ATTACHMENT C-8

FAO/IAEA FOOD DATABASE

UNSCEAR 2013 Report, Annex A, Levels and effects of radiation exposure due to the nuclear accident after the 2011 great east-Japan earthquake and tsunami, Appendix C and Appendix F

Contents

This attachment describes the development of a database on radionuclide concentrations in foodstuffs due to the Fukushima-Daiichi nuclear power plant (NPP) accident for the UNSCEAR assessment of doses to the public and to non-human biota.

The attachment also has six supplements with further underpinning or explanatory information. Supplement 4 refers to a separate MS Excel workbook 'C-8suppl' (UNSCEAR_2013A_C-8suppl_FAO_IAEA_foodstuff_database_reduced_version_2014-07.xlsx).

Acknowledgements

The Committee would like to highlight that the establishment of the database was only possible thanks to the successful collaboration and immense contribution by staff from: the Joint FAO/IAEA Division of Nuclear Techniques for Food and Agriculture, Vienna, Austria; the Ministry of Agriculture, Forestry and Fisheries (MAFF), Tokyo, Japan; the Centre for Radiation, Chemicals and Environmental Hazards, Health Protection Agency, Chilton, United Kingdom; and the World Health Organization, Geneva, Switzerland. The following experts were involved in preparing this attachment: Gerd Dercon[1], Ivancho Naletoski[1], Yukiko Yamada[2], Hiroki Ishida[2], Carl Blackburn[1], Stephan Nielen[1], David H. Byron[1], Jane Simmonds[3], Philippe Verger[4], Minh-Long Nguyen[1], and Qu Liang[1].

Notes

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This publication has not been formally edited.

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Contents

I. BACKGROUND

During the accident at the Fukushima-Daiichi Nuclear Power Station (FDNPS), which started on 11 March 2011, radionuclides were released into the environment over a protracted period of time. Radioactive caesium and iodine were observed in soil and plants as early as 15 March. In response to this situation, the Japanese authorities established provisional regulation values for food on 17 March 2011. A food monitoring programme began immediately thereafter, and the first restrictions on the distribution of specific products were imposed and reported by the Japanese Government on 21 March, i.e. as soon as further sampling had identified the locations and food products that should be removed from the diet.

Over subsequent months, many and various foodstuffs were affected as radionuclides transferred through the air, rivers, streams and ocean currents, and dispersed into the environment and into different types of food products at different rates. Within a few months, concentrations of radioactive iodine were no longer a food safety concern because the specific isotope of concern, iodine-131, has a short half-life of 8 days and much of it was eliminated by radioactive decay. However, two radioactive isotopes of caesium were of concern,

caesium-134 and caesium-137, which have half-lives of about 2 and 30 years respectively, and persist in the environment. Raw milk, vegetables, mushrooms, fruit, nuts, seaweeds, marine invertebrates, coastal fish, freshwater fish, cattle meat, wild animal meat, brown rice, wheat, tea leaves and other foodstuffs were found with concentrations of radioactive caesium above the provisional regulation values and the subsequent limits established by the Japanese authorities.

II. DATABASE DEVELOPMENT FOR THE UNSCEAR EVALUATION

From March 2011, a database was compiled on radionuclide concentrations in foodstuffs due to the FDNPS accident. The database was developed under the guidance of FAO/IAEA and in collaboration with the Japanese authorities, including the Ministry of Agriculture, Forestry and Fisheries (MAFF).
The database includes data for over 500 types of foodstuffs sampled in all 47 prefectures of Japan. These data were provided through the FAO/WHO International Food Safety Authorities Network (INFOSAN) based on information published and provided by the Japanese Ministry of Health, Labour and Welfare (MHLW), and were compiled by the Joint FAO/IAEA Division of Nuclear Techniques in Food and Agriculture.

The database was used in the UNSCEAR assessment of doses to the public and non-human biota. Approximately 126,000 records on food monitoring were compiled from samples collected during the period 15 March 2011 through 15 March 2012. In September 2012, these data were made available — through a relational database prepared in Microsoft Access® format (hereinafter referred to as the Fukushima Foodstuff Database) — to the relevant expert subgroups of UNSCEAR who were assessing ingested doses to the population of Japan resulting from the FDNPS accident.

A. Structure of Fukushima Foodstuff Database

The Fukushima Foodstuff Database refers to a set of data related to concentrations of radionuclides (specifically caesium-134, caesium-137 and iodine-131) in foodstuffs collected officially in Japan over one-year period after March 2011, along with the tools needed to utilize and assess the data, such as sorting, extracting, or summarizing.

The database is composed of multiple tables, which are lists of related information presented in a *column/row* format. Each row is referred to as a Record. Each foodstuff sample is such a record. Each column in a table is a category of information referred to as a Field, for instance radionuclide concentration. One data item, such as the concentration of radionuclides in one foodstuff sample, is called a Data Value.

