

Overview

The NNSA response data repository is sponsored by the United States Department of Energy. The function of the repository is to provide a location where researchers and other government agencies may obtain scientific data collected during the response to the March 11th, 2011 Tōhoku earthquake.

Please note that all data sets available on the repository are provided as a courtesy by the Department of Energy to the academic community. All data sets should be officially considered draft and used for research purposes only. No data sets available through the repository should be used for health and safety, environmental remediation, or other official purposes.

Overview of Available Scientific Data

Available data sets include field measurements and field sample analysis results. Data sets were collected by a variety of parties including the US Department of Energy, the US Department of Defense, as well as by private and governmental sources within Japan. Data sets were collected using both fixed detectors as well as by field teams carrying portable radiological detection and analysis equipment.

Data sets are available from as early as March 11th, 2011. Additional data sets will be released through the repository as they become available.

Further discussion of the specific types of data sets available will be described in more detail later in this document.

Registration, System Access, and Support

Researchers who wish to download data sets from the repository will need to register. Registration requires a valid email address as well as the researcher's name, phone number, and the name of the organization, agency, or university that they represent. All account registration information will remain confidential¹.

After registering, an authorized administrator will review and approve the access request. In the event that a user forgets their password, they may request to have their password reset directly through the repository.

For scientific questions, please contact DOEJapanHomeTeam@nv.doe.gov.

For technical or administrative support, please contact support@chainbridgetech.com.

For policy questions and all other requests, please contact DOEJapanInformation@nnsa.doe.gov.

Data Formats and Search Utilities

Researchers may either download pre-configured large data sets (e.g. all field measurements) or generate their own data sets using the provided search utilities. The search utilities allow researchers to download data sets based upon collection date and distance from the reactor.

Data sets may be downloaded in a variety of formats including Microsoft Excel 2007 (i.e. *.xlsx format), Microsoft Excel XML format, or a Comma Separated Values (CSV) text file.

¹ Security Note: All passwords are stored as an encrypted hash in a protected database

Field Measurements Data Dictionary

Field Measurements describe α and β activity and γ exposure rate. They have been collected by a variety of agencies from both fixed detector locations as well as by mobile field teams.

Field Measurements – Available Data Fields		
Field Name	Type	Comments
Field Measurement Id	Integer	Unique identifier corresponding to the original data record in the US Department of Energy's RAMS system
Measurement Date	DateTime	The date and time the measurement was collected recorded in Pacific Daylight Time (PDT)
Latitude	Decimal(9,6)	<i>Self-explanatory</i>
Longitude	Decimal(9,6)	<i>Self-explanatory</i>
Fixed	True/False	Indicates whether or not the measurement was collected from stationary detection equipment (e.g. GOJ SPEEDI detector)
Distance	Decimal(8,3)	The distance in miles that the measurement was collected, as measured from the event center latitude/longitude of 37.421389/141.032500
Bearing	Integer	The angle from the event center to the measurement's collection measurement as measured in clockwise degrees from north
Direction	Character	A character representation of bearing; N, NNE, NE, ENE, E, ESE, SE, etc.
Measurement Type	Character	Alpha, Beta, or Gamma
Derived	True/False	Indicates whether or not the reported value was converted from an underlying raw value by the source RAMS system. Applicable values will be converted as: <ul style="list-style-type: none"> ▪ α and β: $\mu\text{Ci}/\text{m}^2$ ▪ γ: mR/hr
Value	Float	<i>Self-explanatory</i>
Measurement Unit	Character	<i>Self-explanatory</i>
Source	Character	The agency or organization who collected the measurement; e.g. DOE or GOJ
Source Comment	Character	Description of how the source was determined if indirectly derived
Description	Character	Any collection, assessment, or monitoring comments recorded by field or analysis staff members

Field Sample Analysis Results Data Dictionary

Field Samples are physical media collected during the response which are subsequently analyzed either in a laboratory or in the field using InSitu equipment. Common field samples include air filters and soil samples². Radiochemistry analysis typically reports the presence of specific radionuclides measured as total activity or as either activity/unit of mass or activity/unit of volume, depending upon the sample media. In addition, total beta and total alpha activity may be reported.

Currently, air filter and soil sample analysis results may be downloaded through the data repository. Both data sets are similar; they contain a number of columns describing the collected sample as well as the results of radiochemical analysis. In addition, there are a number of special fields that are specific to a given sample type; e.g. Air Filters specify the filter type and total volume, while soil samples specify the sample weight.

For convenience, the sample information and subsequent analysis has been “flattened” into a simple tabular format. Consequently, if a sample has multiple analysis results the “sample collection” values will be repeated through the set; e.g. sample ID#, barcode, latitude/longitude, collection date etc.

To be included in the data repository, a given sample must meet the following criteria:

- Has a valid latitude, longitude, and collection date
- Has been sent to a laboratory for analysis, or had analysis performed in the field
- Has at least one valid analysis result with a reportable unit, nuclide, and activity which has been validated by an authorized laboratory staff member.

