Understanding Dictionaries
Creating Dictionaries
References
Further Reading
Appendix

Summary

Under contracts with a number of federal agencies, the Pacific Northwest National Laboratory developed a modeling FRAMEwork System (FRAMES) to support the linkage, integration, and communication between multiple models and databases. FRAMES is a flexible and versatile suite of software tools intended to be relatively inclusive of various types of models, databases, and tools. This inclusivity requires that data be managed effectively.

FRAMES provides a data management approach that uses dictionaries (DICs), which are collections of information describing the data. This unique approach frees developers to focus on how models and databases consume and produce data, while providing an easily understandable process for those who use the system to simulate real-world problems.

This approach was developed through evolution when the traditional approach of hardwiring disparate models together proved wieldy and of low quality. Rather than requiring adherence to a rigid set of specifications, FRAMES provides the tools to understand models and databases and map those components into a domain (the boundaries of the problem being modeled) that addresses the needs of the users.

DICs are created through a system evaluation process that includes identifying and defining the need for the component, describing the common content and context for each component in the domain, grouping parameters into real-world collections that describe the conditions of the boundaries of the problem being modeled, and using the FRAMES software toolkit to facilitate integrating data sources and models into the system.

Using Dictionaries to Manage Data Within a Modeling Framework System

Title Page
Legal Notice
Summary
Table of Contents
Acknowledgments
Abbreviations and Acronyms
Glossary
Introduction
Background
Understanding Dictionaries
Creating Dictionaries
References
Further Reading
Appendix

Table of Contents

Title Page
Legal Notice
Summary
Acknowledgments
Abbreviations and Acronyms
Glossary
Introduction
Background
Understanding Dictionaries
- Components of a Dictionary File
- Functions of Dictionaries
- System Dictionaries
- Module-Specific Dictionaries
- Boundary Condition Dictionaries

Creating Dictionaries
References
Further Reading
Appendix, Environmental Domain Dictionaries

Title Page
Legal Notice
Summary
Table of Contents
Acknowledgments
Abbreviations and Acronyms
Glossary
Introduction
Background
Understanding Dictionaries
Creating Dictionaries
References
Further Reading
Appendix

Acknowledgments

This report describes data management for a modeling FRAMEwork System (FRAMES), which provides a central development tool to support multiple user communities. FRAMES is the product of sponsorship by the U.S. Environmental Protection Agency (EPA) Offices of Research and Development (where it was used for analysis under the Hazardous Waste Identification Rule and 3MRA model development), and Radiation and Indoor Air, U.S. Army Corps of Engineers (ACOE) Engineer Research and Development Center, U.S. Nuclear Regulatory Commission (NRC), U.S. Department of Energy (DOE), and American Chemistry Council.

The design of FRAMES is based on a Memorandum of Understanding (MOU) among eight federal agencies, establishing a framework for facilitating cooperation and coordination in research and development of multimedia environmental models, software, and related databases, including development, enhancements, applications, and assessments of site-specific, generic, and process-oriented multimedia environmental models as they pertain to human health and environmental assessment. In addition to EPA, NRC, ACOE, and DOE, the MOU includes the U.S. Geological Survey, Agricultural Research Service, National Oceanic and Atmospheric Administration, and Natural Resources Conservation Service.

All dictionaries provided within FRAMES and discussed in this document can be found in the appendix.

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Title Page
Legal Notice
Summary
Table of Contents
Acknowledgments
Abbreviations and Acronyms
Glossary
Introduction
Background
Understanding Dictionaries
Creating Dictionaries
References
Further Reading
Appendix

Abbreviations and Acronyms

ACOE	U.S. Army Corps of Engineers
API	Application programming interface
DIC	Dictionary
DOE	U.S. Department of Energy
EPA	U.S. Environmental Protection Agency
FRAMES	Framework system
NRC	U.S. Nuclear Regulatory Commission
MOU	Memorandum of Understanding
PC	Personal computer

Title Page
Legal Notice
Summary
Table of Contents
Acknowledgments
Abbreviations and Acronyms
Glossary
Introduction
Background
Understanding Dictionaries
Creating Dictionaries
References
Further Reading
Appendix

Glossary

Application Programming Interface (API)-software that coordinates and manages the input and output between components in a modeling system.

Boundary condition dictionaries-collections of information about data that is transferredbetween or used in common by various components of a system.

Conceptual model-the picture of the real-world problem being modeled.For environmental fate and transport activities, this is also called a conceptual site model.

Consuming model-a software code that simulates real-world activities and that uses (consumes) results of another model as input to function.

Database dictionary-a collection of information associated with the mapping of data between a database and the system.

Datasets-a collection of related data, for example, input for a model.

Dictionaries-files of information about the data being managed in a software system.

Dimensional size-number of dimensions (indices) associated with a parameter.

Domain-the boundaries of the problem being modeled.

Downstream model-a software code that that would run later in an analysis problem.For example, in an environmental fate and transport analysis, a human health impact model would run later than a source term model because the impact model relies on source term data to operate.

Iteration dictionary-a collection of information that defines the current iteration of the simulation.

Iterator dictionaries-a collection of information that defines statistical data associated with the stochastic data; that is, data that can be varied.

Key-attribute of a parameter that indicates whether it has been indicated by the user as being critical to the analysis.For example, a species of concern might be a key to an ecological analysis.

Model-a software code that simulates the activities of a real-world situation.For example, a watershed model might simulate the hydrological cycle within a particular river basin.

Model dictionary-a collection of information about data passed from a producing model to a consuming model.

Module-components that work together to allow a model or database to work within the system.These components may include pre- and post-processors, the model itself, and a user interface.

Module properties dictionary-a collection of information about data on the component and its supporting infrastructure. Such data might include the point of contact for additional information, input and boundary condition dictionaries consumed and produced, and how the module fits into a modeling scheme.

Module-specific dictionaries-collections of information about data needed to operate a module within FRAMES.

Object-oriented modeling-analyzing problems based on a collection of real-world attributes.

Post-processor-software code that runs after a model executes to facilitate its ability to produce data for a system.

Pre-processor-software code that runs before a model executes to facilitate its ability to receive data from a system.

Producing model-a software code that simulates real-world activities and that generates (produces) results which will be used by another model.

Sampled values dictionary-a collection of information that defines the inputs being sampled as stochastic and available for sampling.

Scalar-number of values associated with a variable for a particular set of indices.

Seed dictionary-a collection of information that defines the starting seed number associated with the random number generator.

Simulation dictionary-a collection of information that allows the reproduction of a particular conceptual model.This information includes model names and identification, dataset names and locations, model and database status, linkages, model locking information, and simulation comments.

Start-up dictionary-a collection of information necessary to set up the FRAMES user interface.

Stochastic dictionary-a collection of information that defines the distribution and attributes associated with parameters that can be varied.

Summary values dictionary-a collection of information that defines the outputs summarized as part of the statistical results.

Upstream model-a software code that would run earlier in an analysis problem.For example, in an environmental fate and transport analysis, a source term model would run earlier than a human health impact model because the impact model requires source term information to operate.

Title Page
Legal Notice
Summary
Table of Contents
Acknowledgments
Abbreviations and Acronyms
Glossary
Introduction
Background
Understanding Dictionaries
Creating Dictionaries
References
Further Reading
Appendix

Introduction

Under contracts with a number of federal agencies, the Pacific Northwest National Laboratory developed a modeling FRAMEwork System (FRAMES) to support the linkage, integration, and communication between multiple models and databases (Whelan et al._1997,_PNNL-11748).Consisting of a suite of integration tools and a user-friendly modeling platform, FRAMES ensures that data are correctly transferred among databases and models, especially those components developed with different compilers, programming languages, and database packages.FRAMES was designed to allow models and databases to be accessed from both PCs and mainframes, maintaining the flexibility of access as the components are updated over time.

FRAMES is a flexible and versatile system intended to be relatively "open". That is, it is relatively inclusive of models, attributes, databases, and other software.This inclusivity requires that data be managed effectively.FRAMES provides a data management approach that uses DICtionaries (DICs), which are collections of information describing the data to be managed.Examples of such information include parameter name, description, units, and ranges.This approach of using DICs frees developers to focus on how models and databases consume and produce data, while providing an easily understandable process for those who use the system to simulate real-world problems.

The following sections provide background on the development of this unique approach, describe the purpose and functions of dictionaries used by the system, and provide information and examples for model or database developers interested in creating dictionaries for use in FRAMES.The appendix provides a full set of DICs that comes with FRAMES.

Title Page
Legal Notice
Summary
Table of Contents
Acknowledgments
Abbreviations and Acronyms
Glossary
Introduction
Background
Understanding Dictionaries
Creating Dictionaries
References
Further Reading
Appendix

Background

In the past, the traditional approach for managing data within modeling systems was to directly connect specific models (i.e., hardwire the models to each other). Each connection specifically reflected the data needs of the consuming model, resulting in an efficient transfer of data and dynamic feedback between models. Figure 1 illustrates this traditional approach for linking models and managing data.

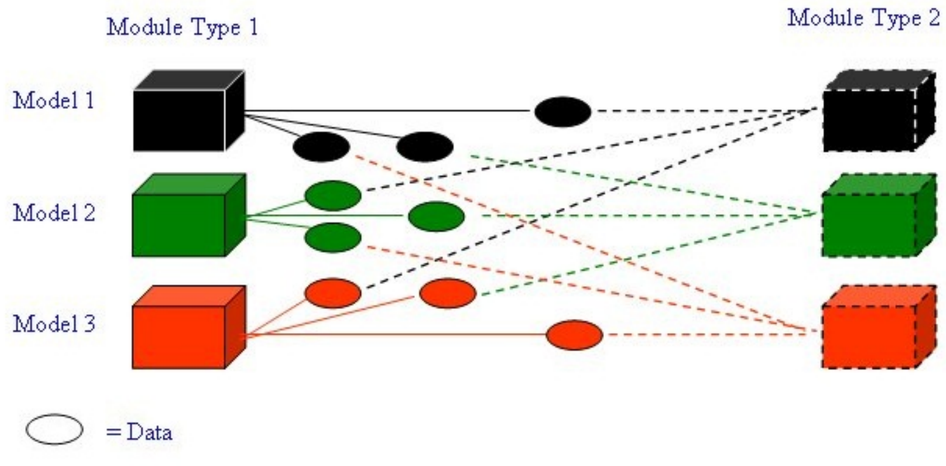

Figure 1. Traditional Approach to Managing Data in Modeling Systems

Unfortunately, as the complexity of the modeled problem increases, so does the complexity of the data management. Thus, this approach quickly becomes unmanageable. It also prevents the user from adding new models, parameters, data requirements, databases, or other components without having to modify the entire system and revamp older models.

As modeling systems evolved, some developers took advantage of advances in "object-oriented" modeling to allow models entering the system to agree on a data transfer protocol (Figure 2). This nontraditional approach identified system data specifications to which models would have to adhere when passing information between model types and databases. Pre- and post-processors allowed older models to remain unaffected and facilitated the ability to connect these models directly into the system. The ability enhanced quality control by making the entire legacy of testing and validation for each model and database still appropriate (i.e., the original code was not modified). The ability also simplified management of and modification to multiple models (Whelan et al. 2001. PNNL-13453).

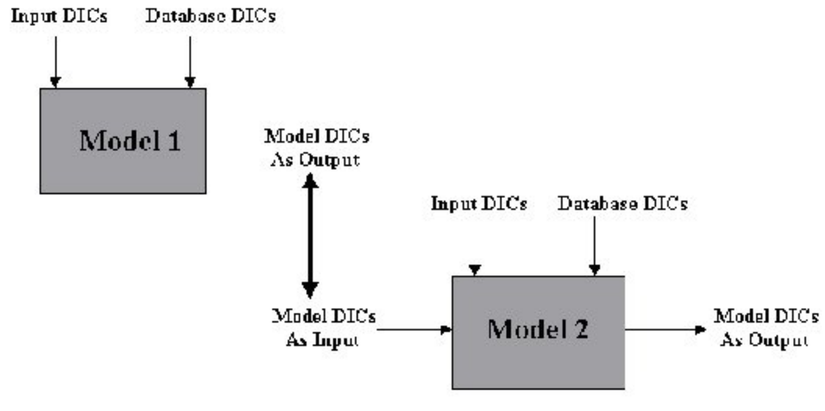

Figure 2. Nontraditional Approach to Managing Data in Modeling Systems

Unfortunately, ensuring that all model developers followed a rigid set of data specifications, while attractive in theory, proved difficult in practice. Following a file specification required each developer to incorporate both format and data content, which had the effect of having every developer recode the specification. This approach, while effective, increased code maintenance and made the interpretation of the file specification critical. Many problems can arise when different individuals make slightly different interpretations of the specification.

In addition, many modeling frameworks required that the specification be built on the needs of upstream models (that is, models that run earlier in the analysis process). These upstream models might produce three output files, while only two would be needed by models running later (downstream models). For example, a chemical database might provide information on 17 different constituents, but the health effects model that will run later in the analysis only needs information on the three constituents that could be linked to cancer. This specification approach, then, results in an excess of data moving through the system, slowing processing and analysis time.

FRAMES Version 2.0 provides the flexibility to allow model developers to use standard requirements (i.e., DICs) to minimize the data produced and consumed between models. If a model developer wants his/her model to produce additional data that are not consumed by a specific downstream model, that can be accomplished. Another, yet different, model might require these data in future assessments. By giving model developers this flexibility to produce a wide range of output datasets, models can link to and communicate with a larger set of other models. Models may also be able to be applied in a wider set of scenarios.

FRAMES 2.0 also utilizes an Application Programming Interface (API) to manage data within the system. This API coordinates and manages the input and output between components.

Basically, in FRAMES, "what" is being stored is different from "how" it is stored. Thus, the API can provide the following functions:

- Range checking of parameters (ensures that parameters remain within acceptable bounds)
- Data retrieval
- Data storage
- Units checking (ensures that the parameters are affiliated with the correct units)
- Opening and closing of data sources
- Read/write abilities (e.g., alerting users to errors, issuing command lines to instruct models how and when to run, identifying which models produce and consume data from other models, selecting models to be used in the analysis, and documenting user comments)
- Units conversion (allows models to use whatever units they require)
- Graphical user interface (e.g., being able to place and connect models by dragging icons and dropping them onto a work space, providing a pallet of models among which to choose, etc.).

The key to successful data management within a modeling system, then, is to ensure that the producing component provides information that meets the needs of the consuming component, in a form that is recognizable by both components as well as to provide a mechanism for ensuring the compatibility of that form. Figure 3 illustrates this approach to managing data within a modeling system, with the arrows representing the transfer of data through one or many DICs.

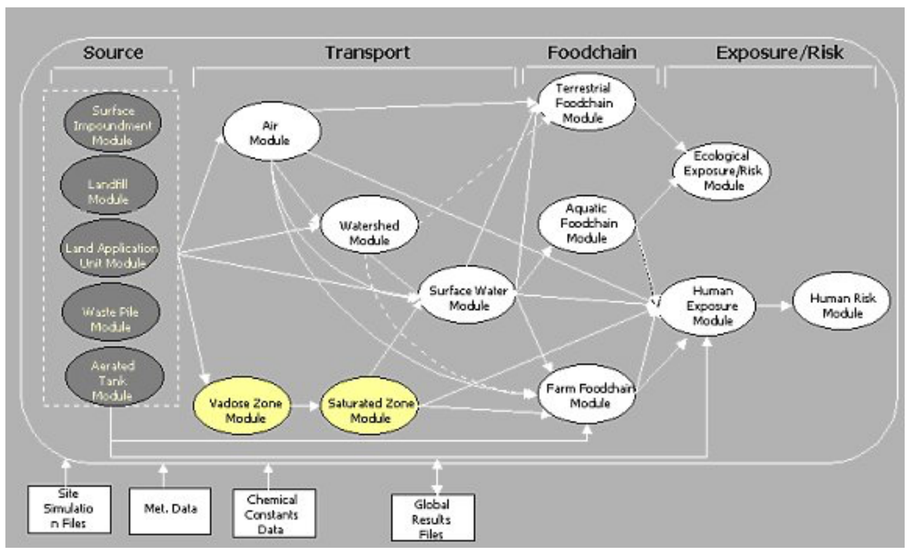

Figure 3. Using Dictionaries (indicated by arrows) to Manage Data in Modeling Systems

In FRAMES, this shared responsibility for managing data is based on datasets, whose describing information is characterized in DIC files. These files can be created by hand or through the use of the API.

Figure 4 provides a more detailed example of the use of DICs by FRAMES. The model shown in the figure can accept information from three different source types: user-defined input provided through a user interface, data supplied from a database, and data provided by a model that runs earlier in the analysis process. When the output dataset (i.e., Model DICs as Output in Figure 4) from an upstreammodel provides enough information to satisfy the input required by a downstream model (e.g., Model 1 in Figure 4), then the data from theupstream model can be successfully and seamlessly transferred to thedownstream model.

Figure 4. How Dictionaries Manage Datasets

The following sections provide additional information on DIC files, both to understand and to create them.

Using Dictionaries to Manage Data Within a Modeling Framework System

Title Page
Legal Notice
Summary
Table of Contents
Acknowledgements
Abbreviations and Acronyms
Glossary
Introduction
Background
Understanding Dictionaries
Creating Dictionaries
References
Further Reading
Appendix

Understanding Dictionaries

DICs start with a dataset. Every component within a modeling system requires data to operate, whether it's the amount of annual rainfall in the Congo or the value of a stock portfolio. Most models provide output in the form of numbers, but a number by itself can be meaningless if not placed within some context. For example, the number 10 with no context tells the user nothing. It could be the number of iterations for that model in a stochastic scenario or the number of years an organism is expected to live. Simply adding a unit doesn't provide much more specificity. Is it 10 seconds to impact or 10 seconds to run a model?

DIC files provide another layer of information about datasets. DICs consist of the description and context of values that occur together in the real world. DIC files also describe attributes of the actual data in the dataset. Such attributes might include whether the particular variable is dependent upon another variable or if the dependent variable has one or more values. This information is critical so that the system can convert units, transfer information, and provide meaningful results to the user.

For example, in an environmental assessment, the description of chemical concentration (the amount of a chemical), the location of the chemical (space), and the particular time provide the most meaning when used in concert. In other words, knowing that trichloroethylene has entered the environment is far more meaningful if the analyst knows how much, where, and when. Furthermore, while a model may only concern itself with concentration, the time and space associated with that concentration cannot be considered separate values. This connection can be seen as analogous to a complex number (a + bi). The real part (a) is meaningless without the imaginary part (bi). Together they have meaning and value. A DIC ensures that this type of connected information stays together as it is transferred through the system.

The following subsections describe the components of a DIC file and the general types of DIC files available in FRAMES.

Components of a Dictionary File

A DIC file is a comma-delimited text file (see Figure 5 for example). This highly organized, structured design was chosen because it can be easily translated into a variety of other formats such as databases, html, xml, etc. The design is also compact and efficient for modeling purposes.

DICs are expressed as html tables in this document for ease of viewing. While DICs can be hand-coded, it is easier for most users of FRAMES to build DIC files using the software tools provided with the system. Table 1 provides an example DIC, in this case, a Chemical Water Concentration DIC, which describes the parameters associated with chemicals in water. Note that this is the same DIC file shown in Figure 5.

Example of a Dictionary File as a Comma-Delimited Text File
(Chemical Water Concentration Dictionary)

```
'variable',Count, Description, Name, Privilege, Version, Updated, Template
'Dictionary Name',Chemical Water Concentration DIC,,,,,,,
'Dictionary Name',Dictionary Description, Dimension, DataType, PrimaryKey, Scalar, Minimum, Maximum, Measure, Unit, Stochastic, Proposition, Index 1, Index 2, Index 3, ....,
Residuals, The set of strings that describe this dataset, 1, STRING, FALSE, FALSE, 0, 0, , , FALSE, ,,,,,,,
```

Title Page
Legal Notice
Summary
Table of Contents
Acknowledgments
Abbreviations and Acronyms
Glossary
Introduction
Background
Understanding Dictionaries
Creating Dictionaries
References
Further Reading
Appendix

Creating Dictionaries

Creating a DIC for FRAMES follows a system evaluation process that begins with identifying and defining the need. What is the purpose of the model or database? What need does it address? For example, a chemical database might have been designed to provide basic chemical data (purpose) for use in modeling the transport and fate of chemicals in organisms (need). Identifying and defining the need provides a boundary for the domain in which the model or database should be used and provides some understanding of the other components of the domain.

Process for Creating a Dictionary for FRAMES

1. Identify and define the need for the component.
2. Describe the common content and context for each component in the domain (the boundaries of the problem being modeled).
3. Group parameters into real-world collections to be used as boundary conditions.
4. Use the FRAMES software toolkit to facilitate registration and integration of data sources and models.

The next step in creating a dictionary is to describe each of the components in the domain in terms of common content and context. As part of reflecting each component in a real-world system, the interfaces between these components begin to emerge. Component owners can draw visual diagrams of these relationships to better understand and communicate the processes. Such diagrams can then be used to identify missing as well as duplicate information.

This interface "defining" process identifies the boundary conditions, which involves understanding the core parameters and their relationship to other parameters. The team of researchers who developed FRAMES used a mediation approach to address differences between components such as variations in terminology, temporal and spatial considerations, scale, and units. This level of understanding is necessary to ensure the effective transfer of data and information between components. Understanding these relationships allows the user to define the mapping (indexing relationships) between these parameters. For example, time is often a core parameter that many other parameters require as an index (deaths per year, costs per month, hourly temperature, etc.).

Once parameters and relationships are clear, they can be grouped into real-world collections (chemical properties, geographic location, etc.). These collections will become the DICs and will provide clear descriptions of the type of information expected to be stored in boundary condition datasets.

Some information will be used by many models within a domain. For example, in an environmental domain, information on such parameters as chemicals, radionuclides, space/time, and organisms will likely be needed several times. Because of this universal need, these dictionaries are provided with the system. See the appendix for a complete list of environmental domain dictionaries.

With a full understanding of the components, their boundary conditions, and the dependencies between parameters, model and database developers can utilize the FRAMES toolkit to facilitate accurate registration and integration of data sources and models. Some of these software tools include the following:

- **Data Client Editor**, which allows users to build the input corresponding to the boundary conditions associated with the module's DICs. Using this editor, the user can actually define the values of the input parameters.
- **Dictionary Editor**, which allows users to add or delete information in any DIC except the module properties DICs. The editor allows the user to add or delete parameters (e.g., rows of information) but does not allow the user to change attributes (e.g., column headings) associated with that parameter.
- **Conversion Editor**, which allows users to add units and their conversions not currently supported by the system.
- **Module Editor**, which allows users to input and edit module properties DICs.
- **Domain Editor**, which allows users to define where the module fits with the other components in the domain.

These tools are installed with FRAMES and can be accessed through the Framework Development Environment, which is the main user interface for FRAMES. Technical documentation on each tool can be found online at FDE Editors' Documentation.