The foodstuff database is a relational database, a step further than a flat file database. A simple spreadsheet (e.g. a Microsoft Excel® worksheet), would be considered a flat file database. In such a flat file database, relational data must be repeated. For instance, for information on foodstuff type, the foodstuff name and its taxonomy would need to be repeated on several records, or for a location, its prefecture and geographic coordinates. Such repetition of data values, particularly in a database with approximately 126,000 data records of foodstuff samples, could cause challenges in sorting or processing the compiled

information. Spelling differences in names of locations or synonyms for a foodstuff type would affect the database's integrity, and, for example, not allow correct calculation of average values of radionuclide concentrations for that particular location or foodstuff.

To avoid these problems, a relational database was developed, which comprises multiple tables, each pertaining to a specific topic. For instance, a specific table of locations or foodstuffs avoids duplication or spelling differences and in the main table with the data values, each location or foodstuff is identified by numbers, and each number is a unique identifier for a location or foodstuff.

The Fukushima Foodstuff Database is composed of the following tables:

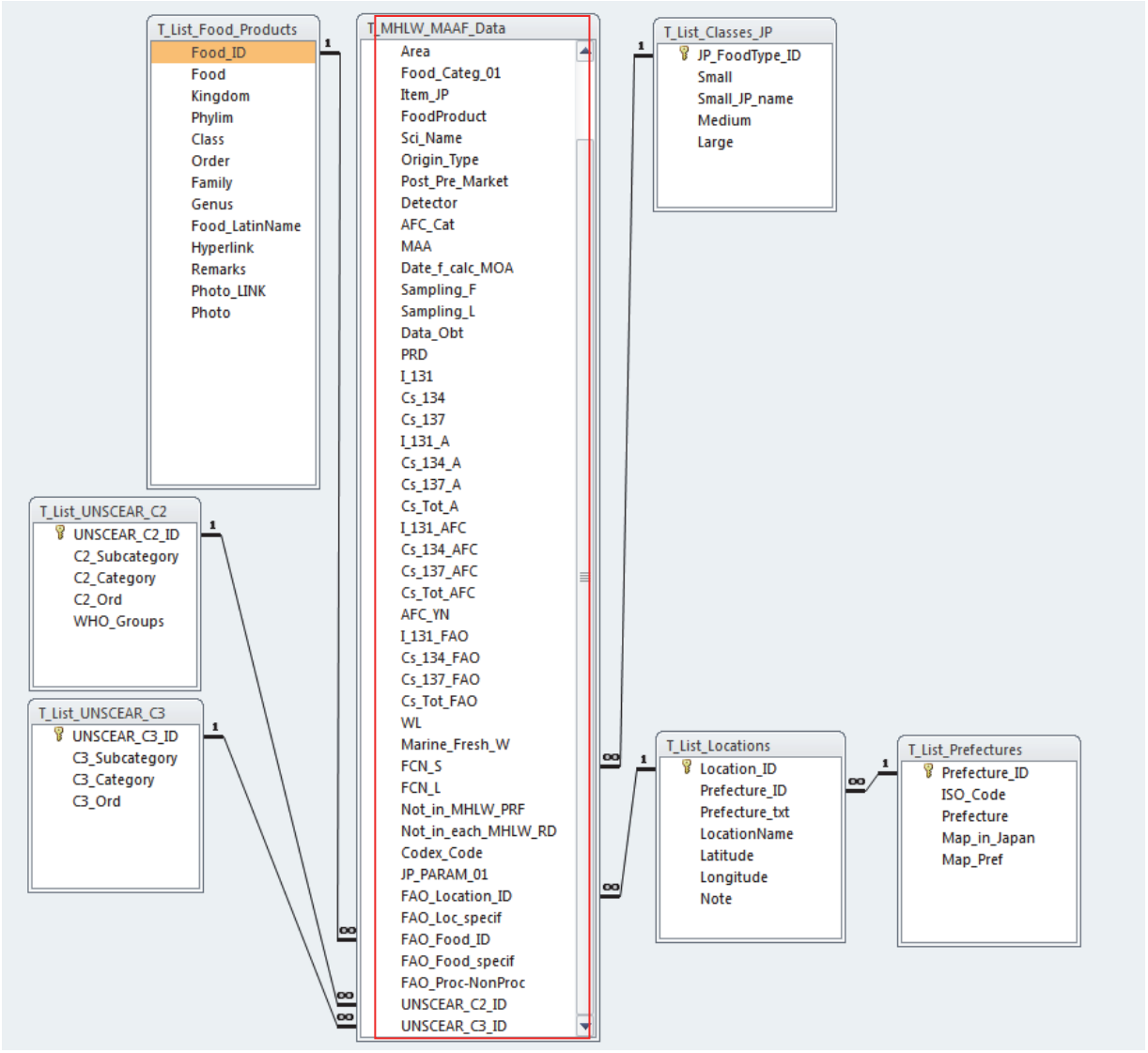
(i) Main table (in which all data values are stored)