² While the repository is currently only managing air filter and soil sample data, additional types of sample data will be shared as they become available. These will include water samples, swipes, vegetation, and InSitu instrument samples (i.e. HPGe and NaI detectors)

Air Filter Analysis Results – Available Data Fields			
	Field Name	Type	Comments
Standard Sample Fields	Analysis ID	Integer	Unique identifier corresponding to the original analysis record in the US Department of Energy's RAMS system. This ID will be unique within the set of available Air Filter results
	Field Sample Id	Integer	Unique identifier corresponding to the original sample record in the US Department of Energy's RAMS system
	Sample Number	Character	Sample control number. Also commonly referred to as the sample barcode
	Sample Type	Character	Soil, Water, Air Filter, Swipe, or Instrument
	Collection Date	DateTime	The date and time the sample was collected recorded in Pacific Daylight Time (PDT)
	Latitude	Decimal(9,6)	<i>Self-explanatory</i>
	Longitude	Decimal(9,6)	<i>Self-explanatory</i>
	Fixed	True/False	Indicates whether or not the sample was collected from stationary detection equipment (e.g. GOJ SPEEDI detector)
	Distance	Decimal(8,3)	The distance in miles that the measurement was collected, as measured from the event center latitude/longitude of 37.421389/141.032500
	Bearing	Integer	The angle from the event center to the measurement's collection measurement as measured in clockwise degrees from north
	Direction	Character	A character representation of bearing; N, NNE, NE, ENE, E, ESE, SE, etc.
	Source	Character	The agency or organization who collected the measurement; e.g. DOE or GOJ
	Description	Character	Any collection, assessment, or monitoring comments recorded by field or analysis staff members
Air Filter	Filter Type	Character	The number of analysis results that are available for this sample
	Volume	Decimal	The total volume of unit that passed through the air filter
	Volume Unit	Character	The unit the volume is measured in
Analysis Results	Uncertainty (%)	Percentage	Value applied by laboratory staff indicating their confidence in the analysis result
	MDA	Decimal	Method detection limit
	Method Code	Character	Describes the analysis performed, if available
	Moisture (%)	Percentage	The percent of moisture in the sample, if relevant
	Nuclide	Character	The reportable radionuclide; alternately "Total Alpha" or "Total Beta" activity.
	Result	Decimal	The analysis result
Unit	Character	The analysis result unit; commonly $\mu\text{Ci}/\text{ml}$, $\mu\text{Ci}/\text{m}^2$, or $\mu\text{Ci}/\text{Sample}$	

Soil Sample Analysis Results – Available Data Fields			
	Field Name	Type	Comments
Standard Sample Fields	Analysis ID	Integer	Unique identifier corresponding to the original analysis record in the US Department of Energy's RAMS system. This ID will be unique within the set of available Air Filter results
	Field Sample Id	Integer	Unique identifier corresponding to the original sample record in the US Department of Energy's RAMS system
	Sample Number	Character	Sample control number. Also commonly referred to as the sample barcode
	Sample Type	Character	Soil, Water, Air Filter, Swipe, or Instrument
	Collection Date	DateTime	The date and time the sample was collected recorded in Pacific Daylight Time (PDT)
	Latitude	Decimal(9,6)	<i>Self-explanatory</i>
	Longitude	Decimal(9,6)	<i>Self-explanatory</i>
	Fixed	True/False	Indicates whether or not the sample was collected from stationary detection equipment (e.g. GOJ SPEEDI detector)
	Distance	Decimal(8,3)	The distance in miles that the measurement was collected, as measured from the event center latitude/longitude of 37.421389/141.032500
	Bearing	Integer	The angle from the event center to the measurement's collection measurement as measured in clockwise degrees from north
	Direction	Character	A character representation of bearing; N, NNE, NE, ENE, E, ESE, SE, etc.
	Source	Character	The agency or organization who collected the measurement; e.g. DOE or GOJ
	Description	Character	Any collection, assessment, or monitoring comments recorded by field or analysis staff members
Soil Sample	Weight	Decimal	The sample weight
	Weight Unit	Character	The unit the sample weight was measured in
	Surface Area (cm ²)	Decimal	<i>Self-explanatory</i>
	Shape	Character	The shape of the collected sample; circular, square, cylindrical, cube etc.
Analysis Results	Uncertainty (%)	Percentage	Value applied by laboratory staff indicating their confidence in the analysis result
	MDA	Decimal	Method detection limit
	Method Code	Character	Describes the analysis performed, if available
	Moisture (%)	Percentage	The percent of moisture in the sample, if relevant
	Nuclide	Character	The reportable radionuclide; alternately "Total Alpha" or "Total Beta" activity.
	Result	Decimal	The analysis result
	Unit	Character	The analysis result unit; commonly $\mu\text{Ci/ml}$, $\mu\text{Ci/m}^2$, or $\mu\text{Ci/Sample}$