Title Page
Legal Notice
Summary
Table of Contents
Acknowledgments
Abbreviations and Acronyms
Glossary
Introduction
Background
Understanding Dictionaries
Creating Dictionaries
References
Further Reading
Appendix

References

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Title Page
Legal Notice
Summary
Table of Contents
Acknowledgments
Abbreviations and Acronyms
Glossary
Introduction
Background
Understanding Dictionaries
Creating Dictionaries
References
Further Reading
Appendix

Further Reading

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FRAMES 2.0 Dictionary Set

Environmental Domain Boundary Definitions

Name	Description	Notation
Atmosphere	Gaseous envelope surrounding the Earth	
Biosphere	Portion of the Earth's surface, living flora and fauna and portions the Earth pedosphere	
Cryosphere	Ice and permanent snow	
Hydrosphere	The Earth surface water	
Lithosphere	The Earth crust and upper mantle	
OCEANsphere	Oceanic portion of the Earth surface	
Pedosphere	Soil portion of the Earth surface	
Anthosphere	Man, his tools and his activities	
Atmosphere	Man, tools and human activities	
Biosphere	Man, tools and human activities	
Cryosphere	Man, tools and human activities	
Hydrosphere	Man, tools and human activities	
Lithosphere	Man, tools and human activities	
OCEANsphere	Man, tools and human activities	
Pedosphere	Man, tools and human activities	
Atmosphere-Biosphere	Atmosphere and the biosphere	
Atmosphere-Cryosphere	Atmosphere and the cryosphere	
Atmosphere-Hydrosphere	Atmosphere and the hydrosphere	
Atmosphere-Lithosphere	Atmosphere and the lithosphere	
Atmosphere-OCEANsphere	Atmosphere and the OCEANsphere	
Atmosphere-Pedosphere	Atmosphere and the pedosphere	
Biosphere-Cryosphere	Biosphere and the cryosphere	
Biosphere-Hydrosphere	Biosphere and the hydrosphere	
Biosphere-Lithosphere	Biosphere and the lithosphere	
Biosphere-OCEANsphere	Biosphere and the OCEANsphere	
Biosphere-Pedosphere	Biosphere and the pedosphere	
Cryosphere-Hydrosphere	Cryosphere and the hydrosphere	
Cryosphere-Lithosphere	Cryosphere and the lithosphere	
Cryosphere-OCEANsphere	Cryosphere and the OCEANsphere	
Cryosphere-Pedosphere	Cryosphere and the pedosphere	
Hydrosphere-Lithosphere	Hydrosphere and the lithosphere	
Hydrosphere-OCEANsphere	Hydrosphere and the OCEANsphere	
Hydrosphere-Pedosphere	Hydrosphere and the pedosphere	
Lithosphere-OCEANsphere	Lithosphere and the OCEANsphere	
Lithosphere-Pedosphere	Lithosphere and the pedosphere	
OCEANsphere-Pedosphere	OCEANsphere and the pedosphere	
Anthosphere-Atmosphere	Man, tools and human activities and the atmosphere	
Anthosphere-Biosphere	Man, tools and human activities and the biosphere	
Anthosphere-Cryosphere	Man, tools and human activities and the cryosphere	
Anthosphere-Hydrosphere	Man, tools and human activities and the hydrosphere	
Anthosphere-Lithosphere	Man, tools and human activities and the lithosphere	
Anthosphere-OCEANsphere	Man, tools and human activities and the OCEANsphere	
Anthosphere-Pedosphere	Man, tools and human activities and the pedosphere	
Atmosphere-Biosphere-Cryosphere	Atmosphere, biosphere and the cryosphere	
Atmosphere-Biosphere-Hydrosphere	Atmosphere, biosphere and the hydrosphere	
Atmosphere-Biosphere-Lithosphere	Atmosphere, biosphere and the lithosphere	
Atmosphere-Biosphere-OCEANsphere	Atmosphere, biosphere and the OCEANsphere	
Atmosphere-Biosphere-Pedosphere	Atmosphere, biosphere and the pedosphere	
Atmosphere-Cryosphere-Hydrosphere	Atmosphere, cryosphere and the hydrosphere	
Atmosphere-Cryosphere-Lithosphere	Atmosphere, cryosphere and the lithosphere	
Atmosphere-Cryosphere-OCEANsphere	Atmosphere, cryosphere and the OCEANsphere	
Atmosphere-Cryosphere-Pedosphere	Atmosphere, cryosphere and the pedosphere	
Atmosphere-Hydrosphere-Lithosphere	Atmosphere, hydrosphere and the lithosphere	
Atmosphere-Hydrosphere-OCEANsphere	Atmosphere, hydrosphere and the OCEANsphere	
Atmosphere-Hydrosphere-Pedosphere	Atmosphere, hydrosphere and the pedosphere	
Atmosphere-Lithosphere-OCEANsphere	Atmosphere, lithosphere and the OCEANsphere	
Atmosphere-Lithosphere-Pedosphere	Atmosphere, lithosphere and the pedosphere	
Atmosphere-OCEANsphere-Pedosphere	Atmosphere, OCEANsphere and the pedosphere	
Biosphere-Cryosphere-Hydrosphere	Biosphere, cryosphere and the hydrosphere	
Biosphere-Cryosphere-Lithosphere	Biosphere, cryosphere and the lithosphere	
Biosphere-Cryosphere-OCEANsphere	Biosphere, cryosphere and the OCEANsphere	
Biosphere-Cryosphere-Pedosphere	Biosphere, cryosphere and the pedosphere	
Biosphere-Hydrosphere-Lithosphere	Biosphere, hydrosphere and the lithosphere	
Biosphere-Hydrosphere-OCEANsphere	Biosphere, hydrosphere and the OCEANsphere	
Biosphere-Hydrosphere-Pedosphere	Biosphere, hydrosphere and the pedosphere	
Biosphere-Lithosphere-OCEANsphere	Biosphere, lithosphere and the OCEANsphere	
Biosphere-Lithosphere-Pedosphere	Biosphere, lithosphere and the pedosphere	
Biosphere-OCEANsphere-Pedosphere	Biosphere, OCEANsphere and the pedosphere	
Cryosphere-Hydrosphere-Lithosphere	Cryosphere, hydrosphere and the lithosphere	
Cryosphere-Hydrosphere-OCEANsphere	Cryosphere, hydrosphere and the OCEANsphere	
Cryosphere-Hydrosphere-Pedosphere	Cryosphere, hydrosphere and the pedosphere	
Cryosphere-Lithosphere-OCEANsphere	Cryosphere, lithosphere and the OCEANsphere	
Cryosphere-Lithosphere-Pedosphere	Cryosphere, lithosphere and the pedosphere	
Cryosphere-OCEANsphere-Pedosphere	Cryosphere, OCEANsphere and the pedosphere	
Hydrosphere-Lithosphere-OCEANsphere	Hydrosphere, lithosphere and the OCEANsphere	
Hydrosphere-Lithosphere-Pedosphere	Hydrosphere, lithosphere and the pedosphere	
Hydrosphere-OCEANsphere-Pedosphere	Hydrosphere, OCEANsphere and the pedosphere	
Lithosphere-OCEANsphere-Pedosphere	Lithosphere, OCEANsphere and the pedosphere	
Anthosphere-Atmosphere-Biosphere	Man, tools and human activities, the atmosphere and the biosphere	
Anthosphere-Atmosphere-Cryosphere	Man, tools and human activities, the atmosphere and the cryosphere	
Anthosphere-Atmosphere-Hydrosphere	Man, tools and human activities, the atmosphere and the hydrosphere	
Anthosphere-Atmosphere-Lithosphere	Man, tools and human activities, the atmosphere and the lithosphere	
Anthosphere-Atmosphere-OCEANsphere	Man, tools and human activities, the atmosphere and the OCEANsphere	
Anthosphere-Atmosphere-Pedosphere	Man, tools and human activities, the atmosphere and the pedosphere	
Anthosphere-Biosphere-Cryosphere	Man, tools and human activities, the biosphere and the cryosphere	
Anthosphere-Biosphere-Hydrosphere	Man, tools and human activities, the biosphere and the hydrosphere	
Anthosphere-Biosphere-Lithosphere	Man, tools and human activities, the biosphere and the lithosphere	
Anthosphere-Biosphere-OCEANsphere	Man, tools and human activities, the biosphere and the OCEANsphere	
Anthosphere-Biosphere-Pedosphere	Man, tools and human activities, the biosphere and the pedosphere	
Anthosphere-Cryosphere-Hydrosphere	Man, tools and human activities, the cryosphere and the hydrosphere	
Anthosphere-Cryosphere-Lithosphere	Man, tools and human activities, the cryosphere and the lithosphere	
Anthosphere-Cryosphere-OCEANsphere	Man, tools and human activities, the cryosphere and the OCEANsphere	
Anthosphere-Cryosphere-Pedosphere	Man, tools and human activities, the cryosphere and the pedosphere	
Anthosphere-Hydrosphere-Lithosphere	Man, tools and human activities, the hydrosphere and the lithosphere	
Anthosphere-Hydrosphere-OCEANsphere	Man, tools and human activities, the hydrosphere and the OCEANsphere	
Anthosphere-Hydrosphere-Pedosphere	Man, tools and human activities, the hydrosphere and the pedosphere	
Anthosphere-Lithosphere-OCEANsphere	Man, tools and human activities, the lithosphere and the OCEANsphere	
Anthosphere-Lithosphere-Pedosphere	Man, tools and human activities, the lithosphere and the pedosphere	
Anthosphere-OCEANsphere-Pedosphere	Man, tools and human activities, the OCEANsphere and the pedosphere	
Atmosphere-Biosphere-Cryosphere-Hydrosphere	Atmosphere, biosphere, cryosphere and the hydrosphere	
Atmosphere-Biosphere-Cryosphere-Lithosphere	Atmosphere, biosphere, cryosphere and the lithosphere	
Atmosphere-Biosphere-Cryosphere-OCEANsphere	Atmosphere, biosphere, cryosphere and the OCEANsphere	
Atmosphere-Biosphere-Cryosphere-Pedosphere	Atmosphere, biosphere, cryosphere and the pedosphere	
Atmosphere-Biosphere-Hydrosphere-Lithosphere	Atmosphere, biosphere, hydrosphere and the lithosphere	
Atmosphere-Biosphere-Hydrosphere-OCEANsphere	Atmosphere, biosphere, hydrosphere and the OCEANsphere	
Atmosphere-Biosphere-Hydrosphere-Pedosphere	Atmosphere, biosphere, hydrosphere and the pedosphere	
Atmosphere-Biosphere-Lithosphere-OCEANsphere	Atmosphere, biosphere, lithosphere and the OCEANsphere	
Atmosphere-Biosphere-Lithosphere-Pedosphere	Atmosphere, biosphere, lithosphere and the pedosphere	
Atmosphere-Biosphere-OCEANsphere-Pedosphere	Atmosphere, biosphere, OCEANsphere and the pedosphere	
Atmosphere-Cryosphere-Hydrosphere-Lithosphere	Atmosphere, cryosphere, hydrosphere and the lithosphere	
Atmosphere-Cryosphere-Hydrosphere-OCEANsphere	Atmosphere, cryosphere, hydrosphere and the OCEANsphere	
Atmosphere-Cryosphere-Hydrosphere-Pedosphere	Atmosphere, cryosphere, hydrosphere and the pedosphere	
Atmosphere-Cryosphere-Lithosphere-OCEANsphere	Atmosphere, cryosphere, lithosphere and the OCEANsphere	
Atmosphere-Cryosphere-Lithosphere-Pedosphere	Atmosphere, cryosphere, lithosphere and the pedosphere	
Atmosphere-Cryosphere-OCEANsphere-Pedosphere	Atmosphere, cryosphere, OCEANsphere and the pedosphere	
Atmosphere-Hydrosphere-Lithosphere-OCEANsphere	Atmosphere, hydrosphere, lithosphere and the OCEANsphere	
Atmosphere-Hydrosphere-Lithosphere-Pedosphere	Atmosphere, hydrosphere, lithosphere and the pedosphere	
Atmosphere-Hydrosphere-OCEANsphere-Pedosphere	Atmosphere, hydrosphere, OCEANsphere and the pedosphere	
Atmosphere-Lithosphere-OCEANsphere-Pedosphere	Atmosphere, lithosphere, OCEANsphere and the pedosphere	
Biosphere-Cryosphere-Hydrosphere-Lithosphere	Biosphere, cryosphere, hydrosphere and the lithosphere	
Biosphere-Cryosphere-Hydrosphere-OCEANsphere	Biosphere, cryosphere, hydrosphere and the OCEANsphere	
Biosphere-Cryosphere-Hydrosphere-Pedosphere	Biosphere, cryosphere, hydrosphere and the pedosphere	
Biosphere-Cryosphere-Lithosphere-OCEANsphere	Biosphere, cryosphere, lithosphere and the OCEANsphere	
Biosphere-Cryosphere-Lithosphere-Pedosphere	Biosphere, cryosphere, lithosphere and the pedosphere	
Biosphere-Cryosphere-OCEANsphere-Pedosphere	Biosphere, cryosphere, OCEANsphere and the pedosphere	
Biosphere-Hydrosphere-Lithosphere-OCEANsphere	Biosphere, hydrosphere, lithosphere and the OCEANsphere	
Biosphere-Hydrosphere-Lithosphere-Pedosphere	Biosphere, hydrosphere, lithosphere and the pedosphere	
Biosphere-Hydrosphere-OCEANsphere-Pedosphere	Biosphere, hydrosphere, OCEANsphere and the pedosphere	
Biosphere-Lithosphere-OCEANsphere-Pedosphere	Biosphere, lithosphere, OCEANsphere and the pedosphere	
Cryosphere-Hydrosphere-Lithosphere-OCEANsphere	Cryosphere, hydrosphere, lithosphere and the OCEANsphere	
Cryosphere-Hydrosphere-Lithosphere-Pedosphere	Cryosphere, hydrosphere, lithosphere and the pedosphere	
Cryosphere-Hydrosphere-OCEANsphere-Pedosphere	Cryosphere, hydrosphere, OCEANsphere and the pedosphere	
Cryosphere-Lithosphere-OCEANsphere-Pedosphere	Cryosphere, lithosphere, OCEANsphere and the pedosphere	
Hydrosphere-Lithosphere-OCEANsphere-Pedosphere	Hydrosphere, lithosphere, OCEANsphere and the pedosphere	
Anthosphere-Atmosphere-Biosphere-Cryosphere	Man, tools and human activities, the atmosphere, the biosphere and the cryosphere	
Anthosphere-Atmosphere-Biosphere-Hydrosphere	Man, tools and human activities, the atmosphere, the biosphere and the hydrosphere	
Anthosphere-Atmosphere-Biosphere-Lithosphere	Man, tools and human activities, the atmosphere, the biosphere and the lithosphere	
Anthosphere-Atmosphere-Biosphere-OCEANsphere	Man, tools and human activities, the atmosphere, the biosphere and the OCEANsphere	
Anthosphere-Atmosphere-Biosphere-Pedosphere	Man, tools and human activities, the atmosphere, the biosphere and the pedosphere	
Anthosphere-Atmosphere-Cryosphere-Hydrosphere	Man, tools and human activities, the atmosphere, the cryosphere and the hydrosphere	
Anthosphere-Atmosphere-Cryosphere-Lithosphere	Man, tools and human activities, the atmosphere, the cryosphere and the lithosphere	
Anthosphere-Atmosphere-Cryosphere-OCEANsphere	Man, tools and human activities, the atmosphere, the cryosphere and the OCEANsphere	
Anthosphere-Atmosphere-Cryosphere-Pedosphere	Man, tools and human activities, the atmosphere, the cryosphere and the pedosphere	
Anthosphere-Atmosphere-Hydrosphere-Lithosphere	Man, tools and human activities, the atmosphere, the hydrosphere and the lithosphere	
Anthosphere-Atmosphere-Hydrosphere-OCEANsphere	Man, tools and human activities, the atmosphere, the hydrosphere and the OCEANsphere	
Anthosphere-Atmosphere-Hydrosphere-Pedosphere	Man, tools and human activities, the atmosphere, the hydrosphere and the pedosphere	
Anthosphere-Atmosphere-Lithosphere-OCEANsphere	Man, tools and human activities, the atmosphere, the lithosphere and the OCEANsphere	
Anthosphere-Atmosphere-Lithosphere-Pedosphere	Man, tools and human activities, the atmosphere, the lithosphere and the pedosphere	
Anthosphere-Atmosphere-OCEANsphere-Pedosphere	Man, tools and human activities, the atmosphere, the OCEANsphere and the pedosphere	
Anthosphere-Biosphere-Cryosphere-Hydrosphere	Man, tools and human activities, the biosphere, the cryosphere and the hydrosphere	
Anthosphere-Biosphere-Cryosphere-Lithosphere	Man, tools and human activities, the biosphere, the cryosphere and the lithosphere	
Anthosphere-Biosphere-Cryosphere-OCEANsphere	Man, tools and human activities, the biosphere, the cryosphere and the OCEANsphere	
Anthosphere-Biosphere-Cryosphere-Pedosphere	Man, tools and human activities, the biosphere, the cryosphere and the pedosphere	
Anthosphere-Biosphere-Hydrosphere-Lithosphere	Man, tools and human activities, the biosphere, the hydrosphere and the lithosphere	
Anthosphere-Biosphere-Hydrosphere-OCEANsphere	Man, tools and human activities, the biosphere, the hydrosphere and the OCEANsphere	
Anthosphere-Biosphere-Hydrosphere-Pedosphere	Man, tools and human activities, the biosphere, the hydrosphere and the pedosphere	
Anthosphere-Biosphere-Lithosphere-OCEANsphere	Man, tools and human activities, the biosphere, the lithosphere and the OCEANsphere	
Anthosphere-Biosphere-Lithosphere-Pedosphere	Man, tools and human activities, the biosphere, the lithosphere and the pedosphere	
Anthosphere-Biosphere-OCEANsphere-Pedosphere	Man, tools and human activities, the biosphere, the OCEANsphere and the pedosphere	
Anthosphere-Cryosphere-Hydrosphere-Lithosphere	Man, tools and human activities, the cryosphere, the hydrosphere and the lithosphere	
Anthosphere-Cryosphere-Hydrosphere-OCEANsphere	Man, tools and human activities, the cryosphere, the hydrosphere and the OCEANsphere	
Anthosphere-Cryosphere-Hydrosphere-Pedosphere	Man, tools and human activities, the cryosphere, the hydrosphere and the pedosphere	
Anthosphere-Cryosphere-Lithosphere-OCEANsphere	Man, tools and human activities, the cryosphere, the lithosphere and the OCEANsphere	
Anthosphere-Cryosphere-Lithosphere-Pedosphere	Man, tools and human activities, the cryosphere, the lithosphere and the pedosphere	
Anthosphere-Cryosphere-OCEANsphere-Pedosphere	Man, tools and human activities, the cryosphere, the OCEANsphere and the pedosphere	
Anthosphere-Hydrosphere-Lithosphere-OCEANsphere	Man, tools and human activities, the hydrosphere, the lithosphere and the OCEANsphere	
Anthosphere-Hydrosphere-Lithosphere-Pedosphere	Man, tools and human activities, the hydrosphere, the lithosphere and the pedosphere	
Anthosphere-Hydrosphere-OCEANsphere-Pedosphere	Man, tools and human activities, the hydrosphere, the OCEANsphere and the pedosphere	
Anthosphere-Lithosphere-OCEANsphere-Pedosphere	Man, tools and human activities, the lithosphere, the OCEANsphere and the pedosphere	
Atmosphere-Biosphere-Cryosphere-Hydrosphere-Lithosphere	Atmosphere, biosphere, cryosphere, hydrosphere and the lithosphere	
Atmosphere-Biosphere-Cryosphere-Hydrosphere-OCEANsphere	Atmosphere, biosphere, cryosphere, hydrosphere and the OCEANsphere	
Atmosphere-Biosphere-Cryosphere-Hydrosphere-Pedosphere	Atmosphere, biosphere, cryosphere, hydrosphere and the pedosphere	
Atmosphere-Biosphere-Cryosphere-Lithosphere-OCEANsphere	Atmosphere, biosphere, cryosphere, lithosphere and the OCEANsphere	
Atmosphere-Biosphere-Cryosphere-Lithosphere-Pedosphere	Atmosphere, biosphere, cryosphere, lithosphere and the pedosphere	
Atmosphere-Biosphere-Cryosphere-OCEANsphere-Pedosphere	Atmosphere, biosphere, cryosphere, OCEANsphere and the pedosphere	
Atmosphere-Biosphere-Hydrosphere-Lithosphere-OCEANsphere	Atmosphere, biosphere, hydrosphere, lithosphere and the OCEANsphere	
Atmosphere-Biosphere-Hydrosphere-Lithosphere-Pedosphere	Atmosphere, biosphere, hydrosphere, lithosphere and the pedosphere	
Atmosphere-Biosphere-Hydrosphere-OCEANsphere-Pedosphere	Atmosphere, biosphere, hydrosphere, OCEANsphere and the pedosphere	
Atmosphere-Biosphere-Lithosphere-OCEANsphere-Pedosphere	Atmosphere, biosphere, lithosphere, OCEANsphere and the pedosphere	
Atmosphere-Cryosphere-Hydrosphere-Lithosphere-OCEANsphere	Atmosphere, cryosphere, hydrosphere, lithosphere and the OCEANsphere	
Atmosphere-Cryosphere-Hydrosphere-Lithosphere-Pedosphere	Atmosphere, cryosphere, hydrosphere, lithosphere and the pedosphere	
Atmosphere-Cryosphere-Hydrosphere-OCEANsphere-Pedosphere	Atmosphere, cryosphere, hydrosphere, OCEANsphere and the pedosphere	
Atmosphere-Cryosphere-Lithosphere-OCEANsphere-Pedosphere	Atmosphere, cryosphere, lithosphere, OCEANsphere and the pedosphere	
Atmosphere-Hydrosphere-Lithosphere-OCEANsphere-Pedosphere	Atmosphere, hydrosphere, lithosphere, OCEANsphere and the pedosphere	
Biosphere-Cryosphere-Hydrosphere-Lithosphere-OCEANsphere	Biosphere, cryosphere, hydrosphere, lithosphere and the OCEANsphere	
Biosphere-Cryosphere-Hydrosphere-Lithosphere-Pedosphere	Biosphere, cryosphere, hydrosphere, lithosphere and the pedosphere	
Biosphere-Cryosphere-Hydrosphere-OCEANsphere-Pedosphere	Biosphere, cryosphere, hydrosphere, OCEANsphere and the pedosphere	
Biosphere-Cryosphere-Lithosphere-OCEANsphere-Pedosphere	Biosphere, cryosphere, lithosphere, OCEANsphere and the pedosphere	
Biosphere-Hydrosphere-Lithosphere-OCEANsphere-Pedosphere	Biosphere, hydrosphere, lithosphere, OCEANsphere and the pedosphere	
Cryosphere-Hydrosphere-Lithosphere-OCEANsphere-Pedosphere	Cryosphere, hydrosphere, lithosphere, OCEANsphere and the pedosphere	
Anthosphere-Atmosphere-Biosphere-Cryosphere-Hydrosphere	Man, tools and human activities, the atmosphere, the biosphere, the cryosphere and the hydrosphere	
Anthosphere-Atmosphere-Biosphere-Cryosphere-Lithosphere	Man, tools and human activities, the atmosphere, the biosphere, the cryosphere and the lithosphere	
Anthosphere-Atmosphere-Biosphere-Cryosphere-OCEANsphere	Man, tools and human activities, the atmosphere, the biosphere, the cryosphere and the OCEANsphere	
Anthosphere-Atmosphere-Biosphere-Cryosphere-Pedosphere	Man, tools and human activities, the atmosphere, the biosphere, the cryosphere and the pedosphere	
Anthosphere-Atmosphere-Biosphere-Hydrosphere-Lithosphere	Man, tools and human activities, the atmosphere, the biosphere, the hydrosphere and the lithosphere	
Anthosphere-Atmosphere-Biosphere-Hydrosphere-OCEANsphere	Man, tools and human activities, the atmosphere, the biosphere, the hydrosphere and the OCEANsphere	
Anthosphere-Atmosphere-Biosphere-Hydrosphere-Pedosphere	Man, tools and human activities, the atmosphere, the biosphere, the hydrosphere and the pedosphere	
Anthosphere-Atmosphere-Biosphere-Lithosphere-OCEANsphere	Man, tools and human activities, the atmosphere, the biosphere, the lithosphere and the OCEANsphere	
Anthosphere-Atmosphere-Biosphere-Lithosphere-Pedosphere	Man, tools and human activities, the atmosphere, the biosphere, the lithosphere and the pedosphere	
Anthosphere-Atmosphere-Biosphere-OCEANsphere-Pedosphere	Man, tools and human activities, the atmosphere, the biosphere, the OCEANsphere and the pedosphere	
Anthosphere-Atmosphere-Cryosphere-Hydrosphere-Lithosphere	Man, tools and human activities, the atmosphere, the cryosphere, the hydrosphere and the lithosphere	
Anthosphere-Atmosphere-Cryosphere-Hydrosphere-OCEANsphere	Man, tools and human activities, the atmosphere, the cryosphere, the hydrosphere and the OCEANsphere	
Anthosphere-Atmosphere-Cryosphere-Hydrosphere-Pedosphere	Man, tools and human activities, the atmosphere, the cryosphere, the hydrosphere and the pedosphere	
Anthosphere-Atmosphere-Cryosphere-Lithosphere-OCEANsphere	Man, tools and human activities, the atmosphere, the cryosphere, the lithosphere and the OCEANsphere	
Anthosphere-Atmosphere-Cryosphere-Lithosphere-Pedosphere	Man, tools and human activities, the atmosphere, the cryosphere, the lithosphere and the pedosphere	
Anthosphere-Atmosphere-Cryosphere-OCEANsphere-Pedosphere	Man, tools and human activities, the atmosphere, the cryosphere, the OCEANsphere and the pedosphere	
Anthosphere-Atmosphere-Hydrosphere-Lithosphere-OCEANsphere	Man, tools and human activities, the atmosphere, the hydrosphere, the lithosphere and the OCEANsphere	
Anthosphere-Atmosphere-Hydrosphere-Lithosphere-Pedosphere	Man, tools and human activities, the atmosphere, the hydrosphere, the lithosphere and the pedosphere	
Anthosphere-Atmosphere-Hydrosphere-OCEANsphere-Pedosphere	Man, tools and human activities, the atmosphere, the hydrosphere, the OCEANsphere and the pedosphere	
Anthosphere-Atmosphere-Lithosphere-OCEANsphere-Pedosphere	Man, tools and human activities, the atmosphere, the lithosphere, the OCEANsphere and the pedosphere	
Anthosphere-Biosphere-Cryosphere-Hydrosphere-Lithosphere	Man, tools and human activities, the biosphere, the cryosphere, the hydrosphere and the lithosphere	
Anthosphere-Biosphere-Cryosphere-Hydrosphere-OCEANsphere	Man, tools and human activities, the biosphere, the cryosphere, the hydrosphere and the OCEANsphere	
Anthosphere-Biosphere-Cryosphere-Hydrosphere-Pedosphere	Man, tools and human activities, the biosphere, the cryosphere, the hydrosphere and the pedosphere	
Anthosphere-Biosphere-Cryosphere-Lithosphere-OCEANsphere	Man, tools and human activities, the biosphere, the cryosphere, the lithosphere and the OCEANsphere	
Anthosphere-Biosphere-Cryosphere-Lithosphere-Pedosphere	Man, tools and human activities, the biosphere, the cryosphere, the lithosphere and the pedosphere	
Anthosphere-Biosphere-Cryosphere-OCEANsphere-Pedosphere	Man, tools and human activities, the biosphere, the cryosphere, the OCEANsphere and the pedosphere	
Anthosphere-Biosphere-Hydrosphere-Lithosphere-OCEANsphere	Man, tools and human activities, the biosphere, the hydrosphere, the lithosphere and the OCEANsphere	
Anthosphere-Biosphere-Hydrosphere-Lithosphere-Pedosphere	Man, tools and human activities, the biosphere, the hydrosphere, the lithosphere and the pedosphere	
Anthosphere-Biosphere-Hydrosphere-OCEANsphere-Pedosphere	Man, tools and human activities, the biosphere, the hydrosphere, the OCEANsphere and the pedosphere	
Anthosphere-Biosphere-Lithosphere-OCEANsphere-Pedosphere	Man, tools and human activities, the biosphere, the lithosphere, the OCEANsphere and the pedosphere	
Anthosphere-Cryosphere-Hydrosphere-Lithosphere-OCEANsphere	Man, tools and human activities, the cryosphere, the hydrosphere, the lithosphere and the OCEANsphere	
Anthosphere-Cryosphere-Hydrosphere-Lithosphere-Pedosphere	Man, tools and human activities, the cryosphere, the hydrosphere, the lithosphere and the pedosphere	
Anthosphere-Cryosphere-Hydrosphere-OCEANsphere-Pedosphere	Man, tools and human activities, the cryosphere, the hydrosphere, the OCEANsphere and the pedosphere	
Anthosphere-Cryosphere-Lithosphere-OCEANsphere-Pedosphere	Man, tools and human activities, the cryosphere, the lithosphere, the OCEANsphere and the pedosphere	
Anthosphere-Hydrosphere-Lithosphere-OCEANsphere-Pedosphere	Man, tools and human activities, the hydrosphere, the lithosphere, the OCEANsphere and the pedosphere	
Biosphere-Cryosphere-Hydrosphere-Lithosphere-OCEANsphere	Biosphere, cryosphere, hydrosphere, lithosphere and the OCEANsphere	
Biosphere-Cryosphere-Hydrosphere-Lithosphere-Pedosphere	Biosphere, cryosphere, hydrosphere, lithosphere and the pedosphere	
Biosphere-Cryosphere-Hydrosphere-OCEANsphere-Pedosphere	Biosphere, cryosphere, hydrosphere, OCEANsphere and the pedosphere	
Biosphere-Cryosphere-Lithosphere-OCEANsphere-Pedosphere	Biosphere, cryosphere, lithosphere, OCEANsphere and the pedosphere	
Biosphere-Hydrosphere-Lithosphere-OCEANsphere-Pedosphere	Biosphere, hydrosphere, lithosphere, OCEANsphere and the pedosphere	
Cryosphere-Hydrosphere-Lithosphere-OCEANsphere-Pedosphere	Cryosphere, hydrosphere, lithosphere, OCEANsphere and the pedosphere	
Anthosphere-Atmosphere-Biosphere-Cryosphere-Hydrosphere-Lithosphere	Man, tools and human activities, the atmosphere, the biosphere, the cryosphere, the hydrosphere and the lithosphere	
Anthosphere-Atmosphere-Biosphere-Cryosphere-Hydrosphere-OCEANsphere	Man, tools and human activities, the atmosphere, the biosphere, the cryosphere, the hydrosphere and the OCEANsphere	
Anthosphere-Atmosphere-Biosphere-Cryosphere-Hydrosphere-Pedosphere	Man, tools and human activities, the atmosphere, the biosphere, the cryosphere, the hydrosphere and the pedosphere	
Anthosphere-Atmosphere-Biosphere-Cryosphere-Lithosphere-OCEANsphere	Man, tools and human activities, the atmosphere, the biosphere, the cryosphere, the lithosphere and the OCEANsphere	
Anthosphere-Atmosphere-Biosphere-Cryosphere-Lithosphere-Pedosphere	Man, tools and human activities, the atmosphere, the biosphere, the cryosphere, the lithosphere and the pedosphere	
Anthosphere-Atmosphere-Biosphere-Cryosphere-OCEANsphere-Pedosphere	Man, tools and human activities, the atmosphere, the biosphere, the cryosphere, the OCEANsphere and the pedosphere	
Anthosphere-Atmosphere-Biosphere-Hydrosphere-Lithosphere-OCEANsphere	Man, tools and human activities, the atmosphere, the biosphere, the hydrosphere, the lithosphere and the OCEANsphere	
Anthosphere-Atmosphere-Biosphere-Hydrosphere-Lithosphere-Pedosphere	Man, tools and human activities, the atmosphere, the biosphere, the hydrosphere, the lithosphere and the pedosphere	
Anthosphere-Atmosphere-Biosphere-Hydrosphere-OCEANsphere-Pedosphere	Man, tools and human activities, the atmosphere, the biosphere, the hydrosphere, the OCEANsphere and the pedosphere	
Anthosphere-Atmosphere-Biosphere-Lithosphere-OCEANsphere-Pedosphere	Man, tools and human activities, the atmosphere, the biosphere, the lithosphere, the OCEANsphere and the pedosphere	
Anthosphere-Atmosphere-Cryosphere-Hydrosphere-Lithosphere-OCEANsphere	Man, tools and human activities, the atmosphere, the cryosphere, the hydrosphere, the lithosphere and the OCEANsphere	
Anthosphere-Atmosphere-Cryosphere-Hydrosphere-Lithosphere-Pedosphere	Man, tools and human activities, the atmosphere, the cryosphere, the hydrosphere, the lithosphere and the pedosphere	
Anthosphere-Atmosphere-Cryosphere-Hydrosphere-OCEANsphere-Pedosphere	Man, tools and human activities, the atmosphere, the cryosphere, the hydrosphere, the OCEANsphere and the pedosphere	
Anthosphere-Atmosphere-Cryosphere-Lithosphere-OCEANsphere-Pedosphere	Man, tools and human activities, the atmosphere, the cryosphere, the lithosphere, the OCEANsphere and the pedosphere	
Anthosphere-Atmosphere-Hydrosphere-Lithosphere-OCEANsphere-Pedosphere	Man, tools and human activities, the atmosphere, the hydrosphere, the lithosphere, the OCEANsphere and the pedosphere	
Anthosphere-Biosphere-Cryosphere-Hydrosphere-Lithosphere-OCEANsphere	Man, tools and human activities, the biosphere, the cryosphere, the hydrosphere, the lithosphere and the OCEANsphere	
Anthosphere-Biosphere-Cryosphere-Hydrosphere-Lithosphere-Pedosphere	Man, tools and human activities, the biosphere, the cryosphere, the hydrosphere, the lithosphere and the pedosphere	
Anthosphere-Biosphere-Cryosphere-Hydrosphere-OCEANsphere-Pedosphere	Man, tools and human activities, the biosphere, the cryosphere, the hydrosphere, the OCEANsphere and the pedosphere	
Anthosphere-Biosphere-Cryosphere-Lithosphere-OCEANsphere-Pedosphere	Man, tools and human activities, the biosphere, the cryosphere, the lithosphere, the OCEANsphere and the pedosphere	
Anthosphere-Biosphere-Hydrosphere-Lithosphere-OCEANsphere-Pedosphere	Man, tools and human activities, the biosphere, the hydrosphere, the lithosphere, the OCEANsphere and the pedosphere	
Anthosphere-Cryosphere-Hydrosphere-Lithosphere-OCEANsphere-Pedosphere	Man, tools and human activities, the cryosphere, the hydrosphere, the lithosphere, the OCEANsphere and the pedosphere	
Atmosphere-Biosphere-Cryosphere-Hydrosphere-Lithosphere-OCEANsphere	Atmosphere, biosphere, cryosphere, hydrosphere, lithosphere and the OCEANsphere	
Atmosphere-Biosphere-Cryosphere-Hydrosphere-Lithosphere-Pedosphere	Atmosphere, biosphere, cryosphere, hydrosphere, lithosphere and the pedosphere	
Atmosphere-Biosphere-Cryosphere-Hydrosphere-OCEANsphere-Pedosphere	Atmosphere, biosphere, cryosphere, hydrosphere, OCEANsphere and the pedosphere	
Atmosphere-Biosphere-Cryosphere-Lithosphere-OCEANsphere-Pedosphere	Atmosphere, biosphere, cryosphere, lithosphere, OCEANsphere and the pedosphere	
Atmosphere-Biosphere-Hydrosphere-Lithosphere-OCEANsphere-Pedosphere	Atmosphere, biosphere, hydrosphere, lithosphere, OCEANsphere and the pedosphere	
Atmosphere-Cryosphere-Hydrosphere-Lithosphere-OCEANsphere-Pedosphere	Atmosphere, cryosphere, hydrosphere, lithosphere, OCEANsphere and the pedosphere	
Biosphere-Cryosphere-Hydrosphere-Lithosphere-OCEANsphere-Pedosphere	Biosphere, cryosphere, hydrosphere, lithosphere, OCEANsphere and the pedosphere	
Anthosphere-Atmosphere-Biosphere-Cryosphere-Hydrosphere-Lithosphere-OCEANsphere-Pedosphere	Man, tools and human activities, the atmosphere, the biosphere, the cryosphere, the hydrosphere, the lithosphere, the OCEANsphere and the pedosphere	