In this main table (identified by a red rectangle in Fig. 1), radionuclide concentration data are stored for all foodstuff samples (whether or not they are available for food consumption), in combination with essential information about (a) the date of sampling, date of obtaining the analytical results and press release date, (b) origin of the samples (location and prefecture, through unique IDs), (c) name and taxonomy of the food product (unique ID), (d) availability for food consumption, (e) pre- or post-market sampling; (f) additional information about foodstuff samples, such as the cultivation/harvest characteristics (e.g. indoor versus outdoor cultivation); (g) type of detectors used to measure the radionuclides in the samples; (h) foodstuff categories (developed by UNSCEAR expert subgroups, using unique IDs; see below for more information); (i) Japanese foodstuff categories (through unique IDs); (j) samples from wildlife, and (k) status of the product (processed versus not processed).

(ii) Location table
(iii) Prefecture table
(iv) Foodstuff product table
(v) UNSCEAR expert subgroup C2 (Foodstuffs) categories and subcategories
(vi) UNSCEAR expert subgroup C3 (Wild versus domesticated species) categories and subcategories
(vii) Japanese foodstuff categories

Figure 1 shows the structure of the relational database and how the different tables were linked.

Figure 1: Structure of relational Fukushima Foodstuff Database (red rectangle indicates the main table)



In the relational database, categorical variables (i.e. variables that can take on one of a limited, and usually fixed, number of possible values) were used in the following main fields:

(viii) UNSCEAR expert subgroup C2 categories and subcategories for the foodstuff samples (Assessment of doses to the public, see categories under supplement 1)
(ix) UNSCEAR expert subgroup C3 categories for the foodstuff samples (Assessment of doses to non-human biota, see categories under supplement 2)
(x) Japanese food categories
(xi) Availability for food consumption

The variables reflecting the UNSCEAR expert subgroup C2 and C3 categories and the availability for food consumption were essential variables used in the UNSCEAR assessment of doses to the public and to non-human biota. The C2 and C3 categories were established in close collaboration with the respective UNSCEAR Lead Writers.

Japanese food categories were included in the database for information only.

More information about the levels of the above mentioned categorical variables (availability for food consumption and Japanese food categories) can be found in supplement 3.

B. Simplification of database

Date for calculation of the number of months after the accident
In the foodstuff database, only samples collected between 15 March 2011 and 15 March 2012 were included. Data on foodstuff samples collected in the first year, but reported later, were excluded from the database.

For simplification, all foodstuffs were classified according to the number of months after the accident. For example, number "1" indicates that sampling was conducted in the period from 15 March 2011 to 14 April 2011.

In general, "Date of Sampling" was used to calculate "Months after Accident". If it was unknown, "Date of obtaining Data" was used. If both "Date of Sampling" and "Date of obtaining Data" were not known, "Date of Press Release" was used.

Availability for food consumption
For purposes of the UNSCEAR assessment, some categorical variables were simplified. For example, the original variable indicating the availability of food for consumption had multiple levels as indicated in supplement 3. This variable was changed to have only two levels, i.e. available or not available for consumption. For the calculation of dose, only samples that represented foodstuffs available for consumption were used.

Radionuclide concentrations
For all data with caesium-134 and caesium-137 concentrations in foodstuffs that were below the detection limit of the detectors, a value of 10 Bq/kg was assigned. A similar value was used for data on iodine-131 concentrations, except for those samples collected five or more months after the accident. For these latter data, a value of 0 Bq/kg was assigned.

If only the sum of caesium-134 and caesium-137 concentrations was provided, the decay of caesium-134 and caesium-137 for each two-month period was taken into consideration when calculating the activity concentration of caesium-134 and caesium-137 respectively.

Table 1 shows the ratio of caesium-134 and caesium-137 to the total radioactive caesium used for calculation. The concentration of caesium-134 and caesium-137 in air was almost the same. Most of the ratios of caesium-134 to caesium-137 were found to be between 0.9 and 1.1 (Ohkura, et al, 2012) [5]. In March 2012, the report of a research project was issued jointly by the Ministry of Education, Culture, Sports, Science and Technology (MEXT) and MAFF, which stated that from the analytical results of soil samples, the average ratio of caesium-134

[5] Okura, Takehisa; Oishi, Tetsuya; Taki, Mitsumasa; Shibanuma, Yukio; Kikuchi, Masamitsu; Akino, Hitoshi; Kikuta, Yasuaki; Kawasaki, Masatsugu; Saegusa, Jun; Tsutsumi, Masahiro; Ogose, Hitoshi; Tamura, Shunsuke; Sawahata, Tadahiro, 2012. Emergency monitoring of environmental radiation and atmospheric radionuclides at Nuclear Science Research Institute, JAEA following the accident of Fukushima Daiichi Nuclear Power Plant. Report No. : JAEA-Data/Code 2012-010, 37 Pages, PDF : JAEA-Data-Code-2012-010.pdf:2.28MB.

and caesium-137 on 14 June 2011 was 0.92:1. This ratio on that specific day was used to estimate the ratio of these two radionuclides in specific periods. Also using this value, the ratio at the time of emission was calculated to be 1 to 1.

