

## JOINT FAO/IAEA PROGRAMME IN FOOD AND AGRICULTURE

- Activities of the Joint FAO/IAEA Division related to the Fukushima accident
- Recent initiatives with the joint FAO/WHO Codex Alimentarius Commission concerning the review of the Codex Guideline Levels for radionuclides in food



NERIS Topical Workshop on Management of Contaminated Goods; Madrid, 22 May 2013

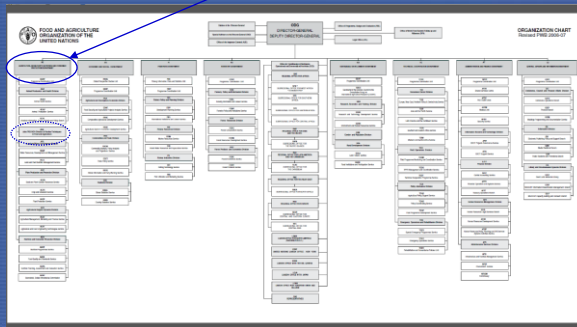


## JOINT FAO/IAEA PROGRAMME

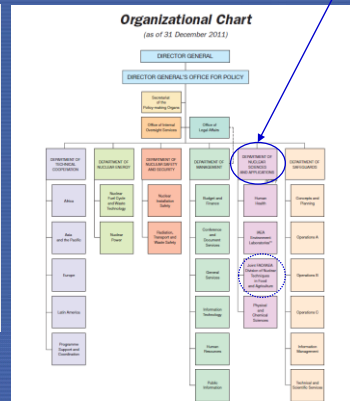
Who are we?

**FAO - ROME**  
 AGRICULTURE, BIOSECURITY, NUTRITION AND CONSUMER PROTECTION DEPARTMENT (AG)

**IAEA - VIENNA**  
 DEPARTMENT OF NUCLEAR SCIENCES AND APPLICATIONS



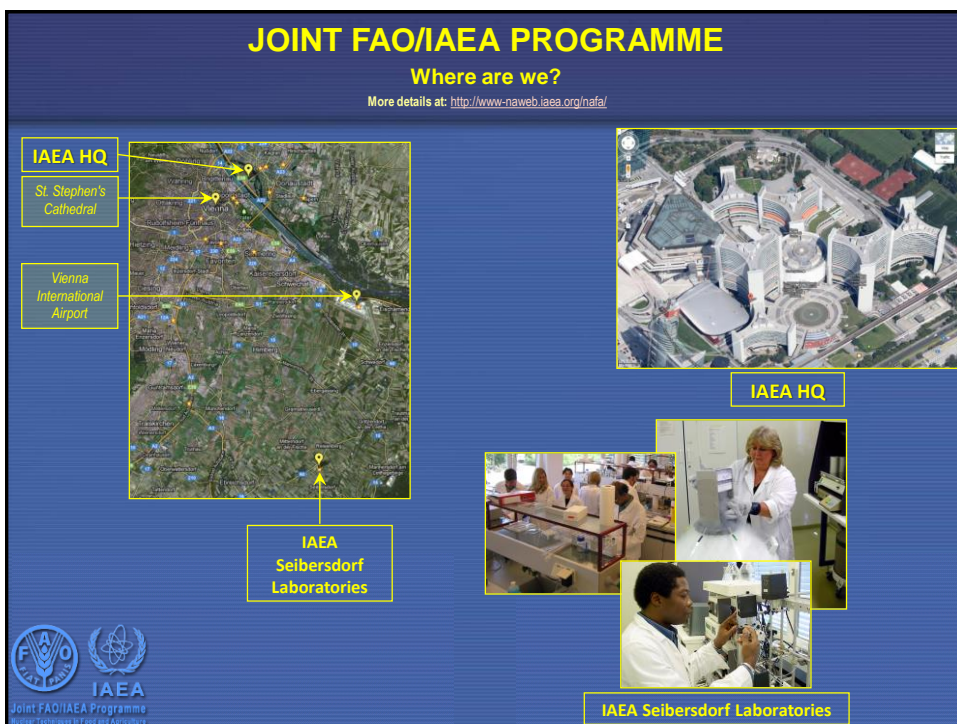
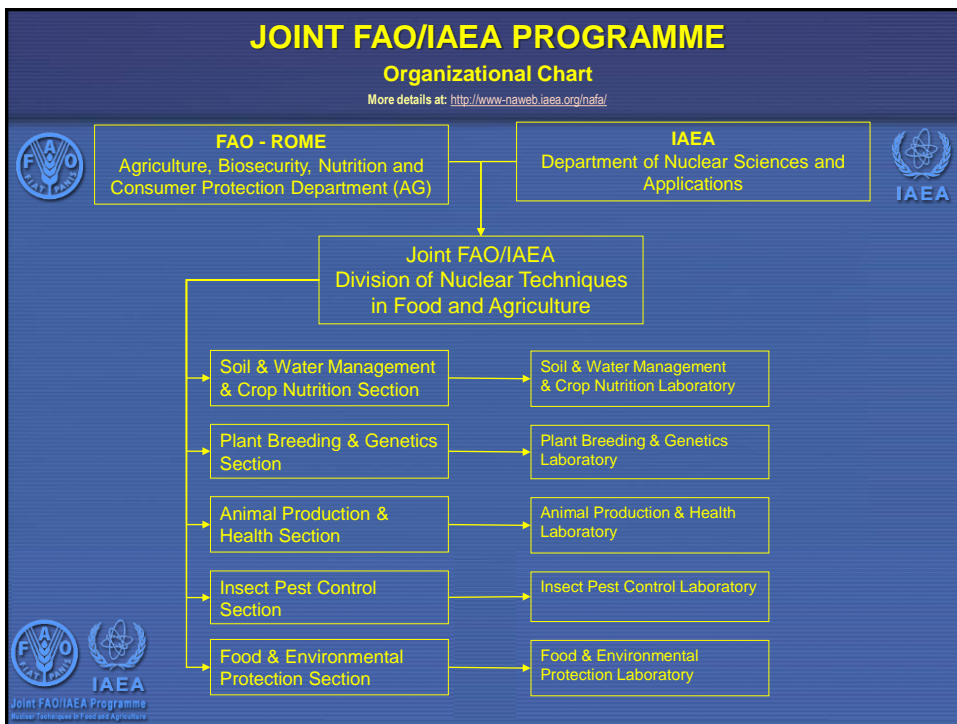
Source: [http://www.fao.org/unfao/bodies/council/c1131/org\\_chart1\\_en.pdf](http://www.fao.org/unfao/bodies/council/c1131/org_chart1_en.pdf)