Acute description dictionary

Version 1
Privilege: Boundary

Name	Description	Unit	Measure	Type	Range	S	D	C	R	Prop	Indices
Acute	Acute toxicity			STRING		Y	Y	Y	Y		Chemicals
Acute	Acute toxicity			STRING		Y	Y	Y	Y		Chemicals

Legend
Column Name
S Stochastic
D Deterministic
C Uncertainty (as qualty (Boolean))
R Is the variable a key to other

Age group names, starting, ending ages and populations for these groups

Version 1
Privilege: Boundary

Name	Description	Unit	Measure	Type	Range	S	D	C	R	Prop	Indices
AbsAge	Averaging duration of the data	yr	Time	REAL8	[0, 0.1]	Y	Y	Y	Y	Y	Ages
AgeGrp	The age group name			STRING		Y	Y	Y	Y		Ages
Pop	The age group size			REAL8	[0, +INF]	Y	Y	Y	Y	Y	Ages
RefPop	The index to the population block

1H5Ks/Cmm1ms	Current in conditions of transmission by NORL tubes																		Cmm1ms/1H5Ks Current/Transmission Ratio NORL Tubes	
1H5Ks/Cpm2ms	Resistance for NORL	Ohm	Real	20 kOhm	10 - 50 kOhm														Cpm2ms/1H5Ks Resistance/Transmission Ratio NORL Tubes	
Dmm1ms	Body size per tube					INTEGER	2-200												Dmm1ms Diameter	
Hmm1ms	H1 when transmission starts					INTEGER	2-200												Hmm1ms H1 Minimum Diameter	
Hmm2ms	H2 when transmission starts					INTEGER	2-200												Hmm2ms H2 Minimum Diameter	
Hmm3ms	H3 when transmission starts					INTEGER	2-200												Hmm3ms H3 Minimum Diameter	
Hmm4ms	H4 when transmission starts					INTEGER	2-200												Hmm4ms H4 Minimum Diameter	
Vm1ms/Hmm1ms	Ratio description for H1 percentages					INTEGER	2-200												Vm1ms/Hmm1ms Voltage/Diameter Ratio Minimum	
Vm2ms/Hmm2ms	Ratio description for H2 percentages					INTEGER	2-200												Vm2ms/Hmm2ms Voltage/Diameter Ratio Minimum	
Vm3ms/Hmm3ms	Ratio description for H3 percentages					INTEGER	2-200												Vm3ms/Hmm3ms Voltage/Diameter Ratio Minimum	
Vm4ms/Hmm4ms	Ratio description for H4 percentages					INTEGER	2-200												Vm4ms/Hmm4ms Voltage/Diameter Ratio Minimum	
Vmm1ms/HOKTm1ms	Lowest ring voltage for ionization effects (LOHE) tubes					INTEGER	2-200												Vmm1ms/HOKTm1ms Voltage/Diameter Ratio Minimum Lowest Ionization Effects Tube	
Vmm2ms/HOKTm1ms	Lowest ring voltage for ionization effects (LOHE) tubes					INTEGER	2-200												Vmm2ms/HOKTm1ms Voltage/Diameter Ratio Minimum Lowest Ionization Effects Tube	
Vmm3ms/HOKTm1ms	Highest ring voltage for ionization effects (HOHE) tubes					INTEGER	2-200												Vmm3ms/HOKTm1ms Voltage/Diameter Ratio Minimum Highest Ionization Effects Tube	
Vmm4ms/HOKTm1ms	Highest ring voltage for ionization effects (HOHE) tubes					INTEGER	2-200												Vmm4ms/HOKTm1ms Voltage/Diameter Ratio Minimum Highest Ionization Effects Tube	

Legend
Column Name — **Meaning**
Sel Selected
Dim Dimensional Sec
Unc Uncertainty (or sigma, or deviation)
S Is the variable a key to others

See Also
Chemical - AqueousPyrolysis

Dissolved chemical concentrations
Physique Boundary
Section 1
Physique Boundary

Name	Description	Unit	Measure	Type	Range	S	D	U	S	Prog	Indices
C1m	The dissolved phase concentration associated with water	kg/L	Mass/Volume	DOUBLE	0 - 61.19	y	y	y	y	y	Chemical-ID Chemical-Name Chemical-Class Chemical-Formula Chemical-MW
Tmp1ms	Concentration time grape	p	Time	DOUBLE	0 - 1000000000	y	y	y	y	y	Chemical-ID Chemical-Name Chemical-Class Chemical-Formula Chemical-MW Tmp1ms

Legend
Column Name — **Meaning**
Sel Selected
Dim Dimensional Sec
Unc Uncertainty (or sigma, or deviation)
S Is the variable a key to others

See Also
AqueousPyrolysis - Chemical

Chemical mass flux rates
Physique Boundary
Section 1
Physique Boundary

Name	Description	Unit	Measure	Type	Range	S	D	U	S	Prog	Indices
Tmp1ms	The cumulative mass associated with all phases	g	Mass	DOUBLE	0 - 61.19	y	y	y	y	y	Chemical-ID Chemical-Name Chemical-Class Chemical-Formula Chemical-MW Tmp1ms
Tmp2ms	Mass time point	p	Time	DOUBLE	0 - 1000000000	y	y	y	y	y	Chemical-ID Chemical-Name Chemical-Class Chemical-Formula Chemical-MW Tmp2ms
Tmp3ms	The total chemical flux	g/s	Mass/Time	DOUBLE	0 - 61.19	y	y	y	y	y	Chemical-ID Chemical-Name Chemical-Class Chemical-Formula Chemical-MW Tmp3ms

Legend
Column Name — **Meaning**
Sel Selected
Dim Dimensional Sec
Unc Uncertainty (or sigma, or deviation)
S Is the variable a key to others

See Also
Chemical - Chemical

Chemical Bioconcentration Factors (BAF)
Physique Boundary
Section 1
Physique Boundary

Name	Description	Unit	Measure	Type	Range	S	D	U	S	Prog	Indices
BafFreshM	The concentration factor (concentration per concentration or concentration-Time-concentration)	L/kg	Mass/Mass	DOUBLE	0 - 61.19	y	y	y	y	y	Chemical-ID Chemical-Name Chemical-Class Chemical-Formula Chemical-MW
AquaticFrom	Aquatic from						STRING				
AquaticTo	Aquatic to						STRING				
BafFreshMmin	The concentration factor (concentration per concentration or concentration-Time-concentration)	L/kg	Mass/Mass	DOUBLE	0 - 61.19	y	y	y	y	y	Chemical-ID Chemical-Name Chemical-Class Chemical-Formula Chemical-MW
BafFreshMmax	The concentration factor (concentration per concentration or concentration-Time-concentration)	L/kg	Mass/Mass	DOUBLE	0 - 61.19	y	y	y	y	y	Chemical-ID Chemical-Name Chemical-Class Chemical-Formula Chemical-MW
BafFreshMstd	The concentration factor (concentration per concentration or concentration-Time-concentration)	L/kg	Mass/Mass	DOUBLE	0 - 61.19	y	y	y	y	y	Chemical-ID Chemical-Name Chemical-Class Chemical-Formula Chemical-MW
BafSaltM	The concentration factor (concentration per concentration or concentration-Time-concentration)	L/kg	Mass/Mass	DOUBLE	0 - 61.19	y	y	y	y	y	Chemical-ID Chemical-Name Chemical-Class Chemical-Formula Chemical-MW
BafSaltMmin	The concentration factor (concentration per concentration or concentration-Time-concentration)	L/kg	Mass/Mass	DOUBLE	0 - 61.19	y	y	y	y	y	Chemical-ID Chemical-Name Chemical-Class Chemical-Formula Chemical-MW
BafSaltMmax	The concentration factor (concentration per concentration or concentration-Time-concentration)	L/kg	Mass/Mass	DOUBLE	0 - 61.19	y	y	y	y	y	Chemical-ID Chemical-Name Chemical-Class Chemical-Formula Chemical-MW
BafSaltMstd	The concentration factor (concentration per concentration or concentration-Time-concentration)	L/kg	Mass/Mass	DOUBLE	0 - 61.19	y	y	y	y	y	Chemical-ID Chemical-Name Chemical-Class Chemical-Formula Chemical-MW
Tmp1ms	Concentration time grape	p	Time	DOUBLE	0 - 1000000000	y	y	y	y	y	Chemical-ID Chemical-Name Chemical-Class Chemical-Formula Chemical-MW Tmp1ms

Legend
Column Name — **Meaning**
Sel Selected
Dim Dimensional Sec
Unc Uncertainty (or sigma, or deviation)
S Is the variable a key to others

See Also
Chemical

Chemical Bioconcentration Factors (BCF)
Physique Boundary
Section 1
Physique Boundary