Table 1: Ratio of caesium-134 and caesium-137 to total radioactive caesium (calculated by MAFF)

Month after accident	*Ratio of caesium-134*	*Ratio of caesium-137*
1 or 2	0.50	0.50
3 or 4	0.49	0.51
5 or 6	0.47	0.53
7 or 8	0.46	0.54
9 or 10	0.45	0.55
11 or 12	0.44	0.56

C. Final selection of dataset for UNSCEAR assessment

For the UNSCEAR assessment for both expert subgroups C2 and C3, all relevant variables were identified in close collaboration with the Lead Writers (expert subgroup leaders), selected from the relational database (via an MS Access Query), and exported in one flat file worksheet (MS Excel). The final selection of variables used can be found in Table 2.

In the resulting worksheet, pivot tables were created for further rapid selection of datasets based on foodstuff categories or locations. Such pivot tables are useful to summarize, analyse, explore, and present summary data and can help visualize summary data so that comparisons, patterns, and trends can easily be seen.

Table 2: Variables selected in the UNSCEAR assessment for expert subgroups C2 and C3

Column heading	*Description*
Run_ID	Unique index number assigned by the Joint FAO/IAEA Division
Orig_Index_No	The order number of the sample within each individual press release by MHLW
Serial_No	Unique serial number assigned by the MAFF of Japan
Prefecture	Prefecture name
Location	Location name
LocSpecifier	Specifier for the location of sampling
Latitude	Latitude in degrees
Longitude	Longitude in degrees
Food	Name of the food product
FoodSpecifier	Specifier for the food product (for example: Boiled, roasted…)
FoodLatin	Latin name of the food product
Origin_Type	Additional information about foodstuff sample such as the cultivation/harvest characteristics (for example: outdoor, indoor, offshore …)
Post_Pre_Market	Sampling timing (Pre- or post- market)
Detector	Type of the detector
AFC_Cat	Availability for food consumption - Japanese category

Column heading	*Description*
Date_f_calc_MOA	Date for calculation of the number of months after the accident
Sampling_F	Date of first sampling
Sampling_L	Date of last sampling
Data_Obt	Date of obtaining the analytical results
PRD	Press release date
AFC_YN	Availability for food consumption - (yes or no), based on the Japanese categories (field AFC_Cat)
I_131_FAO	Corrected numeric value of the iodine-131 concentration in food products
Cs_134_FAO	Corrected numeric value of the caesium-134 concentration in food products
Cs_137_FAO	Corrected numeric value of the caesium-137 concentration in food products
Cs_Tot_FAO	Corrected numeric value of the total radio-caesium concentration in food products
JP_Small	Japanese food product category (small)
JP_Medium	Japanese food product category (medium)
JP_Large	Japanese food product category (large)
Codex_Code	Codex Alimentarius code (only for vegetables)
FAO_Proc-NonProc	Status of the food product (Processed or not processed)
C2_Subcategory	UNSCEAR expert subgroup C2 subcategory
C2_Category	UNSCEAR expert subgroup C2 category
C3_Subcategory	UNSCEAR expert subgroup C3 subcategory
C3_Category	UNSCEAR expert subgroup C3 category

An extract of the main table of the database has been made in Microsoft Excel® (for all foodstuff samples used in the UNSCEAR assessment) and is available in digital format as another attachment (C-8suppl) to this report on the Food database.

III. METADATA ANALYSIS OF THE DATABASE

A set of tables and figures below indicate the main characteristics of the data, and also shows the trend of data availability in time over the first year after the accident.

Figure 2 indicates the number of collected samples for the period of one year (15 March 2011–15 March 2012) after the accident. The first 5,000 samples were collected at the end of the third month, the first 25,000 samples close to the 6th month, approximately 60,000 samples around the 8th month, and the milestone of 100,,000 samples was reached between month 10 and 11.

Figure 2: Accumulated numbers of foodstuff samples collected from 15 March 2011 until 15 March 2012

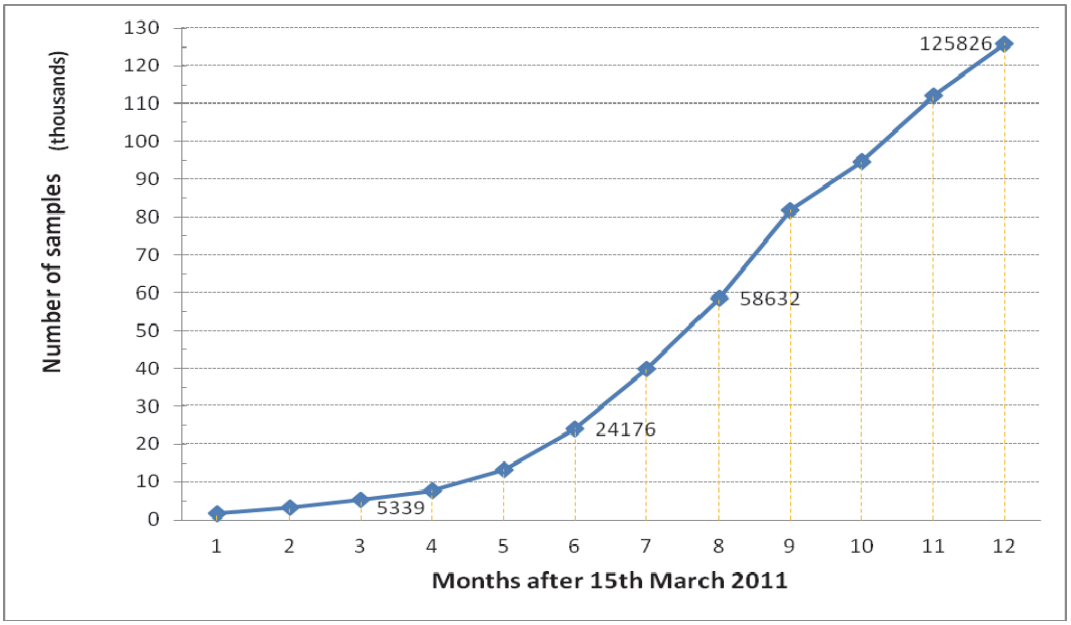


Figure 3 shows the geographic distribution of the foodstuff samples. At three months after the accident, 63% of the collected samples (3,381 samples) came from Fukushima Prefecture and 18% (982 samples) from Ibaraki Prefecture (located to the south of Fukushima Prefecture). At 12 months after the accident (i.e. as of 15 March 2012), over 16% of the total number of samples (20,621 samples) had been collected in Fukushima Prefecture. Approximately 50% of the samples (around 61,500 samples) came from neighbouring prefectures.

Figure 3: Geographic distribution (prefecture level) of the foodstuff samples collected across 47 prefectures (15 March 2011–15 March 2012)

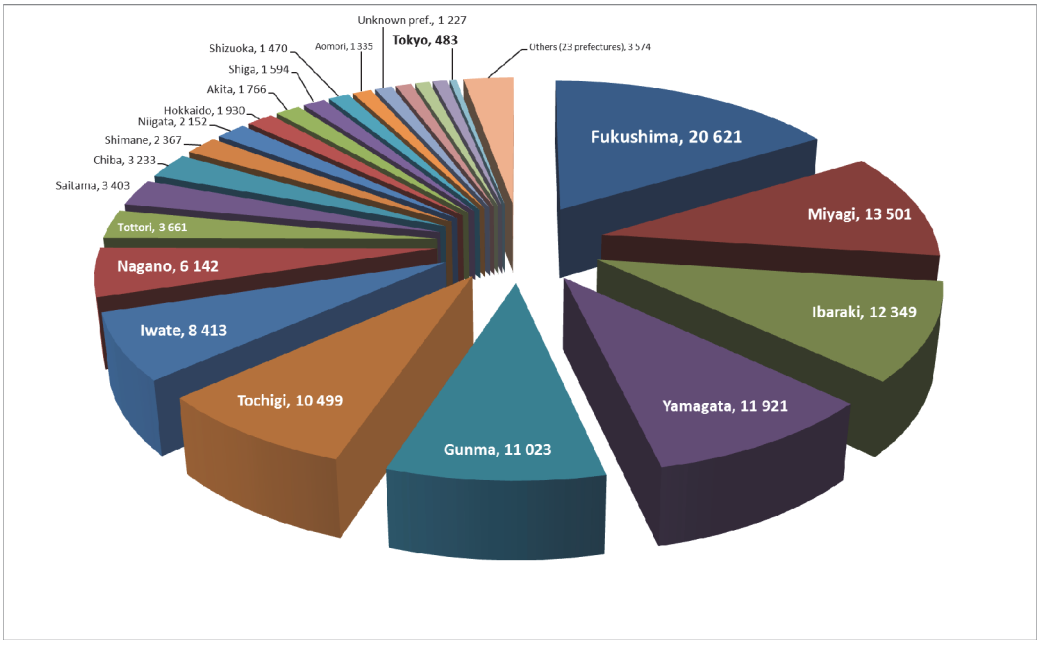


Table 3 also shows the major emphasis on the sampling of cattle meat: representing 66.9% of the samples. Vegetables represented approximately 10% of the foodstuff samples. Marine fish and migratory fish accounted for close to 5% of the samples, whereas rice and rice products about 3%.