Name	Description	Unit	Measure	Type	Range	S	D	U	S	Prog	Indices
BcfFreshM	The concentration factor (concentration per concentration or concentration-Time-concentration)	L/kg	Mass/Mass	DOUBLE	0 - 61.19	y	y	y	y	y	Chemical-ID Chemical-Name Chemical-Class Chemical-Formula Chemical-MW
AquaticFrom	Aquatic from						STRING				
AquaticTo	Aquatic to						STRING				
BcfFreshMmin	The concentration factor (concentration per concentration or concentration-Time-concentration)	L/kg	Mass/Mass	DOUBLE	0 - 61.19	y	y	y	y	y	Chemical-ID Chemical-Name Chemical-Class Chemical-Formula Chemical-MW
BcfFreshMmax	The concentration factor (concentration per concentration or concentration-Time-concentration)	L/kg	Mass/Mass	DOUBLE	0 - 61.19	y	y	y	y	y	Chemical-ID Chemical-Name Chemical-Class Chemical-Formula Chemical-MW
BcfFreshMstd	The concentration factor (concentration per concentration or concentration-Time-concentration)	L/kg	Mass/Mass	DOUBLE	0 - 61.19	y	y	y	y	y	Chemical-ID Chemical-Name Chemical-Class Chemical-Formula Chemical-MW
BcfSaltM	The concentration factor (concentration per concentration or concentration-Time-concentration)	L/kg	Mass/Mass	DOUBLE	0 - 61.19	y	y	y	y	y	Chemical-ID Chemical-Name Chemical-Class Chemical-Formula Chemical-MW
BcfSaltMmin	The concentration factor (concentration per concentration or concentration-Time-concentration)	L/kg	Mass/Mass	DOUBLE	0 - 61.19	y	y	y	y	y	Chemical-ID Chemical-Name Chemical-Class Chemical-Formula Chemical-MW
BcfSaltMmax	The concentration factor (concentration per concentration or concentration-Time-concentration)	L/kg	Mass/Mass	DOUBLE	0 - 61.19	y	y	y	y	y	Chemical-ID Chemical-Name Chemical-Class Chemical-Formula Chemical-MW
BcfSaltMstd	The concentration factor (concentration per concentration or concentration-Time-concentration)	L/kg	Mass/Mass	DOUBLE	0 - 61.19	y	y	y	y	y	Chemical-ID Chemical-Name Chemical-Class Chemical-Formula Chemical-MW
Tmp1ms	Concentration time grape	p	Time	DOUBLE	0 - 1000000000	y	y	y	y	y	Chemical-ID Chemical-Name Chemical-Class Chemical-Formula Chemical-MW Tmp1ms

Legend
Column Name — **Meaning**
Sel Selected
Dim Dimensional Sec
Unc Uncertainty (or sigma, or deviation)
S Is the variable a key to others

See Also
Chemical

Organism-chemical body burden (mg of contaminant/kg of organism) dry
Physique Boundary
Section 1
Physique Boundary

Name	Description	Unit	Measure	Type	Range	S	D	U	S	Prog	Indices
EcoBodyBurdenDry	The Body Burden, or the chemical concentration in a tissue	kg/kg	Mass/Mass	DOUBLE	0 - 61.19	y	y	y	y	y	Chemical-ID Chemical-Name Chemical-Class Chemical-Formula Chemical-MW Ecosystem-Name Ecosystem-Type
Tmp1ms	The set of time points for each location and depicted	p	Time	DOUBLE	0 - 1000000000	y	y	y	y	y	Chemical-ID Chemical-Name Chemical-Class Chemical-Formula Chemical-MW Tmp1ms

Legend
Column Name — **Meaning**
Sel Selected
Dim Dimensional Sec
Unc Uncertainty (or sigma, or deviation)
S Is the variable a key to others

See Also
Chemical - AquaticOrganism

Organism-chemical body burden (mg of contaminant/kg of organism) wet
Physique Boundary
Section 1
Physique Boundary

Name	Description	Unit	Measure	Type	Range	S	D	U	S	Prog	Indices
EcoBodyBurdenWet	The Body Burden, or the chemical concentration in a tissue	kg/kg	Mass/Mass	DOUBLE	0 - 61.19	y	y	y	y	y	Chemical-ID Chemical-Name Chemical-Class Chemical-Formula Chemical-MW Ecosystem-Name Ecosystem-Type
Tmp1ms	The set of time points for each location and depicted	p	Time	DOUBLE	0 - 1000000000	y	y	y	y	y	Chemical-ID Chemical-Name Chemical-Class Chemical-Formula Chemical-MW Tmp1ms

Legend
Column Name — **Meaning**
Sel Selected
Dim Dimensional Sec
Unc Uncertainty (or sigma, or deviation)
S Is the variable a key to others

See Also
Chemical - AquaticOrganism

Impact from carcinogenic chemicals
Physique Boundary
Section 1
Physique Boundary

Name	Description	Unit	Measure	Type	Range	S	D	U	S	Prog	Indices
Dmm1ms	Impact from carcinogenic chemical dermal contact	Carcinogenic	Carcinogenic Risk	DOUBLE	0 - 61.19	y	y	y	y	y	Chemical-ID Chemical-Name Chemical-Class Chemical-Formula Chemical-MW Tmp1ms
DermalMass	Dermal mass						STRING				
DermalSize	Dermal size						STRING				
Imm1ms	Impact from carcinogenic chemical ingestion	Carcinogenic	Carcinogenic Risk	DOUBLE	0 - 61.19	y	y	y	y	y	Chemical-ID Chemical-Name Chemical-Class Chemical-Formula Chemical-MW IngestionPerson IngestionMass IngestionSize Tmp1ms
IngestionPerson	Ingestion person						STRING				
IngestionMass	Ingestion mass						STRING				
IngestionSize	Ingestion size						STRING				
Tmp1ms	Impact from carcinogenic chemical inhalation	Carcinogenic	Carcinogenic Risk	DOUBLE	0 - 61.19	y	y	y	y	y	Chemical-ID Chemical-Name Chemical-Class Chemical-Formula Chemical-MW Tmp1ms
InhalationPerson	Inhalation person						STRING				
Tmp1ms	Concentration time grape	p	Time	DOUBLE	0 - 1000000000	y	y	y	y	y	Chemical-ID Chemical-Name Chemical-Class Chemical-Formula Chemical-MW Tmp1ms

Legend
Column Name — **Meaning**
Sel Selected
Dim Dimensional Sec
Unc Uncertainty (or sigma, or deviation)
S Is the variable a key to others

See Also
Chemical - AqueousPyrolysis

Chemical concentration of dermal contact liquid for the different media and time points
Physique Boundary
Section 1
Physique Boundary

Name	Description	Unit	Measure	Type	Range	S	D	U	S	Prog	Indices
DermalConC1m	The part-input phase chemical concentration associated with pregnant for dermal contact	kg/m^3	Mass/Volume	DOUBLE	0 - 61.19	y	y	y	y	y	Chemical-ID Chemical-Name Chemical-Class Chemical-Formula Chemical-MW
Hm2ms	Hmm1ms (relating the additional factor Hmm1ms Hmm2ms, Hmm3ms, Hmm4ms)						STRING				
Hm3ms	Hmm1ms (relating the additional factor Hmm1ms Hmm2ms, Hmm3ms, Hmm4ms)						STRING				
Dmm1ms	Dermal exposure pathway						STRING				
Tmp1ms	Concentration time grape	p	Time	DOUBLE	0 - 1000000000	y	y	y	y	y	Chemical-ID Chemical-Name Chemical-Class Chemical-Formula Chemical-MW Tmp1ms

Legend
Column Name — **Meaning**
Sel Selected
Dim Dimensional Sec
Unc Uncertainty (or sigma, or deviation)
S Is the variable a key to others

See Also
Chemical

Chemical dermal intake for the medium at a location, carbonaceous, and time point
Physique Boundary
Section 1
Physique Boundary

Name	Description	Unit	Measure	Type	Range	S	D	U	S	Prog	Indices
DermalIntakeCarc	Carcinogenic chemical dermal intake	mg/kg/day	Reference Dose	DOUBLE	0 - 61.19	y	y	y	y	y	Chemical-ID Chemical-Name Chemical-Class Chemical-Formula Chemical-MW Tmp1ms
Hm2ms	Hmm1ms (relating the additional factor Hmm1ms Hmm2ms, Hmm3ms, Hmm4ms)						STRING				
Hm3ms	Hmm1ms (relating the additional factor Hmm1ms Hmm2ms, Hmm3ms, Hmm4ms)						STRING				
Dmm1ms	Dermal exposure pathway						STRING				
Tmp1ms	Concentration time grape	p	Time	DOUBLE	0 - 1000000000	y	y	y	y	y	Chemical-ID Chemical-Name Chemical-Class Chemical-Formula Chemical-MW Tmp1ms

Legend
Column Name — **Meaning**
Sel Selected
Dim Dimensional Sec
Unc Uncertainty (or sigma, or deviation)
S Is the variable a key to others

See Also
Chemical - AqueousPyrolysis

Chemical concentration of dermal contact gas for the different media and time points
Physique Boundary
Section 1
Physique Boundary

Name	Description	Unit	Measure	Type	Range	S	D	U	S	Prog	Indices
DermalGasConC1m	The vapor phase chemical concentration associated with pregnant for dermal contact	kg/m^3	Mass/Volume	DOUBLE	0 - 61.19	y	y	y	y	y	Chemical-ID Chemical-Name Chemical-Class Chemical-Formula Chemical-MW
Hm2ms	Hmm1ms (relating the additional factor Hmm1ms Hmm2ms, Hmm3ms, Hmm4ms)						STRING				
Hm3ms	Hmm1ms (relating the additional factor Hmm1ms Hmm2ms, Hmm3ms, Hmm4ms)						STRING				
Dmm1ms	Dermal exposure pathway						STRING				
Tmp1ms	Concentration time grape	p	Time	DOUBLE	0 - 1000000000	y	y	y	y	y	Chemical-ID Chemical-Name Chemical-Class Chemical-Formula Chemical-MW Tmp1ms

Legend
Column Name — **Meaning**
Sel Selected
Dim Dimensional Sec
Unc Uncertainty (or sigma, or deviation)
S Is the variable a key to others

See Also
Chemical

Chemical concentration of dermal contact gas for the different media and time points
Physique Boundary
Section 1
Physique Boundary

Name	Description	Unit	Measure	Type	Range	S	D	U	S	Prog	Indices
DermalGasConC2m	The vapor phase chemical concentration associated with the adult for dermal contact	kg/m^3	Mass/Volume	DOUBLE	0 - 61.19	y	y	y	y	y	Chemical-ID Chemical-Name Chemical-Class Chemical-Formula Chemical-MW
Hm2ms	Hmm1ms (relating the additional factor Hmm1ms Hmm2ms, Hmm3ms, Hmm4ms)						STRING				
Hm3ms	Hmm1ms (relating the additional factor Hmm1ms Hmm2ms, Hmm3ms, Hmm4ms)						STRING				
Dmm1ms	Dermal exposure pathway						STRING				
Tmp1ms	Concentration time grape	p	Time	DOUBLE	0 - 1000000000	y	y	y	y	y	Chemical-ID Chemical-Name Chemical-Class Chemical-Formula Chemical-MW Tmp1ms

Legend
Column Name — **Meaning**
Sel Selected
Dim Dimensional Sec
Unc Uncertainty (or sigma, or deviation)
S Is the variable a key to others

See Also
Chemical

Chemical inhalation intakes for the medium at a location, carbonaceous, and time point
Physique Boundary
Section 1
Physique Boundary

Name	Description	Unit	Measure	Type	Range	S	D	U	S	Prog	Indices
InhalIntakeCarc	Carcinogenic chemical inhalation intake	mg/m^3	Mass/Volume	DOUBLE	0 - 61.19	y	y	y	y	y	Chemical-ID Chemical-Name Chemical-Class Chemical-Formula Chemical-MW Tmp1ms
InhalIntakeNonCarc	Non-Carcinogenic chemical inhalation intake	mg/m^3	Mass/Volume	DOUBLE	0 - 61.19	y	y	y	y	y	Chemical-ID Chemical-Name Chemical-Class Chemical-Formula Chemical-MW Tmp1ms
Hm2ms	Hmm1ms (relating the additional factor Hmm1ms Hmm2ms, Hmm3ms, Hmm4ms)						STRING				
Hm3ms	Hmm1ms (relating the additional factor Hmm1ms Hmm2ms, Hmm3ms, Hmm4ms)						STRING				
Imm1ms	Ingestion exposure pathway						STRING				
Tmp1ms	Intake time grape	p	Time	DOUBLE	0 - 1000000000	y	y	y	y	y	Chemical-ID Chemical-Name Chemical-Class Chemical-Formula Chemical-MW Tmp1ms

Legend
Column Name — **Meaning**
Sel Selected
Dim Dimensional Sec
Unc Uncertainty (or sigma, or deviation)
S Is the variable a key to others

See Also
Chemical - AqueousPyrolysis

Chemical concentration of ingested liquid for the different media and time points
Physique Boundary
Section 1
Physique Boundary

Name	Description	Unit	Measure	Type	Range	S	D	U	S	Prog	Indices
IngestConC1m	The dissolved phase chemical concentration associated with the pregnant for ingestion	kg/L	Mass/Volume	DOUBLE	0 - 61.19	y	y	y	y	y	Chemical-ID Chemical-Name Chemical-Class Chemical-Formula Chemical-MW
Hm2ms	Hmm1ms (relating the additional factor Hmm1ms Hmm2ms, Hmm3ms, Hmm4ms)						STRING				
Hm3ms	Hmm1ms (relating the additional factor Hmm1ms Hmm2ms, Hmm3ms, Hmm4ms)						STRING				
Imm1ms	Ingestion exposure pathway						STRING				
Tmp1ms	Concentration time grape	p	Time	DOUBLE	0 - 1000000000	y	y	y	y	y	Chemical-ID Chemical-Name Chemical-Class Chemical-Formula Chemical-MW Tmp1ms

Legend
Column Name — **Meaning**
Sel Selected
Dim Dimensional Sec
Unc Uncertainty (or sigma, or deviation)
S Is the variable a key to others

See Also
Chemical

Chemical concentration of ingested liquid for the different media and time points
Physique Boundary
Section 1
Physique Boundary

Name	Description	Unit	Measure	Type	Range	S	D	U	S	Prog	Indices
IngestConC2m	The dissolved phase chemical concentration associated with the adult for ingestion	kg/L	Mass/Volume	DOUBLE	0 - 61.19	y	y	y	y	y	Chemical-ID Chemical-Name Chemical-Class Chemical-Formula Chemical-MW
Hm2ms	Hmm1ms (relating the additional factor Hmm1ms Hmm2ms, Hmm3ms, Hmm4ms)						STRING				
Hm3ms	Hmm1ms (relating the additional factor Hmm1ms Hmm2ms, Hmm3ms, Hmm4ms)						STRING				
Imm1ms	Ingestion exposure pathway						STRING				
Tmp1ms	Concentration time grape	p	Time	DOUBLE	0 - 1000000000	y	y	y	y	y	Chemical-ID Chemical-Name Chemical-Class Chemical-Formula Chemical-MW Tmp1ms

Legend
Column Name — **Meaning**
Sel Selected
Dim Dimensional Sec
Unc Uncertainty (or sigma, or deviation)
S Is the variable a key to others

See Also
Chemical

Chemical ingestion intakes for the medium at a location, carbonaceous, and time point
Physique Boundary
Section 1
Physique Boundary

Name	Description	Unit	Measure	Type	Range	S	D	U	S	Prog	Indices
IngestIntakeCarc	Carcinogenic chemical ingestion intake	mg/kg/day	Reference Dose	DOUBLE	0 - 61.19	y	y	y	y	y	Chemical-ID Chemical-Name Chemical-Class Chemical-Formula Chemical-MW Tmp1ms
IngestIntakeNonCarc	Non-Carcinogenic chemical ingestion intake	mg/kg/day	Reference Dose	DOUBLE	0 - 61.19	y	y	y	y	y	Chemical-ID Chemical-Name Chemical-Class Chemical-Formula Chemical-MW Tmp1ms
Hm2ms	Hmm1ms (relating the additional factor Hmm1ms Hmm2ms, Hmm3ms, Hmm4ms)						STRING				
Hm3ms	Hmm1ms (relating the additional factor Hmm1ms Hmm2ms, Hmm3ms, Hmm4ms)						STRING				
Imm1ms	Ingestion exposure pathway						STRING				
Tmp1ms	Intake time grape	p	Time	DOUBLE	0 - 1000000000	y	y	y	y	y	Chemical-ID Chemical-Name Chemical-Class Chemical-Formula Chemical-MW Tmp1ms

Legend
Column Name — **Meaning**
Sel Selected
Dim Dimensional Sec
Unc Uncertainty (or sigma, or deviation)
S Is the variable a key to others

See Also
Chemical - AqueousPyrolysis

Chemical concentration of ingested liquid for the different media and time points
Physique Boundary
Section 1
Physique Boundary

Name	Description	Unit	Measure	Type	Range	S	D	U	S	Prog	Indices
IngestConC1m	The dissolved phase chemical concentration associated with the pregnant for ingestion	kg/L	Mass/Volume	DOUBLE	0 - 61.19	y	y	y	y	y	Chemical-ID Chemical-Name Chemical-Class Chemical-Formula Chemical-MW
Hm2ms	Hmm1ms (relating the additional factor Hmm1ms Hmm2ms, Hmm3ms, Hmm4ms)						STRING				
Hm3ms	Hmm1ms (relating the additional factor Hmm1ms Hmm2ms, Hmm3ms, Hmm4ms)						STRING				
Imm1ms	Ingestion exposure pathway						STRING				
Tmp1ms	Concentration time grape	p	Time	DOUBLE	0 - 1000000000	y	y	y	y	y	Chemical-ID Chemical-Name Chemical-Class Chemical-Formula Chemical-MW Tmp1ms

Legend
Column Name — **Meaning**
Sel Selected
Dim Dimensional Sec
Unc Uncertainty (or sigma, or deviation)
S Is the variable a key to others

See Also
Chemical

Chemical inhalation intakes for the medium at a location, carbonaceous, and time point
Physique Boundary
Section 1
Physique Boundary

Name	Description	Unit	Measure	Type	Range	S	D	U	S	Prog	Indices
InhalIntakeCarc	Carcinogenic chemical inhalation intake	mg/m^3	Mass/Volume	DOUBLE	0 - 61.19	y	y	y	y	y	Chemical-ID Chemical-Name Chemical-Class Chemical-Formula Chemical-MW Tmp1ms
InhalIntakeNonCarc	Non-Carcinogenic chemical inhalation intake	mg/m^3	Mass/Volume	DOUBLE	0 - 61.19	y	y	y	y	y	Chemical-ID Chemical-Name Chemical-Class Chemical-Formula Chemical-MW Tmp1ms
Hm2ms	Hmm1ms (relating the additional factor Hmm1ms Hmm2ms, Hmm3ms, Hmm4ms)						STRING				
Hm3ms	Hmm1ms (relating the additional factor Hmm1ms Hmm2ms, Hmm3ms, Hmm4ms)						STRING				
Imm1ms	Ingestion exposure pathway						STRING				
Tmp1ms	Intake time grape	p	Time	DOUBLE	0 - 1000000000	y	y	y	y	y	Chemical-ID Chemical-Name Chemical-Class Chemical-Formula Chemical-MW Tmp1ms

Legend
Column Name — **Meaning**
Sel Selected
Dim Dimensional Sec
Unc Uncertainty (or sigma, or deviation)
S Is the variable a key to others

See Also
Chemical - AqueousPyrolysis

Chemical list of constituents and their physical properties
Physique Boundary
Section 1
Physique Boundary

Name	Description	Unit	Measure	Type	Range	S	D	U	S	Prog	Indices
Chemical	Chemical Molecular Species Identifier						STRING				

Impact from carcinogenic chemicals
Version 3
Periodicity: Biennial
Privilege: Boundary

Name	Description	Unit	Measure	Type	Range	V	D	P	S	R	Prog	Indices
Dermal	Impact from non-carcinogenic chemical dermal contact		Total carcinogenic	Decimal Index	[0;1[0;1[	1	1	1	1	1	1	Health 2 (2000) Health 3 (2000) Ecosystem Quality (2000) Ecosystem Quality 2 (2000) Ecosystem Quality 3 (2000) Ecosystem Quality 4 (2000)
GlobalWarming	Global warming											Climate
Inorganics	Impact from non-carcinogenic chemical inorganics		Total carcinogenic	Decimal Index	[0;1[0;1[	1	1	1	1	1	1	Health 2 (2000) Health 3 (2000) Ecosystem Quality (2000) Ecosystem Quality 2 (2000) Ecosystem Quality 3 (2000) Ecosystem Quality 4 (2000)
NaturalRadiation	Ionizing radiation											Health 2 (2000) Health 3 (2000)
Ozone	Ozone depletion											Ozone
Organics	Impact from non-carcinogenic chemical organics		Total carcinogenic	Decimal Index	[0;1[0;1[	1	1	1	1	1	1	Health 2 (2000) Health 3 (2000) Ecosystem Quality (2000) Ecosystem Quality 2 (2000) Ecosystem Quality 3 (2000) Ecosystem Quality 4 (2000)

Legend
Column Name: Meaning
V: Validated
D: Dimensional Use
P: Public Use (Indicators)
S: Sensitivity (Indicators)
R: Relevance (Indicators)
Prog: Indicators

Note
Indicators
Health 2 (2000)
Health 3 (2000)
Ecosystem Quality (2000)
Ecosystem Quality 2 (2000)
Ecosystem Quality 3 (2000)
Ecosystem Quality 4 (2000)
Climate
Ozone

See Also
Chemical - AirCarcinog

Chemical partitioning properties
Version 3
Periodicity: Biennial
Privilege: Boundary

Name	Description	Unit	Measure	Type	Range	V	D	P	S	R	Prog	Indices
AirPart	Particle matter transport		Ratio	Decimal Index	[0;1[0;1[	1	1	1	1	1	1	Chemical Fate (2000)
Kd	The dry soil-water distribution partition coefficient		Ratio	Decimal Index	[0;1[0;1[	1	1	1	1	1	1	Chemical Fate (2000)
Kow	The octanol-water distribution partition coefficient		Ratio	Decimal Index	[0;1[0;1[	1	1	1	1	1	1	Chemical Fate (2000)
Solubility	Water solubility	g/l	Mass/Volume	Decimal Index	[0;1[0;1[	1	1	1	1	1	1	Chemical Fate (2000)
Vp	Vapor pressure	mmHg	Pressure	Decimal Index	[0;1[0;1[	1	1	1	1	1	1	Chemical Fate (2000)

Legend
Column Name: Meaning
V: Validated
D: Dimensional Use
P: Public Use (Indicators)
S: Sensitivity (Indicators)
R: Relevance (Indicators)
Prog: Indicators

See Also
Chemical

Solid phase chemical concentration associated with soil
Version 3
Periodicity: Biennial
Privilege: Boundary

Name	Description	Unit	Measure	Type	Range	V	D	P	S	R	Prog	Indices
SolPart	The solid phase concentration normalized with dry soil	kg/kg	Mass/Mass	Decimal	[0;+∞[0;+∞[	1	1	1	1	1	1	Chemical Fate (2000) Chemical Fate (2000)
SolPartTime	Concentration time point	yr	Time	Decimal	[-∞;+∞[-∞;+∞[	1	1	1	1	1	1	Chemical Fate (2000) Chemical Fate (2000)