Table 3: Distribution of foodstuff samples across expert subgroup C2 categories (15 March 2011 – 15 March 2012)

C2_Category	*C2_Subcategory*	*Totals*	*%Total*
Algae	Algae	319	0.25
Cereals	Other cereals	507	0.40
	Rice and rice products (excl oil)	4010	3.19
	Wheat and wheat products	345	0.27
Eggs	Poultry eggs	453	0.36
Food of mixed composition	Food of mixed composition	58	0.05
Freshwater fish and shellfish	Crustaceans (freshwater)	11	0.01
	Freshwater fish	820	0.65
	Molluscs (freshwater)	4	0.00
Fruits	Fresh and processed fruits	3512	2.79
	Juices	63	0.05
Marine species (e.g. Fish and Shellfish)	Crustaceans (marine)	159	0.13
	Marine fish and migratory fish	6218	4.94
	Molluscs (marine)	956	0.76
	Other marine species	99	0.08
Meat	Cattle meat	84189	66.91
	Other meat	550	0.44
	Pork meat (excl wild boar)	542	0.43
	Poultry	223	0.18
Milk and dairy products	Milk	2493	1.98
	Other dairy products	289	0.23
Mushrooms	Mushrooms	2789	2.22
Other plants	Other plants	1357	1.08
Unclassified	Unclassified product	3157	2.51
Vegetables	Leafy vegetables	3498	2.78
	Other vegetables	6157	4.89
	Root vegetables	3048	2.42

Considering single food products and not categories, the ranking was slightly different from the second position downwards, with rice (3.2%), cattle milk (2.0%), Japanese green tea leaves (1.8%), shiitake mushrooms (1.3%) and spinach (1.2%) (Table 4).

Table 4: Top ten ranking of foodstuff types in descending order of sample share (absolute values and percentage of total number of samples over the first year after the accident)

Food	*Total*	*% Total*
Cattle meat	84188	66.9
Rice	3984	3.2
Cattle milk	2493	2.0
Japanese green tea leaves	2235	1.8
Shiitake (mushroom)	1578	1.3
Spinach	1509	1.2
Soybean	685	0.5
Cucumber	675	0.5
Apple	663	0.5
Japanese mustard spinach (Komatsuna)	640	0.5
Others (645 foodstuff types)	27171	21.6

As expected, the sampling focused mainly on products collected from agricultural land or aquaculture, with close to 93% of the samples. Only 7 % of the samples were related to foodstuffs such as marine or freshwater fish, game meat or wild mushrooms (Table 5).

Table 5: Distribution of foodstuff samples across expert subgroup C3 categories (15 March 2011–15 March 2012)

C3_Category	*C3_Subcategory*	*Total*	*% Total*
Brackish ecosystems	Brackish wild	34	0.027
Freshwater ecosystems	Freshwater aquaculture	222	0.1764
	Freshwater wild	608	0.4832
Marine ecosystems	Marine aquaculture	154	0.1224
	Marine wild	7228	5.7444
Others	Others	7179	5.7055
Terrestrial ecosystems	Cultivated mushrooms	2290	1.82
	Cultivated plants or crops	21701	17.247
	Domesticated animals	84945	67.51
	Unclassified mushrooms	15	0.0119
	Wild animals	528	0.4196
	Wild mushrooms	412	0.3274
	Wild plants	258	0.205
Unclassified	Unclassified	252	0.2003

More detailed information about the time distribution of the samples for the different expert subgroup C2 and C3 categories can be found in supplements 5 and 6.

IV. CONCLUSIONS

The compilation and organization of measurement data into the foodstuff database was essential for the Committee to conduct its assessment of doses to the public and to non-human

biota. Approximately 126,000 records on food monitoring were compiled for the sampling period of 15 March 2011–15 March 2012.

The establishment of a relational database facilitated rapid data analysis by the UNSCEAR experts for the Committee.

Besides its application in the current UNSCEAR evaluation, the relational database is expected to be a valuable resource for scientists in the future for assessing the long-term impact of the accident. In this context, further uploading of all collected foodstuff data to the database over the coming years would be beneficial. As at 13 December 2012, approximately 330,000 records of foodstuffs were available.

Supplementary material

Supplement 1:

Categories and subcategories of foodstuff samples used under UNSCEAR expert subgroup C2 (sub) categories for the assessment of doses to the public.

C2_Category	*C2_Subcategory*
Algae	Algae
Cereals	Other cereals Rice and rice products (excl oil) Wheat and wheat products
Eggs	Poultry eggs
Food of mixed composition	Food of mixed composition
Freshwater fish and shellfish	Crustaceans (freshwater) Freshwater fish Molluscs (freshwater)
Fruits	Fresh and processed fruits Juices
Marine species (e.g. Fish and Shellfish)	Crustaceans (marine) Marine fish and migratory fish Molluscs (marine) Other marine species
Meat	Cattle meat Other meat Pork meat (excl wild boar) Poultry
Milk and dairy products	Milk Other dairy products
Mushrooms	Mushrooms
Other plants	Other plants
Unclassified	Unclassified product
Vegetables	Leafy vegetables Other vegetables Root vegetables

Supplement 2:

Categories and subcategories of foodstuff samples used under UNSCEAR expert subgroup C3 (sub) categories for assessing doses to non-human biota.