Legend
Column Name: Meaning
V: Validated
D: Dimensional Use
P: Public Use (Indicators)
S: Sensitivity (Indicators)
R: Relevance (Indicators)
Prog: Indicators

See Also
SolPartTime - ChemEnt

Solid phase chemical concentration associated with soil
Version 3
Periodicity: Biennial
Privilege: Boundary

Name	Description	Unit	Measure	Type	Range	V	D	P	S	R	Prog	Indices
SolPart	The solid phase concentration normalized with dry soil	kg/kg	Mass/Mass	Decimal	[0;+∞[0;+∞[	1	1	1	1	1	1	Chemical Fate (2000) Chemical Fate (2000)
SolPartTime	Concentration time point	yr	Time	Decimal	[-∞;+∞[-∞;+∞[	1	1	1	1	1	1	Chemical Fate (2000) Chemical Fate (2000)

Legend
Column Name: Meaning
V: Validated
D: Dimensional Use
P: Public Use (Indicators)
S: Sensitivity (Indicators)
R: Relevance (Indicators)
Prog: Indicators

See Also
SolPartTime - ChemEnt

A chemical concentration in a organism
Version 3
Periodicity: Biennial
Privilege: Boundary

Name	Description	Unit	Measure	Type	Range	V	D	P	S	R	Prog	Indices
ConcOrg	The chemical concentration in a over organism	kg/kg	Mass/Mass	Decimal	[0;+∞[0;+∞[	1	1	1	1	1	1	Chemical Fate (2000) Chemical Fate (2000)
OrgTime	Concentration time point	yr	Time	Decimal	[-∞;+∞[-∞;+∞[	1	1	1	1	1	1	Chemical Fate (2000) Chemical Fate (2000) Ecosystem Quality (2000) Ecosystem Quality 2 (2000)

Legend
Column Name: Meaning
V: Validated
D: Dimensional Use
P: Public Use (Indicators)
S: Sensitivity (Indicators)
R: Relevance (Indicators)
Prog: Indicators

See Also
ChemEnt - AquaticQuantum

Soil Screening Levels for chemicals
Version 3
Periodicity: Biennial
Privilege: Boundary

Name	Description	Unit	Measure	Type	Range	V	D	P	S	R	Prog	Indices
CriterionGroup	Degree of contamination			Enumeration			1	1	1	1	1	Ecosystem (2000) Ecosystem 2 (2000) Ecosystem 3 (2000)
DerivMeth	Derivation method used			Enumeration			1	1	1	1	1	Ecosystem (2000) Ecosystem 2 (2000) Ecosystem 3 (2000)
Description	SSL description			Enumeration			1	1	1	1	1	Ecosystem (2000) Ecosystem 2 (2000) Ecosystem 3 (2000)
Index	Index			Enumeration			1	1	1	1	1	Ecosystem (2000) Ecosystem 2 (2000) Ecosystem 3 (2000)
LocalSoil	Type of soil			Enumeration			1	1	1	1	1	Ecosystem (2000) Ecosystem 2 (2000) Ecosystem 3 (2000)
LocationApplicability	Type of land use applicability			Enumeration			1	1	1	1	1	Ecosystem (2000) Ecosystem 2 (2000) Ecosystem 3 (2000)
NumberOfyears	Number of yr of exposition			INTEGER	[-2;+2147483647[	1	1	1	1	1	1	Ecosystem (2000) Ecosystem 2 (2000) Ecosystem 3 (2000)
SoilPart	Number of Soil-to-Water Reference Dilution			INTEGER	[-2;+2147483647[	1	1	1	1	1	1	Ecosystem (2000) Ecosystem 2 (2000) Ecosystem 3 (2000)
Source	Information source			INTEGER	[-2;+2147483647[	1	1	1	1	1	1	Ecosystem (2000) Ecosystem 2 (2000) Ecosystem 3 (2000)
SoilTypeApplicability	Type of soil applicability			Enumeration			1	1	1	1	1	Ecosystem (2000) Ecosystem 2 (2000) Ecosystem 3 (2000)
Value	Text subpart			Enumeration			1	1	1	1	1	Ecosystem (2000) Ecosystem 2 (2000) Ecosystem 3 (2000)
ZoneSSL	Zone of Soil Screening Level	kg/kg/km	Mass/Mass/Distance	Decimal	[0;+∞[0;+∞[	1	1	1	1	1	1	Ecosystem (2000) Ecosystem 2 (2000) Ecosystem 3 (2000)

Legend
Column Name: Meaning
V: Validated
D: Dimensional Use
P: Public Use (Indicators)
S: Sensitivity (Indicators)
R: Relevance (Indicators)
Prog: Indicators

See Also
Chemical

Chemical mass flux rates
Version 3
Periodicity: Biennial
Privilege: Boundary

Name	Description	Unit	Measure	Type	Range	V	D	P	S	R	Prog	Indices
CoeffMass	The absolute phase chemical flux	g/yr	Mass/Time	Decimal	[0;+∞[0;+∞[	1	1	1	1	1	1	Chemical Fate (2000) Chemical Fate (2000) Chemical Fate (2000)
CoeffMassTime	The cumulative mass associated with all phases	yr	Time	Decimal	[-∞;+∞[-∞;+∞[	1	1	1	1	1	1	Chemical Fate (2000) Chemical Fate (2000)
DestFlux	Flux mass point	yr	Time	Decimal	[-∞;+∞[-∞;+∞[	1	1	1	1	1	1	Chemical Fate (2000) Chemical Fate (2000)

Legend
Column Name: Meaning
V: Validated
D: Dimensional Use
P: Public Use (Indicators)
S: Sensitivity (Indicators)
R: Relevance (Indicators)
Prog: Indicators

See Also
SurfaceWaterPartition - ChemEnt

Dissolved chemical concentrations
Version 3
Periodicity: Biennial
Privilege: Boundary

Name	Description	Unit	Measure	Type	Range	V	D	P	S	R	Prog	Indices
CoeffMass	The dissolved phase concentration with water	kg/l	Mass/Volume	Decimal	[0;+∞[0;+∞[	1	1	1	1	1	1	Chemical Fate (2000) Chemical Fate (2000)
CoeffMassTime	The cumulative mass associated with all phases	yr	Time	Decimal	[-∞;+∞[-∞;+∞[	1	1	1	1	1	1	Chemical Fate (2000) Chemical Fate (2000)
DestFlux	Flux mass point	yr	Time	Decimal	[-∞;+∞[-∞;+∞[	1	1	1	1	1	1	Chemical Fate (2000) Chemical Fate (2000)

Legend
Column Name: Meaning
V: Validated
D: Dimensional Use
P: Public Use (Indicators)
S: Sensitivity (Indicators)
R: Relevance (Indicators)
Prog: Indicators

See Also
SurfaceWaterPartition - ChemEnt

Chemical mass flux rates
Version 3
Periodicity: Biennial
Privilege: Boundary

Name	Description	Unit	Measure	Type	Range	V	D	P	S	R	Prog	Indices
CoeffMass	The cumulative mass associated with all phases	g	Mass	Decimal	[0;+∞[0;+∞[	1	1	1	1	1	1	Chemical Fate (2000) Chemical Fate (2000)
DestinationFlux	The absolute phase flux	g/yr	Mass/Time	Decimal	[0;+∞[0;+∞[	1	1	1	1	1	1	Chemical Fate (2000) Chemical Fate (2000) Ecosystem Quality (2000) Ecosystem Quality 2 (2000)
DestFlux	Flux mass point	yr	Time	Decimal	[-∞;+∞[-∞;+∞[	1	1	1	1	1	1	Chemical Fate (2000) Chemical Fate (2000)
SourceFlux	The absolute phase flux	g/yr	Mass/Time	Decimal	[0;+∞[0;+∞[	1	1	1	1	1	1	Chemical Fate (2000) Chemical Fate (2000)

Legend
Column Name: Meaning
V: Validated
D: Dimensional Use
P: Public Use (Indicators)
S: Sensitivity (Indicators)
R: Relevance (Indicators)
Prog: Indicators

See Also
SurfaceWaterPartition - ChemEnt

Terrestrial Toxicity Reference Values for Chemicals
Version 3
Periodicity: Biennial
Privilege: Boundary

Name	Description	Unit	Measure	Type	Range	V	D	P	S	R	Prog	Indices
CriterionGroup	Degree of contamination			Enumeration			1	1	1	1	1	Ecosystem (2000) Ecosystem 2 (2000) Ecosystem 3 (2000)
DerivMeth	Derivation method used			Enumeration			1	1	1	1	1	Ecosystem (2000) Ecosystem 2 (2000) Ecosystem 3 (2000)
Description	SSL description			Enumeration			1	1	1	1	1	Ecosystem (2000) Ecosystem 2 (2000) Ecosystem 3 (2000)
Index	Index			Enumeration			1	1	1	1	1	Ecosystem (2000) Ecosystem 2 (2000) Ecosystem 3 (2000)
LocalSoil	Type of soil			Enumeration			1	1	1	1	1	Ecosystem (2000) Ecosystem 2 (2000) Ecosystem 3 (2000)
LocationApplicability	Type of land use applicability			Enumeration			1	1	1	1	1	Ecosystem (2000) Ecosystem 2 (2000) Ecosystem 3 (2000)
NumberOfyears	Number of yr of exposition			INTEGER	[-2;+2147483647[	1	1	1	1	1	1	Ecosystem (2000) Ecosystem 2 (2000) Ecosystem 3 (2000)
SoilPart	Number of Soil-to-Water Reference Dilution			INTEGER	[-2;+2147483647[	1	1	1	1	1	1	Ecosystem (2000) Ecosystem 2 (2000) Ecosystem 3 (2000)
Source	Information source			INTEGER	[-2;+2147483647[	1	1	1	1	1	1	Ecosystem (2000) Ecosystem 2 (2000) Ecosystem 3 (2000)
SoilTypeApplicability	Type of soil applicability			Enumeration			1	1	1	1	1	Ecosystem (2000) Ecosystem 2 (2000) Ecosystem 3 (2000)
Value	Text subpart			Enumeration			1	1	1	1	1	Ecosystem (2000) Ecosystem 2 (2000) Ecosystem 3 (2000)
ZoneSSL	Zone of Soil Screening Level	kg/kg/km	Mass/Mass/Distance	Decimal	[0;+∞[0;+∞[	1	1	1	1	1	1	Ecosystem (2000) Ecosystem 2 (2000) Ecosystem 3 (2000)

Legend
Column Name: Meaning
V: Validated
D: Dimensional Use
P: Public Use (Indicators)
S: Sensitivity (Indicators)
R: Relevance (Indicators)
Prog: Indicators

See Also
Chemical - TerrestrialQuantum

Chemical thermodynamic properties
Version 3
Periodicity: Biennial
Privilege: Boundary

Name	Description	Unit	Measure	Type	Range	V	D	P	S	R	Prog	Indices
EnthalpyFor	The enthalpy of formation	J/mol	Energy/Mole	Decimal	[-∞;+∞[-∞;+∞[	1	1	1	1	1	1	Chemical Fate (2000)
EnthalpyVap	The latent heat of vaporization	J/mol	Energy/Mole	Decimal	[-∞;+∞[-∞;+∞[	1	1	1	1	1	1	Chemical Fate (2000)
EntropyFor	The entropy of formation	J/kg/K	Entropy	Decimal	[-∞;+∞[-∞;+∞[	1	1	1	1	1	1	Chemical Fate (2000)
EntropyVap	The latent heat of vaporization	J/mol	Energy/Mole	Decimal	[-∞;+∞[-∞;+∞[	1	1	1	1	1	1	Chemical Fate (2000)
FreeEnergyFor	The free energy of formation	J/mol	Energy/Mole	Decimal	[-∞;+∞[-∞;+∞[	1	1	1	1	1	1	Chemical Fate (2000)
HenryLawFor	The henry law constant	Pa/l	Pressure/Volume	Decimal	[-∞;+∞[-∞;+∞[	1	1	1	1	1	1	Chemical Fate (2000)
MeltingPoint	The melting point temperature	K	Temperature	Decimal	[-∞;+∞[-∞;+∞[	1	1	1	1	1	1	Chemical Fate (2000)
SpecificHeat	The specific heat capacity	J/kg/K	Energy/Mass/Temperature	Decimal	[-∞;+∞[-∞;+∞[	1	1	1	1	1	1	Chemical Fate (2000)

Legend
Column Name: Meaning
V: Validated
D: Dimensional Use
P: Public Use (Indicators)
S: Sensitivity (Indicators)
R: Relevance (Indicators)
Prog: Indicators

See Also
Chemical

Chemical toxicity properties
Version 3
Periodicity: Biennial
Privilege: Boundary

Name	Description	Unit	Measure	Type	Range	V	D	P	S	R	Prog	Indices
EqpCPF	The equivalent cancer potency factor	(mg/kg/day)-1	Dose/Mass	Decimal	[0;+∞[0;+∞[	1	1	1	1	1	1	Health 2 (2000)
EqpRfC	The equivalent reference concentration	kg/m³/h	Mass/Mass	Decimal	[0;+∞[0;+∞[	1	1	1	1	1	1	Health 2 (2000)
EqpRfD	The equivalent oral dose	(mg/kg)-1	1/kg	Decimal	[0;+∞[0;+∞[	1	1	1	1	1	1	Health 2 (2000)
EqpUnitRisk	The inhalation cancer potency factor	(mg/m³)-1	Volume/Mass	Decimal	[0;+∞[0;+∞[	1	1	1	1	1	1	Health 2 (2000)
MRDLG	The maximum permissible level in water	(mg/l)-1	Mass/Volume	Decimal	[0;+∞[0;+∞[	1	1	1	1	1	1	Health 2 (2000)
MRFD	The maximum permissible level in food	(mg/kg)-1	Mass/Mass	Decimal	[0;+∞[0;+∞[	1	1	1	1	1	1	Health 2 (2000)
NOAEL	The observed no adverse effect level	mg/kg/day	Mass/Mass/Time	Decimal	[0;+∞[0;+∞[	1	1	1	1	1	1	Health 2 (2000)
Tox	The carcinogenic toxicity			Enumeration			1	1	1	1	1	Health 2 (2000)
TWA	The time weighted average			INTEGER	[-2;+2147483647[	1	1	1	1	1	1	Health 2 (2000)

Legend
Column Name: Meaning
V: Validated
D: Dimensional Use
P: Public Use (Indicators)
S: Sensitivity (Indicators)
R: Relevance (Indicators)
Prog: Indicators

See Also
AirCarcinog - TerrestrialQuantum - ChemEnt

Terrestrial organism ingestion dose
Version 3
Periodicity: Biennial
Privilege: Boundary

Name	Description	Unit	Measure	Type	Range	V	D	P	S	R	Prog	Indices
Dose	Dose Rate media			Enumeration			1	1	1	1	1	Ecosystem (2000) Ecosystem 2 (2000) Ecosystem 3 (2000)
NumberOfyears	Number of years			INTEGER	[-2;+2147483647[	1	1	1	1	1	1	Ecosystem (2000) Ecosystem 2 (2000) Ecosystem 3 (2000)
TotalDoseRate	Total dose rate			Enumeration			1	1	1	1	1	Ecosystem (2000) Ecosystem 2 (2000) Ecosystem 3 (2000)
TotalDose	Total point or child media, not calculated incremental			Decimal	[0;+∞[0;+∞[	1	1	1	1	1	1	Ecosystem (2000) Ecosystem 2 (2000) Ecosystem 3 (2000)

Legend
Column Name: Meaning
V: Validated
D: Dimensional Use
P: Public Use (Indicators)
S: Sensitivity (Indicators)
R: Relevance (Indicators)
Prog: Indicators

See Also
AirCarcinog - TerrestrialQuantum - ChemEnt

Chemical mass flux rates
Version 3
Periodicity: Biennial
Privilege: Boundary

Name	Description	Unit	Measure	Type	Range	V	D	P	S	R	Prog	Indices
CoeffMass	The cumulative mass associated with all phases	g	Mass	Decimal	[0;+∞[0;+∞[	1	1	1	1	1	1	Chemical Fate (2000) Chemical Fate (2000)
DestFlux	Flux mass point	yr	Time	Decimal	[-∞;+∞[-∞;+∞[	1	1	1	1	1	1	Chemical Fate (2000) Chemical Fate (2000)
SourceFlux	The absolute phase flux	g/yr	Mass/Time	Decimal	[0;+∞[0;+∞[	1	1	1	1	1	1	Chemical Fate (2000) Chemical Fate (2000)

Legend
Column Name: Meaning
V: Validated
D: Dimensional Use
P: Public Use (Indicators)
S: Sensitivity (Indicators)
R: Relevance (Indicators)
Prog: Indicators

See Also
SurfaceWaterPartition - ChemEnt

Water Equivalent Concentrations
Version 3
Periodicity: Biennial
Privilege: Boundary

Name	Description	Unit	Measure	Type	Range	V	D	P	S	R	Prog	Indices
ConcWater	The Water Equivalent Concentration in a receptor, chemical, and time point	g/m³	Mass/Volume	Decimal	[0;+∞[0;+∞[	1	1	1	1	1	1	Chemical Fate (2000) Chemical Fate (2000)
ConcTime	The set of time points for each location and chemical	yr	Time	Decimal	[-∞;+∞[-∞;+∞[	1	1	1	1	1	1	Chemical Fate (2000) Chemical Fate (2000) Ecosystem Quality (2000) Ecosystem Quality 2 (2000)

Legend
Column Name: Meaning
V: Validated
D: Dimensional Use
P: Public Use (Indicators)
S: Sensitivity (Indicators)
R: Relevance (Indicators)
Prog: Indicators

See Also
Chemical - AquaticQuantum

Output of CCER Module
Version 3
Periodicity: Biennial
Privilege: Boundary

Name	Description	Unit	Measure	Type	Range	V	D	P	S	R	Prog	Indices
Dose	Concentration in			Enumeration			1	1	1	1	1	Chemical Fate (2000)
Flux	Flux mass point	yr	Time	Decimal	[-∞;+∞[-∞;+∞[	1	1	1	1	1	1	Chemical Fate (2000) Chemical Fate (2000)
Dose	Dose of contamination	kg/l	Mass/Volume	Decimal	[0;+∞[0;+∞[	1	1	1	1	1	1	Chemical Fate (2000) Chemical Fate (2000)
Dose	Total point or child media, not calculated incremental			Decimal	[0;+∞[0;+∞[	1	1	1	1	1	1	Ecosystem (2000) Ecosystem 2 (2000) Ecosystem 3 (2000)

Legend
Column Name: Meaning
V: Validated
D: Dimensional Use
P: Public Use (Indicators)
S: Sensitivity (Indicators)
R: Relevance (Indicators)
Prog: Indicators

Geographical Information
Version 3
Periodicity: Biennial
Privilege: Boundary

Name	Description	Unit	Measure	Type	Range	V	D	P	S	R	Prog	Indices
CoordinateSystem	Coordinate system Lambert Zone, Mercator, Geographic			Enumeration			1	1	1	1	1	Ecosystem (2000)
CoordinateX	Coordinate of geo reference point	m	Length	Decimal	[-1000000;+1000000[		1	1	1	1	1	Ecosystem (2000) Ecosystem 2 (2000)
CoordinateY	Coordinate of geo reference point	m	Length	Decimal	[-1000000;+1000000[		1	1	1	1	1	Ecosystem (2000) Ecosystem 2 (2000)

Legend
Column Name: Meaning
V: Validated
D: Dimensional Use
P: Public Use (Indicators)
S: Sensitivity (Indicators)
R: Relevance (Indicators)
Prog: Indicators

Population counter
Version 3
Periodicity: Biennial
Privilege: Boundary

Name	Description	Unit	Measure	Type	Range	V	D	P	S	R	Prog	Indices
DataSource	Information available for Indicator			Enumeration			1	1	1	1	1	Climate
DataSource	Information available for Indicator			Enumeration			1	1	1	1	1	Ozone
DataSource	Quote number to obtain data of digital form units			INTEGER	[-2;+2147483647[		1	1	1	1	1	Climate
DataSource	Quote number to obtain data of digital form units			INTEGER	[-2;+2147483647[		1	1	1	1	1	Ozone
Population	Population of the country, year, sex, age, or any other			Enumeration			1	1	1	1	1	Climate Ozone
Year	Year of Indicator Value	yr	Length	Decimal	[-1000000;+1000000[		1	1	1	1	1	Climate Ozone

See Also
GeoRefAreas

Radionuclide concentration in a chronic release - solidliquidgas phases
Version 3
Periodicity: Biennial
Privilege: Boundary

SolPhase - RadLat - SurpassRadLocalSol - SurpassRadLiquidSol - SurpassRadGaseousSol

Dry deposition rates for a chronic radionuclide release - solidliquidgas phases
Version 3
Periodicity: Biennial
Privilege: Boundary

Name	Description	Unit	Measure	Type	Range	V	D	P	S	R	Prog	Indices
LatDryDep	Integrated deposition density in a gaseous state, not accounting for degradation of material on the surface	Bq/s/m²	Activity/Area/Time	Decimal	[0;+∞[0;+∞[	1	1	1	1	1	1	LatGaseous Fallout LatGaseous Fallout 2 LatGaseous Fallout 3 LatGaseous Fallout 4
LatDryDepLiquid	Integrated deposition density in a liquid state, not accounting for degradation of material on the surface	Bq/s/m²	Activity/Area/Time	Decimal	[0;+∞[0;+∞[	1	1	1	1	1	1	LatLiquid Fallout LatLiquid Fallout 2 LatLiquid Fallout 3 LatLiquid Fallout 4
LatDryDepSol	Integrated deposition density in solid phase, not accounting for degradation of material on the surface	Bq/s/m²	Activity/Area/Time	Decimal	[0;+∞[0;+∞[	1	1	1	1	1	1	LatSol Fallout LatSol Fallout 2 LatSol Fallout 3 LatSol Fallout 4
SurfaceDryDep	Integrated deposition density of all states, not accounting for degradation of material on the surface	Bq/s/m²	Activity/Area/Time	Decimal	[0;+∞[0;+∞[	1	1	1	1	1	1	SurfaceFallout SurfaceFallout 2 SurfaceFallout 3 SurfaceFallout 4
TotalDryDep	Deposition product depuration averaging time	yr	Time	Decimal	[0;+∞[0;+∞[	1	1	1	1	1	1	TotalFallout TotalFallout 2 TotalFallout 3 TotalFallout 4
TotalDryDepTime	Concentration time point	yr	Time	Decimal	[-∞;+∞[-∞;+∞[	1	1	1	1	1	1	TotalFallout TotalFallout 2 TotalFallout 3 TotalFallout 4

Legend
Column Name: Meaning
V: Validated
D: Dimensional Use
P: Public Use (Indicators)
S: Sensitivity (Indicators)
R: Relevance (Indicators)
Prog: Indicators

See Also
SolPhase - RadLat - SurpassRadLocalSol - SurpassRadLiquidSol - SurpassRadGaseousSol

Radionuclide emission rates for a chronic release - solidliquidgas phases
Version 3
Periodicity: Biennial
Privilege: Boundary

Name	Description	Unit	Measure	Type	Range	V	D	P	S	R	Prog	Indices
LatEmission	Emission rate in a gaseous state or specified time period	Bq/s	Activity/Time	Decimal	[0;+∞[0;+∞[	1	1	1	1	1	1	LatGaseous Emission LatGaseous Emission 2 LatGaseous Emission 3 LatGaseous Emission 4
LatLiquidEmission	Emission rate in a liquid state or specified time period	Bq/s	Activity/Time	Decimal	[0;+∞[0;+∞[	1	1	1	1	1	1	LatLiquid Emission LatLiquid Emission 2 LatLiquid Emission 3 LatLiquid Emission 4
LatSolEmission	Emission rate in a solid state or specified time period	Bq/s	Activity/Time	Decimal	[0;+∞[0;+∞[	1	1	1	1	1	1	LatSol Emission LatSol Emission 2 LatSol Emission 3 LatSol Emission 4
SurfaceEmission	Emission rate in all states or specified time period	Bq/s	Activity/Time	Decimal	[0;+∞[0;+∞[	1	1	1	1	1	1	SurfaceEmission SurfaceEmission 2 SurfaceEmission 3 SurfaceEmission 4
TotalEmission	Emission time period	yr	Time	Decimal	[0;+∞[0;+∞[	1	1	1	1	1	1	TotalEmission TotalEmission 2 TotalEmission 3 TotalEmission 4
TotalEmissionTime	Emission time point	yr	Time	Decimal	[-∞;+∞[-∞;+∞[	1	1	1	1	1	1	TotalEmission TotalEmission 2 TotalEmission 3 TotalEmission 4

Legend
Column Name: Meaning
V: Validated
D: Dimensional Use
P: Public Use (Indicators)
S: Sensitivity (Indicators)
R: Relevance (Indicators)
Prog: Indicators

See Also
SolPhase - RadLat

Radionuclide retrieval dose from a chronic release
Version 3
Periodicity: Biennial
Privilege: Boundary

Name	Description	Unit	Measure	Type	Range	V	D	P	S	R	Prog	Indices
DoseRate	The retrieval dose rate in a defined time	Sv/s	Dose/Time	Decimal	[0;+∞[0;+∞[	1	1	1	1	1	1	Dose
DoseRateTime	Retrieval dose averaging time	yr	Time	Decimal	[-∞;+∞[-∞;+∞[	1	1	1	1	1	1	Dose
TotalDose	Retrieval dose point	yr	Time	Decimal	[-∞;+∞[-∞;+∞[	1	1	1	1	1	1	Dose

Legend
Column Name: Meaning
V: Validated
D: Dimensional Use
P: Public Use (Indicators)
S: Sensitivity (Indicators)
R: Relevance (Indicators)
Prog: Indicators

See Also
SolPhase - RadLat

Total deposition rates for a chronic radionuclide release - solidliquidgas phases
Version 3
Periodicity: Biennial
Privilege: Boundary

Name	Description	Unit	Measure	Type	Range	V	D	P	S	R	Prog	Indices

Name	Description	Unit	Measure	Type	Range	C	D	S	Prog	Index
GrossPrim	Gross primary production density in a genome-scale, net accounting for degradation of material on the surface	Mega/Year	Ecosystem Net Primary Prod	DOUBLE	0.00 - 10.00	N	S	S	N	AnPhaseEnzymes Dataset.v1.0001 Genomic.v1.0001 GenomicAnnotationFunctions Genome.v1.0001
GrossPrimAnn	Integrated depiction density in a liquid state, net accounting for degradation of material on the surface	Mega/Year	Ecosystem Net Primary Prod	DOUBLE	0.00 - 10.00	N	S	S	N	AnPhaseEnzymes Dataset.v1.0001 Genomic.v1.0001 GenomicAnnotationFunctions Genome.v1.0001
GrossPrimAnnAnnotation	Integrated depiction density in a particulate phase, net accounting for degradation of material on the surface	Mega/Year	Ecosystem Net Primary Prod	DOUBLE	0.00 - 10.00	N	S	S	N	AnPhaseEnzymes Dataset.v1.0001 Genomic.v1.0001 GenomicAnnotationFunctions Genome.v1.0001
GrossPrimAnnSolid	Integrated depiction density in all states, net accounting for degradation of material on the surface	Mega/Year	Ecosystem Net Primary Prod	DOUBLE	0.00 - 10.00	N	S	S	N	AnPhaseEnzymes Dataset.v1.0001 Genomic.v1.0001 GenomicAnnotationFunctions Genome.v1.0001
TotalPrimAnn	Depiction product depiction stringing line	y	Year	Date	2.00E-01 - 1.00000000	Y	S	S	N	Dataset.v1.0001 Genome.v1.0001
TotalPrim	Depiction line sum	y	Year	Date	2.00E-01 - 1.00000000	Y	S	S	N	Dataset.v1.0001 Genome.v1.0001

Legend
Column Name — Meaning
C — Self-Indexed
D — Dimensional Key
S — Dimensional Key
N — Non-Indexed Key (Indexable)
Y — Indexed Key (Indexable)
Index — Index Name

Bad Index: *AnPhaseEnzymesDataset.v1.0001*, *GenomicAnnotationFunctions.v1.0001*, *GenomicAnnotationFunctions.v1.0001*

Wet deposition rate for a chemic radionuclide release - solidHydrolyzer phases

Version 1
Privilege: Boundary

Name	Description	Unit	Measure	Type	Range	C	D	S	Prog	Index
GrossPrim	Gross primary production density in a genome-scale, net accounting for degradation of material on the surface	Mega/Year	Ecosystem Net Primary Prod	DOUBLE	0.00 - 10.00	N	S	S	N	AnPhaseEnzymes Dataset.v1.0001 Genomic.v1.0001 GenomicAnnotationFunctions Genome.v1.0001
GrossPrimAnn	Integrated depiction density in a liquid state, net accounting for degradation of material on the surface	Mega/Year	Ecosystem Net Primary Prod	DOUBLE	0.00 - 10.00	N	S	S	N	AnPhaseEnzymes Dataset.v1.0001 Genomic.v1.0001 GenomicAnnotationFunctions Genome.v1.0001
GrossPrimAnnAnnotation	Integrated depiction density in a particulate phase, net accounting for degradation of material on the surface	Mega/Year	Ecosystem Net Primary Prod	DOUBLE	0.00 - 10.00	N	S	S	N	AnPhaseEnzymes Dataset.v1.0001 Genomic.v1.0001 GenomicAnnotationFunctions Genome.v1.0001
GrossPrimAnnSolid	Integrated depiction density in all states, net accounting for degradation of material on the surface	Mega/Year	Ecosystem Net Primary Prod	DOUBLE	0.00 - 10.00	N	S	S	N	AnPhaseEnzymes Dataset.v1.0001 Genomic.v1.0001 GenomicAnnotationFunctions Genome.v1.0001
TotalPrimAnn	Depiction product depiction stringing line	y	Year	Date	2.00E-01 - 1.00000000	Y	S	S	N	Dataset.v1.0001 Genome.v1.0001
TotalPrim	Depiction line sum	y	Year	Date	2.00E-01 - 1.00000000	Y	S	S	N	Dataset.v1.0001 Genome.v1.0001

Legend
Column Name — Meaning
C — Self-Indexed
D — Dimensional Key
S — Dimensional Key
N — Non-Indexed Key (Indexable)
Y — Indexed Key (Indexable)
Index — Index Name

Bad Index: *AnPhaseEnzymesDataset.v1.0001*, *GenomicAnnotationFunctions.v1.0001*, *GenomicAnnotationFunctions.v1.0001*

Observed radionuclide activity

Version 1
Privilege: Boundary

Name	Description	Unit	Measure	Type	Range	C	D	S	Prog	Index
Time	The detector phase activity associated with water	Bq/L	Activity Volume	DOUBLE	0.00 - 10.00	N	S	S	N	GrapheneEnzymes Dataset.v1.0001 Genome.v1.0001
TotalPrim	Activity time series	y	Date	DOUBLE	2.-1000000000	Y	S	S	N	GrapheneEnzymes Dataset.v1.0001

Legend
Column Name — Meaning
C — Self-Indexed
D — Dimensional Key
S — Dimensional Key
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Y — Indexed Key (Indexable)
Index — Index Name

Bad Index: *Time*

Radionuclide mass flux rate at water flux locations

Version 1
Privilege: Boundary

Name	Description	Unit	Measure	Type	Range	C	D	S	Prog	Index
Time	The activity associated with water	Bq/L	Activity Volume	DOUBLE	0.00 - 10.00	N	S	S	N	GrapheneEnzymes Dataset.v1.0001 Genome.v1.0001
TotalPrim	Total activity flux	g/ Year	Activity Flow	DOUBLE	2.-1000000000	Y	S	S	N	GrapheneEnzymes Dataset.v1.0001

Legend
Column Name — Meaning
C — Self-Indexed
D — Dimensional Key
S — Dimensional Key
N — Non-Indexed Key (Indexable)
Y — Indexed Key (Indexable)
Index — Index Name

Bad Index: *AnnHeFlux*, *BadList*

Radionuclide Neuroimitation Factors (RAF)

Version 1
Privilege: Boundary

Name	Description	Unit	Measure	Type	Range	C	D	S	Prog	Index
AnHeadRAF	The net contribution from concentration per contribution to neuroimitation (Neuroimitation)	Bq/Kg	Mass Fraction	DOUBLE	0.00 - 10.00	N	S	S	N	BadList.v1.0001 Dataset.v1.0001 Genome.v1.0001
AgeadFactor	Ageing factor	y	Year	DOUBLE	0.00 - 10.00	N	S	S	N	BadList.v1.0001
AnNeckRAF	The net contribution from concentration per contribution to neuroimitation (Neuroimitation)	Bq/Kg	Mass Fraction	DOUBLE	0.00 - 10.00	N	S	S	N	BadList.v1.0001 Dataset.v1.0001 Genome.v1.0001
AnLowerForeRAF	The net contribution from concentration per contribution to neuroimitation (Neuroimitation)	Bq/Kg	Mass Fraction	DOUBLE	0.00 - 10.00	N	S	S	N	BadList.v1.0001 Dataset.v1.0001 Genome.v1.0001
AnUpperForeRAF	The net contribution from concentration per contribution to neuroimitation (Neuroimitation)	Bq/Kg	Mass Fraction	DOUBLE	0.00 - 10.00	N	S	S	N	BadList.v1.0001 Dataset.v1.0001 Genome.v1.0001
AnUpperLowerForeRAF	The net contribution from concentration per contribution to neuroimitation (Neuroimitation)	Bq/Kg	Mass Fraction	DOUBLE	0.00 - 10.00	N	S	S	N	BadList.v1.0001 Dataset.v1.0001 Genome.v1.0001
AnWaistRAF	The net contribution from concentration per contribution to neuroimitation (Neuroimitation)	Bq/Kg	Mass Fraction	DOUBLE	0.00 - 10.00	N	S	S	N	BadList.v1.0001 Dataset.v1.0001 Genome.v1.0001
BodyFactor	Body factor	y	Year	DOUBLE	0.00 - 10.00	N	S	S	N	BadList.v1.0001
ExpoFactor	Exposure factor	y	Year	DOUBLE	0.00 - 10.00	N	S	S	N	BadList.v1.0001
GrossPrimRAF	The net contribution from concentration per contribution to neuroimitation (Neuroimitation)	Bq/Kg	Mass Fraction	DOUBLE	0.00 - 10.00	N	S	S	N	BadList.v1.0001 Dataset.v1.0001 Genome.v1.0001
TotalPrimRAF	The net contribution from concentration per contribution to neuroimitation (Neuroimitation)	Bq/Kg	Mass Fraction	DOUBLE	0.00 - 10.00	N	S	S	N	BadList.v1.0001 Dataset.v1.0001 Genome.v1.0001

Legend
Column Name — Meaning
C — Self-Indexed
D — Dimensional Key
S — Dimensional Key
N — Non-Indexed Key (Indexable)
Y — Indexed Key (Indexable)
Index — Index Name

Bad Index: *AnHeadRAF*

Radionuclide Neuroimitation Factors (BCF)

Version 1
Privilege: Boundary

Name	Description	Unit	Measure	Type	Range	C	D	S	Prog	Index
AnHeadBCF	The net contribution from concentration per contribution to neuroimitation (Neuroimitation)	Bq/Kg	Mass Fraction	DOUBLE	0.00 - 10.00	N	S	S	N	BadList.v1.0001 Dataset.v1.0001 Genome.v1.0001
AgeadFactor	Ageing factor	y	Year	DOUBLE	0.00 - 10.00	N	S	S	N	BadList.v1.0001
AnNeckBCF	The net contribution from concentration per contribution to neuroimitation (Neuroimitation)	Bq/Kg	Mass Fraction	DOUBLE	0.00 - 10.00	N	S	S	N	BadList.v1.0001 Dataset.v1.0001 Genome.v1.0001
AnLowerForeBCF	The net contribution from concentration per contribution to neuroimitation (Neuroimitation)	Bq/Kg	Mass Fraction	DOUBLE	0.00 - 10.00	N	S	S	N	BadList.v1.0001 Dataset.v1.0001 Genome.v1.0001
AnUpperForeBCF	The net contribution from concentration per contribution to neuroimitation (Neuroimitation)	Bq/Kg	Mass Fraction	DOUBLE	0.00 - 10.00	N	S	S	N	BadList.v1.0001 Dataset.v1.0001 Genome.v1.0001
AnUpperLowerForeBCF	The net contribution from concentration per contribution to neuroimitation (Neuroimitation)	Bq/Kg	Mass Fraction	DOUBLE	0.00 - 10.00	N	S	S	N	BadList.v1.0001 Dataset.v1.0001 Genome.v1.0001
AnWaistBCF	The net contribution from concentration per contribution to neuroimitation (Neuroimitation)	Bq/Kg	Mass Fraction	DOUBLE	0.00 - 10.00	N	S	S	N	BadList.v1.0001 Dataset.v1.0001 Genome.v1.0001
BodyFactor	Body factor	y	Year	DOUBLE	0.00 - 10.00	N	S	S	N	BadList.v1.0001
ExpoFactor	Exposure factor	y	Year	DOUBLE	0.00 - 10.00	N	S	S	N	BadList.v1.0001
GrossPrimBCF	The net contribution from concentration per contribution to neuroimitation (Neuroimitation)	Bq/Kg	Mass Fraction	DOUBLE	0.00 - 10.00	N	S	S	N	BadList.v1.0001 Dataset.v1.0001 Genome.v1.0001
TotalPrimBCF	The net contribution from concentration per contribution to neuroimitation (Neuroimitation)	Bq/Kg	Mass Fraction	DOUBLE	0.00 - 10.00	N	S	S	N	BadList.v1.0001 Dataset.v1.0001 Genome.v1.0001

Legend
Column Name — Meaning
C — Self-Indexed
D — Dimensional Key
S — Dimensional Key
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Y — Indexed Key (Indexable)
Index — Index Name

Bad Index: *AnHeadBCF*

Organism radionuclide body burden (mg of contaminatiNg of organism) dry

Version 1
Privilege: Boundary

Name	Description	Unit	Measure	Type	Range	C	D	S	Prog	Index
Time	The burden (Burden)	y	Year	DOUBLE	0.00 - 10.00	N	S	S	N	GrapheneEnzymes Dataset.v1.0001 Genome.v1.0001
BurdenBurden	The Body Burden, or the radionuclide concentration in a dry organism	Bq/kg	Activity Mass	DOUBLE	0.00 - 10.00	N	S	S	N	GrapheneEnzymes Dataset.v1.0001 Genome.v1.0001
TotalPrim	The set of time points for each location and radionuclide	y	Year	DOUBLE	2.-1000000000	Y	S	S	N	GrapheneEnzymes Dataset.v1.0001 GrapheneEnzymes.AccessIndex

Legend
Column Name — Meaning
C — Self-Indexed
D — Dimensional Key
S — Dimensional Key
N — Non-Indexed Key (Indexable)
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Index — Index Name

Bad Index: *AnHeadBurden*, *AnNeckBurden*

Organism radionuclide body burden (mg of contaminatiNg of organism) wet

Version 1
Privilege: Boundary

Name	Description	Unit	Measure	Type	Range	C	D	S	Prog	Index
Time	The burden (Burden)	y	Year	DOUBLE	0.00 - 10.00	N	S	S	N	GrapheneEnzymes Dataset.v1.0001 Genome.v1.0001
BurdenBurden	The Body Burden, or the radionuclide concentration in a wet organism	Bq/kg	Activity Mass	DOUBLE	0.00 - 10.00	N	S	S	N	GrapheneEnzymes Dataset.v1.0001 Genome.v1.0001
TotalPrim	The set of time points for each location and radionuclide	y	Year	DOUBLE	2.-1000000000	Y	S	S	N	GrapheneEnzymes Dataset.v1.0001 GrapheneEnzymes.AccessIndex

Legend
Column Name — Meaning
C — Self-Indexed
D — Dimensional Key
S — Dimensional Key
N — Non-Indexed Key (Indexable)
Y — Indexed Key (Indexable)
Index — Index Name

Bad Index: *AnHeadBurden*, *AnNeckBurden*

Imports from radionuclide

Version 1
Privilege: Boundary

Name	Description	Unit	Measure	Type	Range	C	D	S	Prog	Index
Detrital	The impact from radionuclide activity detrital contact	Cancer Fatalities	Radionuclide Fatalities Rate	DOUBLE	0.00 - 10.00	N	S	S	N	Dataset.v1.0001 Genome.v1.0001 GrapheneEnzymes GrapheneEnzymes.AccessIndex Genome.v1.0001
DetrialFatalities	Detrital fatalities	y	Year	DOUBLE	2.-1000000000	Y	S	S	N	Dataset.v1.0001
DiffusePlume	Diffused vapor	y	Year	DOUBLE	2.-1000000000	Y	S	S	N	Dataset.v1.0001
Ground	The impact from ground radionuclide activity	Cancer Fatalities	Radionuclide Fatalities Rate	DOUBLE	0.00 - 10.00	N	S	S	N	Dataset.v1.0001 Genome.v1.0001 GrapheneEnzymes GrapheneEnzymes.AccessIndex Genome.v1.0001
GroundFatalities	Ground fatalities	y	Year	DOUBLE	2.-1000000000	Y	S	S	N	Dataset.v1.0001
Ingestion	The impact from radionuclide activity ingestion	Cancer Fatalities	Radionuclide Fatalities Rate	DOUBLE	0.00 - 10.00	N	S	S	N	Dataset.v1.0001 Genome.v1.0001 GrapheneEnzymes GrapheneEnzymes.AccessIndex Genome.v1.0001
IngestionFatalities	Ingestion fatalities	y	Year	DOUBLE	2.-1000000000	Y	S	S	N	Dataset.v1.0001
Inhalation	The impact from radionuclide activity inhalation	Cancer Fatalities	Radionuclide Fatalities Rate	DOUBLE	0.00 - 10.00	N	S	S	N	Dataset.v1.0001 Genome.v1.0001 GrapheneEnzymes GrapheneEnzymes.AccessIndex Genome.v1.0001
InhalationFatalities	Inhalation fatalities	y	Year	DOUBLE	2.-1000000000	Y	S	S	N	Dataset.v1.0001
Metals	Metals containing the qualified Gross Fatalities Metals, Aquatic Fat, Soil, Inhalation	y	Year	DOUBLE	2.-1000000000	Y	S	S	N	Dataset.v1.0001
RadFlux	The concentration in water (dissol mass) and in sediment (in wet, dry Metals + Fat) Dissol	y	Year	DOUBLE	2.-1000000000	Y	S	S	N	Dataset.v1.0001
TotalPrim	The set of time points for each location and radionuclide	y	Year	DOUBLE	2.-1000000000	Y	S	S	N	Dataset.v1.0001

Legend
Column Name — Meaning
C — Self-Indexed
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Y — Indexed Key (Indexable)
Index — Index Name

Bad Index: *AnGroup*

Imports from radionuclide

Version 1
Privilege: Boundary

Name	Description	Unit	Measure	Type	Range	C	D	S	Prog	Index
Detrital	The impact from radionuclide activity detrital contact	Cancer / Hereditary Effects	Radionuclide Effects Rate	DOUBLE	0.00 - 10.00	N	S	S	N	Dataset.v1.0001 Genome.v1.0001 GrapheneEnzymes GrapheneEnzymes.AccessIndex Genome.v1.0001
DetrialEffects	Detrital effects	y	Year	DOUBLE	2.-1000000000	Y	S	S	N	Dataset.v1.0001
DiffusePlume	Diffused vapor	y	Year	DOUBLE	2.-1000000000	Y	S	S	N	Dataset.v1.0001
Ground	The impact from ground radionuclide activity	Cancer / Hereditary Effects	Radionuclide Effects Rate	DOUBLE	0.00 - 10.00	N	S	S	N	Dataset.v1.0001 Genome.v1.0001 GrapheneEnzymes GrapheneEnzymes.AccessIndex Genome.v1.0001
GroundEffects	Ground effects	y	Year	DOUBLE	2.-1000000000	Y	S	S	N	Dataset.v1.0001
Ingestion	The impact from radionuclide activity ingestion	Cancer / Hereditary Effects	Radionuclide Effects Rate	DOUBLE	0.00 - 10.00	N	S	S	N	Dataset.v1.0001 Genome.v1.0001 GrapheneEnzymes GrapheneEnzymes.AccessIndex Genome.v1.0001
IngestionEffects	Ingestion effects	y	Year	DOUBLE	2.-1000000000	Y	S	S	N	Dataset.v1.0001
Inhalation	The impact from radionuclide activity inhalation	Cancer / Hereditary Effects	Radionuclide Effects Rate	DOUBLE	0.00 - 10.00	N	S	S	N	Dataset.v1.0001 Genome.v1.0001 GrapheneEnzymes GrapheneEnzymes.AccessIndex Genome.v1.0001
InhalationEffects	Inhalation effects	y	Year	DOUBLE	2.-1000000000	Y	S	S	N	Dataset.v1.0001
Metals	Metals containing the qualified Gross Effects Metals, Aquatic Fat, Soil, Inhalation	y	Year	DOUBLE	2.-1000000000	Y	S	S	N	Dataset.v1.0001
RadFlux	The concentration in water (dissol mass) and in sediment (in wet, dry Metals + Fat) Dissol	y	Year	DOUBLE	2.-1000000000	Y	S	S	N	Dataset.v1.0001
TotalPrim	The set of time points for each location and radionuclide	y	Year	DOUBLE	2.-1000000000	Y	S	S	N	Dataset.v1.0001

Legend
Column Name — Meaning
C — Self-Indexed
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Index — Index Name

Bad Index: *AnGroup*

Activity concentration of dermal-contact liquid for the different media and time points