C3_Category	*C3_Subcategory*
Brackish ecosystems	Brackish wild
Freshwater ecosystems	Freshwater aquaculture
	Freshwater wild
Marine ecosystems	Marine aquaculture
	Marine wild
Others	Others
Terrestrial ecosystems	Cultivated mushrooms
	Cultivated plants or crops
	Domesticated animals
	Unclassified mushrooms
	Wild animals
	Wild mushrooms
	Wild plants
Unclassified	Unclassified

Supplement 3:

Description of specific categorical variables "Availability for food consumption" and "Japanese food categories"

a. Availability for food consumption (AFC) category

In order to clarify whether foodstuffs in the same lot are available for consumption or not, eight categories were created according to the time of sampling; and whether the foodstuff was: subject to "distribution restraints imposed by government and local governments on the sampling date" and sampled in the harvest season. In creating these categories, the file "Restriction of Distribution" is used as reference. Table 1 indicates characteristics of each category.

Table S3.1: Characteristics of each AFC category

Category	*Sampling pre-market or post-market*	*Was distribution restraint imposed on the sampling date?*	*Was foodstuff sampled in harvest season?*	*Was foodstuff available for consumption?*
0	Pre-market	No Sampled before distribution restraints	No Sampled before harvest season*[1].	**No**
1	Pre-market	No Sampled before distribution restraints	Yes	Yes
2	Pre-market	Yes	Yes or No	**No**
3	Pre-market	Yes But the result was disclosed within the day before lifting restraints	Yes or No	Yes (Possibility that foodstuff was distributed after lifting restraints.)
4	Pre-market	No Sampled after lifting restraints	Yes	Yes
5	Pre-market	No	Yes	Yes
6	Pre-market	Yes or No	No*[2]	**No**
M	Post-market	No	Yes	Yes

*1. Raw milk sampled during the cessation of milk production by the destruction of dairy factories and/or milk collection centre with cooling facility was included.

*2. Fishing was banned on the sampling date. Crops in AFC category 6 were cultivated only in some experimental farms

b. Food class (National Health and Nutrition Survey in Japan)

In the National Health and Nutrition Survey in Japan, there were 17 large classes that are further sub-divided into 99 smaller classes originally for the purpose of determining the nutritional status of citizens.

Food class 100 and 200 were additionally established because there were some foodstuffs falling outside existing classes.

- Food class 100 includes foodstuffs which are normally eaten after processing or cooking whereby radionuclide concentration is reduced, e.g. dried mushrooms and dried wheat noodles.
- Food class 200 includes mineral water, processed foods of multiple ingredients, and those foods without sufficient information for classification.

For aquatic food samples, excluding processed foods of multiple ingredients, "Marine or fresh water" was added in the data sheet. Eight categories were created according to the "habitat" and "in the case of migrating species, place of sampling". Characteristics of each category were described as follows in table 2:

Table 2: Characteristics of each category of "Marine or fresh water"

Category	*The habitat*	*In the case of migrating species, place of sampling*
F	Fresh water	-
B	Brackish water	-
M	Marine water	-
MB	Mostly in marine water (occasionally in brackish water)	-
A(F)*	Migrating between fresh water and marine water	Fresh water
A(B)*		Brackish water
A(M)*		Marine water
X	Insufficient information	

* Letter in parentheses indicates place of sampling.

Foodstuff sampled in either marine wildlife or terrestrial wildlife was identified as "1" in the "WL" field in the database.

Supplement 4:

Extract of the main table of the database, in Microsoft Excel format, for all foodstuff samples used in the UNSCEAR assessment, is available in digital format. See attachment 'C-8suppl' (UNSCEAR_2013A_C-8suppl_FAO_IAEA_foodstuff_database_reduced_version_2014-07.xlsx).