Version 1
Privilege: Boundary

Name	Description	Unit	Measure	Type	Range	C	D	S	Prog	Index
DermalFatCon	The part-input phase activity associated with (per) the dermal contact	Bq/kg/d	Activity Volume	DOUBLE	0.00 - 10.00	N	S	S	N	GrapheneEnzymes Dataset.v1.0001 Genome.v1.0001
DermalFatCon0	Initial value of the dermal-contact activity concentration	y	Year	DOUBLE	0.00 - 10.00	N	S	S	N	GrapheneEnzymes Dataset.v1.0001
Time	The concentration (input) value (Fat) in sediment (in wet, dry Metals + Fat) Dermal	y	Year	DOUBLE	0.00 - 10.00	N	S	S	N	GrapheneEnzymes Dataset.v1.0001
TotalPrim	Dermal-contact activity time series	y	Year	DOUBLE	2.-1000000000	Y	S	S	N	GrapheneEnzymes Dataset.v1.0001
TotalPrim	Activity time point	y	Year	DOUBLE	2.-1000000000	Y	S	S	N	GrapheneEnzymes Dataset.v1.0001

Legend
Column Name — Meaning
C — Self-Indexed
D — Dimensional Key
S — Dimensional Key
N — Non-Indexed Key (Indexable)
Y — Indexed Key (Indexable)
Index — Index Name

Bad Index: *Time*

Radionuclide dermal binder for the medium at a location, radionuclide, and time point

Version 1
Privilege: Boundary

Name	Description	Unit	Measure	Type	Range	C	D	S	Prog	Index
DermalBinder	Radionuclide dermal binder	Bq	Activity Mass	DOUBLE	0.00 - 10.00	N	S	S	N	GrapheneEnzymes Dataset.v1.0001 Genome.v1.0001
BinderFat	The concentration (input) value (Fat) in sediment (in wet, dry Metals + Fat) Dermal	y	Year	DOUBLE	0.00 - 10.00	N	S	S	N	GrapheneEnzymes Dataset.v1.0001
Time	Dermal-contact activity	y	Year	DOUBLE	0.00 - 10.00	N	S	S	N	GrapheneEnzymes Dataset.v1.0001
TotalPrim	Binder time point	y	Year	DOUBLE	2.-1000000000	Y	S	S	N	GrapheneEnzymes Dataset.v1.0001

Legend
Column Name — Meaning
C — Self-Indexed
D — Dimensional Key
S — Dimensional Key
N — Non-Indexed Key (Indexable)
Y — Indexed Key (Indexable)
Index — Index Name

Bad Index: *AnGroup*

Activity concentration of dermal-contact solid for the different media and time points

Version 1
Privilege: Boundary

Name	Description	Unit	Measure	Type	Range	C	D	S	Prog	Index
DermalSolidCon	The dermal-phase activity associated with (per) the dermal-contact	Bq/kg	Activity Mass	DOUBLE	0.00 - 10.00	N	S	S	N	GrapheneEnzymes Dataset.v1.0001 Genome.v1.0001
DermalSolidCon0	Initial value of the dermal-contact activity concentration	y	Year	DOUBLE	0.00 - 10.00	N	S	S	N	GrapheneEnzymes Dataset.v1.0001
Time	The concentration (input) value (Solid) in sediment (in wet, dry Metals + Fat) Dermal	y	Year	DOUBLE	0.00 - 10.00	N	S	S	N	GrapheneEnzymes Dataset.v1.0001
TotalPrim	Dermal-contact activity time series	y	Year	DOUBLE	2.-1000000000	Y	S	S	N	GrapheneEnzymes Dataset.v1.0001
TotalPrim	Activity time point	y	Year	DOUBLE	2.-1000000000	Y	S	S	N	GrapheneEnzymes Dataset.v1.0001

Legend
Column Name — Meaning
C — Self-Indexed
D — Dimensional Key
S — Dimensional Key
N — Non-Indexed Key (Indexable)
Y — Indexed Key (Indexable)
Index — Index Name

Bad Index: *Time*

Activity concentration of dermal-contact gas for the different media and time points

Version 1
Privilege: Boundary

Name	Description	Unit	Measure	Type	Range	C	D	S	Prog	Index
DermalGasCon	The total phase radionuclide activity associated with (by-product) the dermal-contact	Bq/kg	Activity Mass	DOUBLE	0.00 - 10.00	N	S	S	N	GrapheneEnzymes Dataset.v1.0001 Genome.v1.0001
DermalGasCon0	Initial value of the organism radionuclide concentration	y	Year	DOUBLE	0.00 - 10.00	N	S	S	N	GrapheneEnzymes Dataset.v1.0001
Time	The concentration (input) value (Solid) in sediment (in wet, dry Metals + Fat) Dermal	y	Year	DOUBLE	0.00 - 10.00	N	S	S	N	GrapheneEnzymes Dataset.v1.0001
TotalPrim	Dermal-contact activity time series	y	Year	DOUBLE	2.-1000000000	Y	S	S	N	GrapheneEnzymes Dataset.v1.0001
TotalPrim	Activity time point	y	Year	DOUBLE	2.-1000000000	Y	S	S	N	GrapheneEnzymes Dataset.v1.0001

Legend
Column Name — Meaning
C — Self-Indexed
D — Dimensional Key
S — Dimensional Key
N — Non-Indexed Key (Indexable)
Y — Indexed Key (Indexable)
Index — Index Name

Bad Index: *Time*

Radionuclide diffusion coefficient properties

Version 1
Privilege: Boundary

Name	Description	Unit	Measure	Type	Range	C	D	S	Prog	Index
DFAir	The diffusion coefficient in air	(pm/ yr)	Gross Flow	DOUBLE	0.00 - 10.00	N	S	S	N	BadList.v1.0001
DFSolid	The diffusion coefficient in solid	(pm/ yr)	Gross Flow	DOUBLE	0.00 - 10.00	N	S	S	N	BadList.v1.0001
DFSolid	The diffusion coefficient in group	(pm/ yr)	Gross Flow	DOUBLE	0.00 - 10.00	N	S	S	N	BadList.v1.0001
DFWater	The diffusion coefficient in water	(pm/ yr)	Gross Flow	DOUBLE	0.00 - 10.00	N	S	S	N	BadList.v1.0001
DFWater	The diffusion coefficient in water	(pm/ yr)	Gross Flow	DOUBLE	0.00 - 10.00	N	S	S	N	BadList.v1.0001

Legend
Column Name — Meaning
C — Self-Indexed
D — Dimensional Key
S — Dimensional Key
N — Non-Indexed Key (Indexable)
Y — Indexed Key (Indexable)
Index — Index Name

Bad Index: *DFAir*

Radionuclide dermatory conversion factors

Version 1
Privilege: Boundary

Name	Description	Unit	Measure	Type	Range	C	D	S	Prog	Index
DFAir	The Dermal Dose Conversion Factor, Dermal Contact Factor, Factor of a radionuclide	(mrem/ pCi/m3)	Dermal Dose Conversion Factor	DOUBLE	0.00 - 10.00	N	S	S	N	BadList.v1.0001
DFAir	The Dermal Dose Conversion Factor, Dermal Contact Factor, Factor of a radionuclide	(mrem/ pCi/m3)	Dermal Dose Conversion Factor	DOUBLE	0.00 - 10.00	N	S	S	N	BadList.v1.0001
DFDermal	The Dermal Metabolic Dose Conversion Factor of a radionuclide	(mrem/ pCi)	Dermal Conversion Factor	DOUBLE	0.00 - 10.00	N	S	S	N	BadList.v1.0001
DFDermal	The Dermal Metabolic Dose Conversion Factor of a radionuclide	(mrem/ pCi)	Dermal Conversion Factor	DOUBLE	0.00 - 10.00	N	S	S	N	BadList.v1.0001
DFIng	The Ingestion Dose Conversion Factor, Ingestion Factor, Factor of a radionuclide	(mrem/ pCi)	Ingestion Dose Conversion Factor	DOUBLE	0.00 - 10.00	N	S	S	N	BadList.v1.0001
DFIng	The Ingestion Dose Conversion Factor, Ingestion Factor, Factor of a radionuclide	(mrem/ pCi)	Ingestion Dose Conversion Factor	DOUBLE	0.00 - 10.00	N	S	S	N	BadList.v1.0001
DFI	The Inhalation Dose Conversion Factor, Inhal. Factor, Factor of a radionuclide	(mrem/ pCi)	Inhal. Dose Conversion Factor	DOUBLE	0.00 - 10.00	N	S	S	N	BadList.v1.0001
DFI	The Inhalation Dose Conversion Factor, Inhal. Factor, Factor of a radionuclide	(mrem/ pCi)	Inhal. Dose Conversion Factor	DOUBLE	0.00 - 10.00	N	S	S	N	BadList.v1.0001
DFSolid	The Dermal Dose Conversion Factor, Dermal Contact Factor, Factor of a radionuclide	(mrem/ pCi/m2)	Dermal Dose Conversion Factor	DOUBLE	0.00 - 10.00	N	S	S	N	BadList.v1.0001
DFSolid	The Dermal Dose Conversion Factor, Dermal Contact Factor, Factor of a radionuclide	(mrem/ pCi/m2)	Dermal Dose Conversion Factor	DOUBLE	0.00 - 10.00	N	S	S	N	BadList.v1.0001
DFWater	The Dermal Dose Conversion Factor, Dermal Contact Factor, Factor of a radionuclide	(mrem/ pCi/m3

Legend
Column Name — **Missing**
Self-Indexed
Dimensional Var.
Variable(s) (Variable Attribute)
Variable(s) (Variable Attribute)
Variable(s) (Variable Attribute)
See Also
Indexed

Radionuclide external air exposure rate concentrations
Version 1
Privilege: Restricted

Name	Description	Unit	Measure	Type	Range	C	D	U	Req	Index
ExternalAirExpRate	Radionuclide external air exposure rate concentration	mR/h	Activity/Volume	FLOAT	0:10:-30	Y	Y	Y	Y	Radiation1-DIM1
										Radiation1-DIM2
										Radiation1-DIM3
										TimePk
RefDt	Reference date for radionuclide Indicator Dilution Samples, Equivalent, Air, Soil, Radiation			DATEIME		Y	Y	N	N	Dates
ExternalAirExpRateUncertainty	The uncertainty associated with external air exposure rate concentration, plus Sigma, 1 Year Defined			FLOAT	0:10:-30	Y	Y	Y	Y	Uncertainty
ExternalAirExpRateMethod	External air exposure pathway			CHAR(4)		Y	Y	N	N	Methods
TimePk	Sample time point	s	Time	INTEGER	2:-2000000000:2:2:N	Y	Y	N	N	TimePk
										Radiation1-DIM1
										Radiation1-DIM2

Legend
Column Name — **Missing**
Self-Indexed
Dimensional Var.
Variable(s) (Variable Attribute)
Variable(s) (Variable Attribute)
Variable(s) (Variable Attribute)
See Also
Indexed — **AirExpGroup**

Radionuclide external dose
Version 1
Privilege: Restricted

Name	Description	Unit	Measure	Type	Range	C	D	U	Req	Index
ExternalDose	Radionuclide external dose	Sv	Radiation Dose	FLOAT	0:10:-30	Y	Y	Y	Y	Radiation1-DIM1
										Radiation1-DIM2
										Radiation1-DIM3
										TimePk
RefDt	Reference date for radionuclide Indicator Dilution Samples, Equivalent, Air, Soil, Radiation			DATEIME		Y	Y	N	N	Dates
ExternalDoseUncertainty	The uncertainty associated with external dose, plus Sigma, 1 Year Defined			FLOAT	0:10:-30	Y	Y	Y	Y	Uncertainty
ExternalDoseMethod	External dose exposure pathway			CHAR(4)		Y	Y	N	N	Methods
TimePk	Sample time point	s	Time	INTEGER	2:-2000000000:2:2:N	Y	Y	N	N	TimePk
										Radiation1-DIM1
										Radiation1-DIM2

Legend
Column Name — **Missing**
Self-Indexed
Dimensional Var.
Variable(s) (Variable Attribute)
Variable(s) (Variable Attribute)
Variable(s) (Variable Attribute)
See Also
Indexed — **AirExpGroup**

Radionuclide external dose rate
Version 1
Privilege: Restricted

Name	Description	Unit	Measure	Type	Range	C	D	U	Req	Index
ExternalDoseRate	The gas phase radionuclide activity associated with gas for external exposure	Sv/s	Activity/Mass	FLOAT	0:10:-30	Y	Y	Y	Y	Radiation1-DIM1
										Radiation1-DIM2
										Radiation1-DIM3
										TimePk
ExternalDoseRateMethod	Method of the organism's total exposure to ionizing radiation			CHAR(4)		Y	Y	N	N	Methods
RefDt	Reference date for radionuclide Indicator Dilution Samples, Equivalent, Air, Soil, Radiation			DATEIME		Y	Y	N	N	Dates
ExternalDoseRateUncertainty	The uncertainty associated with external dose rate, plus Sigma, 1 Year Defined			FLOAT	0:10:-30	Y	Y	Y	Y	Uncertainty
ExternalDoseRateMethod	External exposure pathway			CHAR(4)		Y	Y	N	N	Methods
TimePk	Sample time point	s	Time	INTEGER	2:-2000000000:2:2:N	Y	Y	N	N	TimePk
										Radiation1-DIM1
										Radiation1-DIM2

Legend
Column Name — **Missing**
Self-Indexed
Dimensional Var.
Variable(s) (Variable Attribute)
Variable(s) (Variable Attribute)
Variable(s) (Variable Attribute)
See Also
Indexed — **AirExpGroup**

Radionuclide external exposure rate concentrations
Version 1
Privilege: Restricted

Name	Description	Unit	Measure	Type	Range	C	D	U	Req	Index
ExternalRateConc	Radionuclide external rate concentration	mR/h	Activity/Mass	FLOAT	0:10:-30	Y	Y	Y	Y	Radiation1-DIM1
										Radiation1-DIM2
										Radiation1-DIM3
										TimePk
RefDt	Reference date for radionuclide Indicator Dilution Samples, Equivalent, Air, Soil, Radiation			DATEIME		Y	Y	N	N	Dates
ExternalRateConcUncertainty	The uncertainty associated with external rate concentration, plus Sigma, 1 Year Defined			FLOAT	0:10:-30	Y	Y	Y	Y	Uncertainty
ExternalRateConcMethod	External exposure pathway			CHAR(4)		Y	Y	N	N	Methods
TimePk	Sample time point	s	Time	INTEGER	2:-2000000000:2:2:N	Y	Y	N	N	TimePk
										Radiation1-DIM1
										Radiation1-DIM2

Legend
Column Name — **Missing**
Self-Indexed
Dimensional Var.
Variable(s) (Variable Attribute)
Variable(s) (Variable Attribute)
Variable(s) (Variable Attribute)
See Also
Indexed — **AirExpGroup**

Radionuclide fed to animal transfer factors
Version 1
Privilege: Restricted

Name	Description	Unit	Measure	Type	Range	C	D	U	Req	Index
ExternalLipidFW	The fed to liquid animal product transfer factor	mg/L	Time/Mass	FLOAT	0:10:-30	N	Y	Y	N	Radiation1-DIM1
										AnimalProduct-AnimalProduct
ExternalMeatFW	The fed to solid animal product transfer factor	kg/kg	Time/Mass	FLOAT	0:10:-30	N	Y	Y	N	Radiation1-DIM1
										AnimalProduct-AnimalProduct

Legend
Column Name — **Missing**
Self-Indexed
Dimensional Var.
Variable(s) (Variable Attribute)
Variable(s) (Variable Attribute)
Variable(s) (Variable Attribute)
See Also
Indexed — **AnimalProducts**

Radionuclide ingestion intakes for the medium at a location, radionuclide, and time point
Version 1
Privilege: Restricted

Name	Description	Unit	Measure	Type	Range	C	D	U	Req	Index
IngestIntake	Radionuclide ingestion intake	Bq	Activity	FLOAT	0:10:-30	Y	Y	Y	Y	Radiation1-DIM1
										Radiation1-DIM2
										Radiation1-DIM3
										TimePk
RefDt	Reference date for radionuclide Indicator Dilution Samples, Equivalent, Air, Soil, Radiation			DATEIME		Y	Y	N	N	Dates
IngestIntakeMethod	The organism concentration dilution factor used to calculate the ingestion, plus Sigma, 1 Year Defined			CHAR(4)		Y	Y	N	N	Methods
TimePk	Sample time point	s	Time	INTEGER	2:-2000000000:2:2:N	Y	Y	N	N	TimePk
										Radiation1-DIM1
										Radiation1-DIM2

Legend
Column Name — **Missing**
Self-Indexed
Dimensional Var.
Variable(s) (Variable Attribute)
Variable(s) (Variable Attribute)
Variable(s) (Variable Attribute)
See Also
Indexed — **IngestGroup**

Activity concentration of ingested liquid for the different media and time points
Version 1
Privilege: Restricted

Name	Description	Unit	Measure	Type	Range	C	D	U	Req	Index
IngestLiquidConc	The ainvid phase radionuclide activity associated with fish for ingestion	Bq/kg	Activity/Mass	FLOAT	0:10:-30	Y	Y	Y	Y	Media
										Radiation1-DIM1
										Radiation1-DIM2
										TimePk
IngestLiquidConcMethod	Method of the organism's total exposure to ionizing radiation			CHAR(4)		Y	Y	N	N	Methods
RefDt	The concentration dilution factor used to calculate the ingestion concentration, plus Sigma, 1 Year Defined			DATEIME		Y	Y	N	N	Dates
TimePk	Sample time point	s	Time	INTEGER	2:-2000000000:2:2:N	Y	Y	N	N	TimePk
										Radiation1-DIM1
										Radiation1-DIM2

Legend
Column Name — **Missing**
Self-Indexed
Dimensional Var.
Variable(s) (Variable Attribute)
Variable(s) (Variable Attribute)
Variable(s) (Variable Attribute)
See Also
Indexed

Activity concentration of ingested solid for the different media and time points
Version 1
Privilege: Restricted

Name	Description	Unit	Measure	Type	Range	C	D	U	Req	Index
IngestSolidConc	The solid phase radionuclide activity associated with fish for ingestion	Bq/kg	Activity/Mass	FLOAT	0:10:-30	Y	Y	Y	Y	Media
										Radiation1-DIM1
										Radiation1-DIM2
										TimePk
IngestSolidConcMethod	Method of the organism's total exposure to ionizing radiation			CHAR(4)		Y	Y	N	N	Methods
RefDt	The concentration dilution factor used to calculate the ingestion concentration, plus Sigma, 1 Year Defined			DATEIME		Y	Y	N	N	Dates
TimePk	Sample time point	s	Time	INTEGER	2:-2000000000:2:2:N	Y	Y	N	N	TimePk
										Radiation1-DIM1
										Radiation1-DIM2

Legend
Column Name — **Missing**
Self-Indexed
Dimensional Var.
Variable(s) (Variable Attribute)
Variable(s) (Variable Attribute)
Variable(s) (Variable Attribute)
See Also
Indexed

Activity concentration of leafed-plant fed for the different media and time points
Version 1
Privilege: Restricted

Name	Description	Unit	Measure	Type	Range	C	D	U	Req	Index
IngestLeafedConc	The gas phase radionuclide activity associated with gas for ingestion	Bq/kg	Activity/Mass	FLOAT	0:10:-30	Y	Y	Y	Y	Media
										Radiation1-DIM1
										Radiation1-DIM2
										TimePk
IngestLeafedConcMethod	Method of the organism's total exposure to ionizing radiation			CHAR(4)		Y	Y	N	N	Methods
RefDt	The concentration dilution factor used to calculate the ingestion concentration, plus Sigma, 1 Year Defined			DATEIME		Y	Y	N	N	Dates
TimePk	Sample time point	s	Time	INTEGER	2:-2000000000:2:2:N	Y	Y	N	N	TimePk
										Radiation1-DIM1
										Radiation1-DIM2

Legend
Column Name — **Missing**
Self-Indexed
Dimensional Var.
Variable(s) (Variable Attribute)
Variable(s) (Variable Attribute)
Variable(s) (Variable Attribute)
See Also
Indexed

Radionuclide ingestion intakes for the medium at a location, radionuclide, and time point
Version 1
Privilege: Restricted

Name	Description	Unit	Measure	Type	Range	C	D	U	Req	Index
IngestIntake	Radionuclide ingestion intake	Bq	Activity	FLOAT	0:10:-30	Y	Y	Y	Y	Radiation1-DIM1
										Radiation1-DIM2
										Radiation1-DIM3
										TimePk
RefDt	Reference date for radionuclide Indicator Dilution Samples, Equivalent, Air, Soil, Radiation			DATEIME		Y	Y	N	N	Dates
IngestIntakeMethod	The organism concentration dilution factor used to calculate the intake, plus Sigma, 1 Year Defined			CHAR(4)		Y	Y	N	N	Methods
TimePk	Sample time point	s	Time	INTEGER	2:-2000000000:2:2:N	Y	Y	N	N	TimePk
										Radiation1-DIM1
										Radiation1-DIM2

Legend
Column Name — **Missing**
Self-Indexed
Dimensional Var.
Variable(s) (Variable Attribute)
Variable(s) (Variable Attribute)
Variable(s) (Variable Attribute)
See Also
Indexed — **IngestGroup**

Radionuclide half-life
Version 1
Privilege: Restricted

Name	Description	Unit	Measure	Type	Range	C	D	U	Req	Index
HalfLife	The Physical Half-Life, Biological Half-Life, and Effective Half-Life for the radionuclide	s	Time	FLOAT	0:10:-30	Y	Y	Y	Y	Radiation1-DIM1
										Radiation1-DIM2
										Radiation1-DIM3
										TimePk
Del_HHS	The 0-0 identification number of a chemical degradation product			INTEGER		Y	Y	N	N	Radiation1-DIM1
ElectronFactor	Electron emission factor		Energy/Mass	FLOAT		Y	Y	N	N	Radiation1-DIM1
DecayTo	The nuclide, isotope		Half-life/Nuclide	STRING	2:0:-30:2:2:N	Y	Y	N	N	Radiation1-DIM1
DecayFrom	The nuclide, isotope, or element		Half-life/Nuclide	STRING	2:0:-30:2:2:N	Y	Y	N	N	Radiation1-DIM1
HalfLife_Error	Half-life error	s	Time	FLOAT	0:10:-30	Y	Y	N	N	Radiation1-DIM1
Molecular	The molecular weight	g/mol	Mass/Mole	FLOAT	0:10:-30:2:N	Y	Y	N	N	Radiation1-DIM1
Molecular_Error	Molecular weight error	g/mol	Mass/Mole	FLOAT	0:10:-30:2:N	Y	Y	N	N	Radiation1-DIM1
Decay	The decay mode			STRING	2:0:-30:2:2:N	Y	Y	N	N	Radiation1-DIM1
Decay_Error	The error decay mode			STRING	2:0:-30:2:2:N	Y	Y	N	N	Radiation1-DIM1
DecayFrom_Mass	The mass number		Mass/Mole	INTEGER	2:0:-30:2:2:N	Y	Y	N	N	Radiation1-DIM1
DecayFrom_Mass_Error	The mass number error		Mass/Mole	INTEGER	2:0:-30:2:2:N	Y	Y	N	N	Radiation1-DIM1
DecayFrom_Z	The atomic number		Mass/Mole	INTEGER	2:0:-30:2:2:N	Y	Y	N	N	Radiation1-DIM1
DecayFrom_Z_Error	The atomic number error		Mass/Mole	INTEGER	2:0:-30:2:2:N	Y	Y	N	N	Radiation1-DIM1
DecayTo_Mass	The mass number		Mass/Mole	INTEGER	2:0:-30:2:2:N	Y	Y	N	N	Radiation1-DIM1
DecayTo_Mass_Error	The mass number error		Mass/Mole	INTEGER	2:0:-30:2:2:N	Y	Y	N	N	Radiation1-DIM1
DecayTo_Z	The atomic number		Mass/Mole	INTEGER	2:0:-30:2:2:N	Y	Y	N	N	Radiation1-DIM1
DecayTo_Z_Error	The atomic number error		Mass/Mole	INTEGER	2:0:-30:2:2:N	Y	Y	N	N	Radiation1-DIM1

Legend
Column Name — **Missing**
Self-Indexed
Dimensional Var.
Variable(s) (Variable Attribute)
Variable(s) (Variable Attribute)
Variable(s) (Variable Attribute)
See Also
Indexed

Radionuclide partitioning properties
Version 1
Privilege: Restricted

Name	Description	Unit	Measure	Type	Range	C	D	U	Req	Index
Kd	Kd for the radionuclide	mL/g	Volume/Mass	FLOAT	0:10:-30	Y	Y	Y	Y	Radiation1-DIM1
Kd_Error	Kd for the radionuclide standard error	mL/g	Volume/Mass	FLOAT	0:10:-30	Y	Y	Y	Y	Radiation1-DIM1
Kd_Method	The method used to generate the Kd			CHAR(4)		Y	Y	N	N	Methods
Kd_Reference	The source of the Kd		Reference/Method	STRING	2:0:-30:2:2:N	Y	Y	N	N	Radiation1-DIM1
TempCorrection	The temperature correction factor			FLOAT	0:10:-30	Y	Y	N	N	Radiation1-DIM1
TempCorrection_Error	The temperature correction factor standard error			FLOAT	0:10:-30	Y	Y	N	N	Radiation1-DIM1

Legend
Column Name — **Missing**
Self-Indexed
Dimensional Var.
Variable(s) (Variable Attribute)
Variable(s) (Variable Attribute)
Variable(s) (Variable Attribute)
See Also
Indexed

Impacts from radionuclides
Version 1
Privilege: Restricted

Name	Description	Unit	Measure	Type	Range	C	D	U	Req	Index
Dermal	The impact from radionuclide activity through contact	Sv	Radiation Dose	FLOAT	0:10:-30	Y	Y	Y	Y	Radiation1-DIM1
										Radiation1-DIM2
										Radiation1-DIM3
										TimePk
ExternalDose	External radiation			CHAR(4)		Y	Y	N	N	Methods
RefDt	Reference date for radionuclide Indicator Dilution Samples, Equivalent, Air, Soil, Radiation			DATEIME		Y	Y	N	N	Dates
Ingestion	The impact from ingested radionuclide activity	Sv	Radiation Dose	FLOAT	0:10:-30	Y	Y	Y	Y	Radiation1-DIM1
										Radiation1-DIM2
										Radiation1-DIM3
										TimePk
InternalRadiation	Internal radiation			CHAR(4)		Y	Y	N	N	Methods
Inhalation	The impact from radionuclide activity	Sv	Radiation Dose	FLOAT	0:10:-30	Y	Y	Y	Y	Radiation1-DIM1
										Radiation1-DIM2
										Radiation1-DIM3
										TimePk
InternalTotalDose	Internal radiation			CHAR(4)		Y	Y	N	N	Methods
TimePk	Sample time point	s	Time	INTEGER	2:-2000000000:2:2:N	Y	Y	N	N	TimePk
										Radiation1-DIM1
										Radiation1-DIM2

Legend
Column Name — **Missing**
Self-Indexed
Dimensional Var.
Variable(s) (Variable Attribute)
Variable(s) (Variable Attribute)
Variable(s) (Variable Attribute)
See Also
Indexed — **ImpactGroup**

Solid-phase radionuclide activity associated with air
Version 1
Privilege: Restricted

Name	Description	Unit	Measure	Type	Range	C	D	U	Req	Index
SolidAir	The solid phase radionuclide activity associated with air	Bq/kg	Activity/Mass	FLOAT	0:10:-30	Y	Y	Y	Y	Radiation1-DIM1
										Radiation1-DIM2
										Radiation1-DIM3
TimePk	Activity time point	s	Time	INTEGER	2:-2000000000:2:2:N	Y	Y	N	N	TimePk
										Radiation1-DIM1
										Radiation1-DIM2

Legend
Column Name — **Missing**
Self-Indexed
Dimensional Var.
Variable(s) (Variable Attribute)
Variable(s) (Variable Attribute)
Variable(s) (Variable Attribute)
See Also
Indexed — **SolidAirVolume**, **AirGroup**

Solid-phase radionuclide activity associated with soil
Version 1
Privilege: Restricted

Name	Description	Unit	Measure	Type	Range	C	D	U	Req	Index
SolidSoil	The solid phase radionuclide activity associated with dry soil	Bq/kg	Activity/Mass	FLOAT	0:10:-30	Y	Y	Y	Y	Radiation1-DIM1
										Radiation1-DIM2
										Radiation1-DIM3
TimePk	Activity time point	s	Time	INTEGER	2:-2000000000:2:2:N	Y	Y	N	N	TimePk
										Radiation1-DIM1
										Radiation1-DIM2

Legend
Column Name — **Missing**
Self-Indexed
Dimensional Var.
Variable(s) (Variable Attribute)
Variable(s) (Variable Attribute)
Variable(s) (Variable Attribute)
See Also
IndividualVolume, **SoilGroup**

A radionuclide activity in an organism
Version 1
Privilege: Restricted

Name	Description	Unit	Measure	Type	Range	C	D	U	Req	Index
SolidTissue	The radionuclide activity in a tissue	Bq/kg	Activity/Mass	FLOAT	0:10:-30	Y	Y	Y	Y	Radiation1-DIM1
										Radiation1-DIM2
										Radiation1-DIM3
										TimePk
TimePk	The set of time points for each location and radionuclide	s	Time	INTEGER	2:-2000000000:2:2:N	Y	Y	N	N	Radiation1-DIM1
										Radiation1-DIM2

Legend
Column Name — **Missing**
Self-Indexed
Dimensional Var.
Variable(s) (Variable Attribute)
Variable(s) (Variable Attribute)
Variable(s) (Variable Attribute)
See Also
Indexed — **AnimalGroupIndividual**, **AnimalGroupIndividual**

Radionuclide mass than unit or water flux location
Version 1
Privilege: Restricted

Name	Description	Unit	Measure	Type	Range	C	D	U	Req	Index
ExchangeMass	The atmospheric gross flux	g/s	Activity	FLOAT	0:10:-30	Y	Y	Y	Y	Location1-DIM1
										Radiation1-DIM1
										Radiation1-DIM2
										TimePk
ExchangeMass_Error	The atmospheric gross exchange standard error of all phases	g/s	Activity	FLOAT	0:10:-30	Y	Y	Y	Y	Location1-DIM1
										Radiation1-DIM1
										Radiation1-DIM2
										TimePk
TimePk	Time stamp point	s	Time	INTEGER	2:-2000000000:2:2:N	Y	Y	N	N	TimePk
										Radiation1-DIM1
										Radiation1-DIM2

Legend
Column Name — **Missing**
Self-Indexed
Dimensional Var.
Variable(s) (Variable Attribute)
Variable(s) (Variable Attribute)
Variable(s) (Variable Attribute)
See Also
InterfaceFluxes-Polygons, **AirGroup**

Dissolved radionuclide activity
Version 1
Privilege: Restricted

Name	Description	Unit	Measure	Type	Range	C	D	U	Req	Index
DissolvedAir	The dissolved activity associated with air	Bq/L	Activity/Volume	FLOAT	0:10:-30	Y	Y	Y	Y	Radiation1-DIM1
										Radiation1-DIM2
										Radiation1-DIM3
										TimePk
TimePk	Activity time point	s	Time	INTEGER	2:-2000000000:2:2:N	Y	Y	N	N	TimePk
										Radiation1-DIM1
										Radiation1-DIM2

Legend
Column Name — **Missing**
Self-Indexed
Dimensional Var.
Variable(s) (Variable Attribute)
Variable(s) (Variable Attribute)
Variable(s) (Variable Attribute)
See Also
InterfaceFluxes-Polygons, **AirGroup**

Radionuclide mass than unit or water flux location
Version 1
Privilege: Restricted

Name	Description	Unit	Measure	Type	Range	C	D	U	Req	Index
ExchangeMass	The atmospheric activity associated with all phases	g/s	Activity	FLOAT	0:10:-30	Y	Y	Y	Y	Location1-DIM1
										Radiation1-DIM1
										Radiation1-DIM2
										TimePk
ExchangeMass_Error	The total activity flux	g/s	Activity	FLOAT	0:10:-30	Y	Y	Y	Y	Location1-DIM1
										Radiation1-DIM1
										Radiation1-DIM2
										TimePk
TimePk	Time stamp point	s	Time	INTEGER	2:-2000000000:2:2:N	Y	Y	N	N	TimePk
										Radiation1-DIM1
										Radiation1-DIM2

Legend
Column Name — **Missing**
Self-Indexed
Dimensional Var.
Variable(s) (Variable Attribute)
Variable(s) (Variable Attribute)
Variable(s) (Variable Attribute)
See Also
InterfaceFluxes-Polygons, **AirGroup**

Radionuclide thermodynamic properties
Version 1
Privilege: Restricted

Name	Description	Unit	Measure	Type	Range	C	D	U	Req	Index
DeltaHf	The heating and transformation	J/mol	Energy/Mole	FLOAT		Y	Y	N	N	Radiation1-DIM1
DeltaGf	The energy of formation	J/mol	Energy/Mole	FLOAT		Y	Y	N	N	Radiation1-DIM1
Density	The density of a thermo-magnetism	g/cm3	Density/Mass	FLOAT		Y	Y	N	N	Radiation1-DIM1
Density_Error	The density error	g/cm3	Density/Mass	FLOAT		Y	Y	N	N	Radiation1-DIM1
Entropy	The entropy	J/mol/K	Energy/Mole	FLOAT		Y	Y	N	N	Radiation1-DIM1
EnthalpyFr	The heat or factor	J/kg	Energy/Mass	FLOAT		Y	Y	N	N	Radiation1-DIM1
Enthalpy	The heat or energy	J/kg	Energy/Mass	FLOAT		Y	Y	N	N	Radiation1-DIM1
										Radiation1-DIM2

Legend
Column Name — **Missing**
Self-Indexed
Dimensional Var.
Variable(s) (Variable Attribute)
Variable(s) (Variable Attribute)
Variable(s) (Variable Attribute)
See Also
IsotopeMasses

Radionuclide mass than unit or water flux location
Version 1
Privilege: Restricted

Name	Description	Unit	Measure	Type	Range	C	D	U	Req	Index
ExchangeMass	The atmospheric activity associated with all phases	g/s	Activity	FLOAT	0:10:-30	Y	Y	Y	Y	Location1-DIM1
										Radiation1-DIM1
										Radiation1-DIM2
										TimePk
TimePk	Time stamp point	s	Time	INTEGER	2:-2000000000:2:2:N	Y	Y	N	N	TimePk
										Radiation1-DIM1
										Radiation1-DIM2

Legend
Column Name — **Missing**
Self-Indexed
Dimensional Var.
Variable(s) (Variable Attribute)
Variable(s) (Variable Attribute)
Variable(s) (Variable Attribute)
See Also
InterfaceFluxes-Polygons, **AirGroup**

Water Equivalent Concentration
Version 1
Privilege: Restricted

Name	Description	Unit	Measure	Type	Range	C	D	U	Req	Index
WEC	The ratio of the Water Equivalent Concentration			FLOAT	0:10:-30	Y	Y	Y	Y	Radiation1-DIM1
										Radiation1-DIM2
										Radiation1-DIM3
										TimePk
Water	Water Equivalent Radionuclide Activity	Bq/L	Activity/Volume	FLOAT	0:10:-30	Y	Y	Y	Y	Radiation1-DIM1
										Radiation1-DIM2
										Radiation1-DIM3
										TimePk

Legend
Column Name — **Missing**
Self-Indexed
Dimensional Var.
Variable(s) (Variable Attribute)
Variable(s) (Variable Attribute)
Variable(s) (Variable Attribute)
See Also
Indexed — **IsotopeGroup**

Soil concentration polygonal location reference
Version 1
Privilege: Restricted

Name	Description	Unit	Measure	Type	Range	C	D	U	Req	Index
SoilConcRef	Identifier of a dilution by factors			INTEGER	0:1:2	Y	Y	N	N	Location1-DIM1
SoilConcRef_Error	Soil concentration error			INTEGER	0:1:2	Y	Y	N	N	Location1-DIM1
DilutionFactor	Factor used to dilute a dilution factor			FLOAT	0:10:-30	Y	Y	N	N	Location1-DIM1
Shape	The shape of the polygon			STRING	2:0:-30:2:2:N	Y	Y	N	N	Location1-DIM1
Shape_Area	The area of the polygon	m2	Area	FLOAT	0:10:-30	Y	Y	N	N	Location1-DIM1
Volume	Volume of a soil	m3	Volume	FLOAT	0:10:-30	Y	Y	N	N	Location1-DIM1
										Location1-DIM2

Legend
Column Name — **Missing**
Self-Indexed
Dimensional Var.
Variable(s) (Variable Attribute)
Variable(s) (Variable Attribute)
Variable(s) (Variable Attribute)
See Also
Indexed — **SoilGroup**

DataBinding	GIS type that contains object				STRING	1-512	N	1	N	N		Feature
DataQuery	Query needed to obtain object from table				STRING	1-512	N	1	N	N		Feature
DataTable	Table needed to obtain object				STRING	1-512	N	1	N	N		Feature
Feature	Geographic object names of the points, lines or polys				STRING	1-512	Y	1	N	N		
FeaturePts	Vetices of feature (x,y,z)	m	Length	FLOAT	-1000000-1000000		Y	3	N	N		Feature GeoReference.Axis

Legend

Column Name	Meaning
S	Self-Indexed
D	Dimensional Size
U	Uncertainty can apply (Stochastic)
K	Is the variable a key to others

See Also:
GeoReference

Status
Version: 1
Privilege: Boundary

Name	Description	Unit	Measure	Type	Range	S	D	U	K	Prep	Indices
Errors	Error listing			STRING		Y	1	N	N		
Messages	Message listing			STRING		Y	1	N	N		
Warnings	Warning listing			STRING		Y	1	N	N		

Legend

Column Name	Meaning
S	Self-Indexed
D	Dimensional Size
U	Uncertainty can apply (Stochastic)
K	Is the variable a key to others

Water flux rates at water flux locations
Version: 1
Privilege: Boundary

Name	Description	Unit	Measure	Type	Range	S	D	U	K	Prep	Indices
RegionalRecharge	The natural regional recharge rate	m/yr	Length/Time	FLOAT	0-1E+30	N	1	Y	N		SurfaceWaterPolygons.Feature
TimePts	Flux time point	yr	Time	FLOAT	0-100000000	Y	2	N	N		SurfaceWaterPolygons.Feature
WaterFlux	The water flux	m^3/yr	Volume/Time	FLOAT	0-1E+30	N	2	Y	N		SurfaceWaterPolygons.Feature TimePts

Legend

Column Name	Meaning
S	Self-Indexed
D	Dimensional Size
U	Uncertainty can apply (Stochastic)
K	Is the variable a key to others

See Also:
SurfaceWaterPolygons

Water well point location references
Version: 1
Privilege: Boundary

Name	Description	Unit	Measure	Type	Range	S	D	U	K	Prep	Indices
Attributes	Attribute available for feature			STRING	1-512	Y	2	N	N		Feature
DataBinding	GIS type that contains object			STRING	1-512	N	1	N	N		Feature
DataQuery	Query needed to obtain object from table			STRING	1-512	N	1	N	N		Feature
DataTable	Table needed to obtain object			STRING	1-512	N	1	N	N		Feature
Feature	Geographic object names of the points, lines or polys			STRING	1-512	Y	1	N	N		
FeaturePts	Vetices of feature (x,y,z)	m	Length	FLOAT	-1000000-1000000	Y	3	N	N		Feature GeoReference.Axis

Legend

Column Name	Meaning
S	Self-Indexed
D	Dimensional Size
U	Uncertainty can apply (Stochastic)
K	Is the variable a key to others

See Also:
GeoReference

Water flux point location reference
Version: 1
Privilege: Boundary

Name	Description	Unit	Measure	Type	Range	S	D	U	K	Prep	Indices
Attributes	Attribute available for feature			STRING	1-512	Y	2	N	N		Feature
DataBinding	GIS type that contains object			STRING	1-512	N	1	N	N		Feature
DataQuery	Query needed to obtain object from table			STRING	1-512	N	1	N	N		Feature
DataTable	Table needed to obtain object			STRING	1-512	N	1	N	N		Feature
Feature	Geographic object names of the points, lines or polys			STRING	1-512	Y	1	N	N		
FeaturePts	Vetices of feature (x,y,z)	m	Length	FLOAT	-1000000-1000000	Y	3	N	N		Feature GeoReference.Axis

Legend

Column Name	Meaning
S	Self-Indexed
D	Dimensional Size
U	Uncertainty can apply (Stochastic)
K	Is the variable a key to others

See Also:
GeoReference

Suspended gas fractions for transport
Version: 1
Privilege: Boundary

Name	Description	Unit	Measure	Type	Range	S	D	U	K	Prep	Indices
Density	Density of gas	g/cm^3	Mass/Volume	FLOAT	0-1E+30	N	1	N	N		Name
Name	Name of gas fraction			STRING		Y	1	N	N		
Reactive	The fraction of gas that is reactive	fraction	Ratio	FLOAT	0-1E+30	N	1	N	N		Name

Legend

Column Name	Meaning
S	Self-Indexed
D	Dimensional Size
U	Uncertainty can apply (Stochastic)
K	Is the variable a key to others

Suspended liquid droplet sizes for transport
Version: 1
Privilege: Boundary

Name	Description	Unit	Measure	Type	Range	S	D	U	K	Prep	Indices
Name	Name of liquid drop			STRING		Y	1	N	N		
Size	Size mid-point of liquid droplet	um	Length	FLOAT	0-1E+30	N	1	N	N		Name

Legend

Column Name	Meaning
S	Self-Indexed
D	Dimensional Size
U	Uncertainty can apply (Stochastic)
K	Is the variable a key to others

Suspended solid particle midranges for transport
Version: 1
Privilege: Boundary

Name	Description	Unit	Measure	Type	Range	S	D	U	K	Prep	Indices
Density	Density of solid particle	g/cm^3	Mass/Volume	FLOAT	0-1E+30	N	1	N	N		Name
Name	Name of solid particle			STRING		Y	1	N	N		
Size	Size mid-point of solid particle	um	Length	FLOAT	0-1E+30	N	1	N	N		Name

Legend

Column Name	Meaning
S	Self-Indexed
D	Dimensional Size
U	Uncertainty can apply (Stochastic)
K	Is the variable a key to others

Time varying water temperature at flux plane locations
Version: 1
Privilege: Boundary

Name	Description	Unit	Measure	Type	Range	S	D	U	K	Prep	Indices
Temperature	The temperature of water	degC	Temperature	FLOAT		N	2	Y	N		SurfaceWaterPolygons.Feature TimePts
TimePts	The set of time points for each location	yr	Time	FLOAT	0-100000000	Y	2	N	N		SurfaceWaterPolygons.Feature

Legend

Column Name	Meaning
S	Self-Indexed
D	Dimensional Size
U	Uncertainty can apply (Stochastic)
K	Is the variable a key to others

See Also:
SurfaceWaterPolygons

Terrestrial organisms and classification
Version: 1
Privilege: Boundary

Name	Description	Unit	Measure	Type	Range	S	D	U	K	Prep	Indices
Class	Class of terrestrial organism			STRING		N	1	N	N		ScientificName
CommonName	Common name of terrestrial organism			STRING		N	1	N	N		ScientificName
Family	Family of terrestrial organism			STRING		N	1	N	N		ScientificName
ForagingGuild				STRING		N	1	N	N		ScientificName
Genus	Genus of terrestrial organism			STRING		N	1	N	N		ScientificName
Kingdom	Kingdom of terrestrial organism			STRING		N	1	N	N		ScientificName
NumScientificName	Number of scientific names			INTEGER	0-200	N	0	N	N		
Orders	Order of terrestrial organism			STRING		N	1	N	N		ScientificName
Phylum	Phylum of terrestrial organism			STRING		N	1	N	N		ScientificName
ScientificName	Genus Species name			STRING		Y	1	N	Y		
Species	Species of terrestrial organism			STRING		N	1	N	N		ScientificName
TSN	Organism Taxonomic Serial Number			STRING		N	1	N	N		ScientificName

Legend

Column Name	Meaning
S	Self-Indexed
D	Dimensional Size
U	Uncertainty can apply (Stochastic)
K	Is the variable a key to others

Water flux rates at water flux locations
Version: 1
Privilege: Boundary

Name	Description	Unit	Measure	Type	Range	S	D	U	K	Prep	Indices
RegionalRecharge	The natural regional recharge rate	m/yr	Length/Time	FLOAT	0-1E+30	N	1	Y	N		VadosePolygons.Feature
TimePts	Flux time point	yr	Time	FLOAT	0-100000000	Y	2	N	N		VadosePolygons.Feature
WaterFlux	The water flux	m^3/yr	Volume/Time	FLOAT	0-1E+30	N	2	Y	N		VadosePolygons.Feature TimePts

Legend

Column Name	Meaning
S	Self-Indexed
D	Dimensional Size
U	Uncertainty can apply (Stochastic)
K	Is the variable a key to others

See Also:
VadosePolygons

Water flux point location reference
Version: 1
Privilege: Boundary

Name	Description	Unit	Measure	Type	Range	S	D	U	K	Prep	Indices
Attributes	Attribute available for feature			STRING	1-512	Y	2	N	N		Feature
DataBinding	GIS type that contains object			STRING	1-512	N	1	N	N		Feature
DataQuery	Query needed to obtain object from table			STRING	1-512	N	1	N	N		Feature
DataTable	Table needed to obtain object			STRING	1-512	N	1	N	N		Feature
Feature	Geographic object names of the points, lines or polys			STRING	1-512	Y	1	N	N		
FeaturePts	Vetices of feature (x,y,z)	m	Length	FLOAT	-1000000-1000000	Y	3	N	N		Feature GeoReference.Axis

Legend

Column Name	Meaning
S	Self-Indexed
D	Dimensional Size
U	Uncertainty can apply (Stochastic)
K	Is the variable a key to others

See Also:
GeoReference