Supplement 5:

Number of foodstuff samples under UNSCEAR expert subgroup C2 (sub) categories, collected from 15 March 2011 until 15 March 2012 (Number in columns reflects the number of months after the accident)

C2_Category	C2_Subcategory	1	2	3	4	5	6	7	8	9	10	11	12	Total	% Total
Algae	Algae	5	3	16	2	16	19	16	43	53	33	48	65	*319*	*0.3%*
Cereals	Other cereals			11	64	84	6	132	151	40	2	8	9	*507*	*0.4%*
	Rice and rice products (excl oil)					61	1 731	1 948	107	54	24	52	33	*4 010*	*3.2%*
	Wheat and wheat products			1	78	153	15	8	20	31	8	22	9	*345*	*0.3%*
Eggs	Poultry eggs	20	14	6	22	28	45	25	44	60	34	81	74	*453*	*0.4%*
Food of mixed composition	Food of mixed composition								8	8	5	16	21	*58*	*0.0%*
Freshwater fish and shellfish	Crustaceans (freshwater)			1	2		1	2	1			1	3	*11*	*0.0%*
	Freshwater fish	10	18	102	99	70	89	56	50	61	17	63	185	*820*	*0.7%*
	Molluscs (freshwater)								2			2		*4*	*0.0%*
Fruits	Fresh and processed fruits	88	44	115	219	417	604	577	536	430	185	205	92	*3 512*	*2.8%*
	Juices							4	15	15	7	16	6	*63*	*0.1%*
Marine species (e.g. Fish and Shellfish)	Crustaceans (Marine)		4	4	3	12	14	20	22	17	10	27	26	*159*	*0.1%*
	Marine fish and migratory fish	82	140	173	270	271	481	742	1 054	783	448	1 010	764	*6 218*	*4.9%*
	Molluscs (marine)	14	20	49	48	57	86	88	116	116	63	178	121	*956*	*0.8%*
	Other marine species	2	1	14	16	13	14	7	5	7	3	12	5	*99*	*0.1%*
Meat	Beef / cattle	9	25	18	88	2 865	6 060	8 402	13 419	18 849	10 574	13 371	10 509	*84 189*	*66.9%*
	Other meat	1	4	3	1	5	63	91	87	117	64	91	23	*550*	*0.4%*
	Pork meat (excl wild boar)	26	19	16	25	43	57	55	57	64	35	76	69	*542*	*0.4%*
	Poultry	15		7	12	10	22	11	36	29	18	31	32	*223*	*0.2%*
Milk and dairy products	Milk	241	131	149	140	133	194	196	226	258	217	337	271	*2 493*	*2.0%*
	Other dairy products		5	8	11	29	9	35	16	73	17	58	28	*289*	*0.2%*
Mushrooms	Mushrooms	96	159	36	29	107	242	527	514	297	170	385	227	*2 789*	*2.2%*
Other plants	Other plants	37	29	21	16	15	100	173	455	352	55	52	52	*1 357*	*1.1%*
Unclassified	Unclassified product	1	72	171	185	167	106	1 579	379	160	116	114	107	*3 157*	*2.5%*
Vegetables	Leafy vegetables	621	548	481	243	64	90	128	293	300	154	301	275	*3 498*	*2.8%*
	Other vegetables	344	385	565	660	763	678	448	575	558	271	511	399	*6 157*	*4.9%*
	Root vegetables	8	60	71	219	99	177	390	565	514	239	384	322	*3 048*	*2.4%*

Grand Total: ***125 826*** ***100.0%***

Supplement 6:

Number of foodstuff samples, under UNSCEAR expert subgroup C3 (sub) categories, collected from 15 March 2011 until 15 March 2012 (Number in columns reflects the number of months after the accident)

C3_Category	C3_Subcategory	1	2	3	4	5	6	7	8	9	10	11	12	Total	% Total
Brackish ecosystems	Brackish wild	1	2	2	3	2	3	3	2	2	2	5	7	*34*	*0.0%*
Freshwater ecosystems	Freshwater aquaculture		2	23	25	21	13	22	14	23	10	30	39	*222*	*0.2%*
	Freshwater wild	10	16	80	78	49	73	37	39	36	8	33	149	*608*	*0.5%*
Marine ecosystems	Marine aquaculture				3	6	6	8	32	32	22	24	21	*154*	*0.1%*
	Marine wild	101	146	233	320	339	582	830	1 155	895	519	1 196	912	*7 228*	*5.7%*
Others	Others	263	201	275	271	243	385	1 896	833	794	519	851	648	*7 179*	*5.7%*
Terrestrial ecosystems	Cultivated mushrooms	96	157	36	28	91	142	311	402	267	167	372	221	*2 290*	*1.8%*
	Cultivated plants or crops	1 078	1 021	1 227	1 562	1 787	3 384	3 774	2 611	2 072	816	1 317	1 052	*21 701*	*17.2%*
	Domesticated animals	51	44	41	124	2 921	6 143	8 471	13 514	18 938	10 626	13 466	10 606	*84 945*	*67.5%*
	Unclassified mushrooms						4	7		4				*15*	*0.0%*
	Wild animals		4	3	1	2	59	87	84	115	63	88	22	*528*	*0.4%*
	Wild mushrooms		2		1	16	96	202	83	6		5	1	*412*	*0.3%*
	Wild plants	18	53	72	24		11	4	1	19	9	33	14	*258*	*0.2%*
Unclassified	Unclassified	2	33	46	12	5	2	8	26	43	8	32	35	*252*	*0.2%*

Grand total: *125 826* *100.0%*