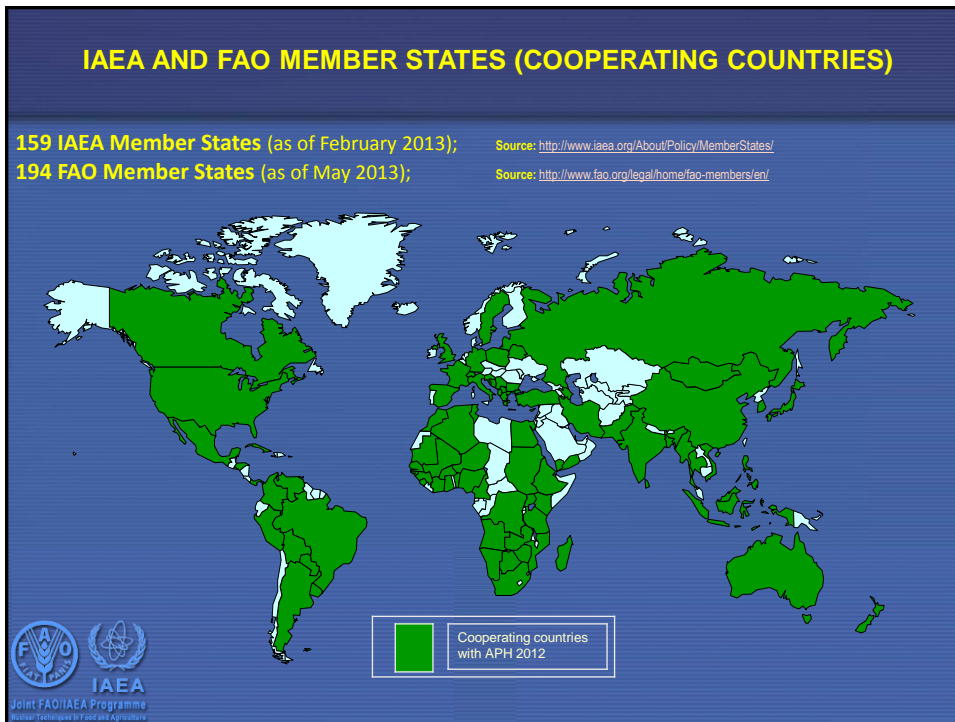


Source: <http://www.iaea.org/Publications/Reports/Anrep2011/orgchart.pdf>



**Acronyms:**  
 In FAO → AGE; in IAEA → NAFA  
 AGE = NAFA







## JOINT FAO/IAEA PROGRAMME

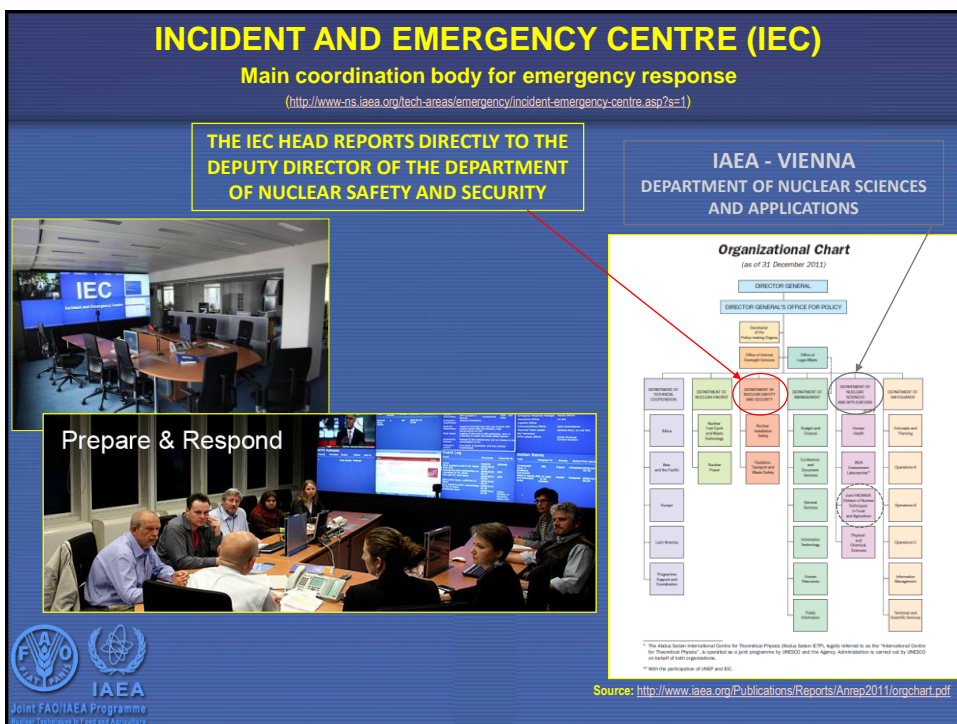
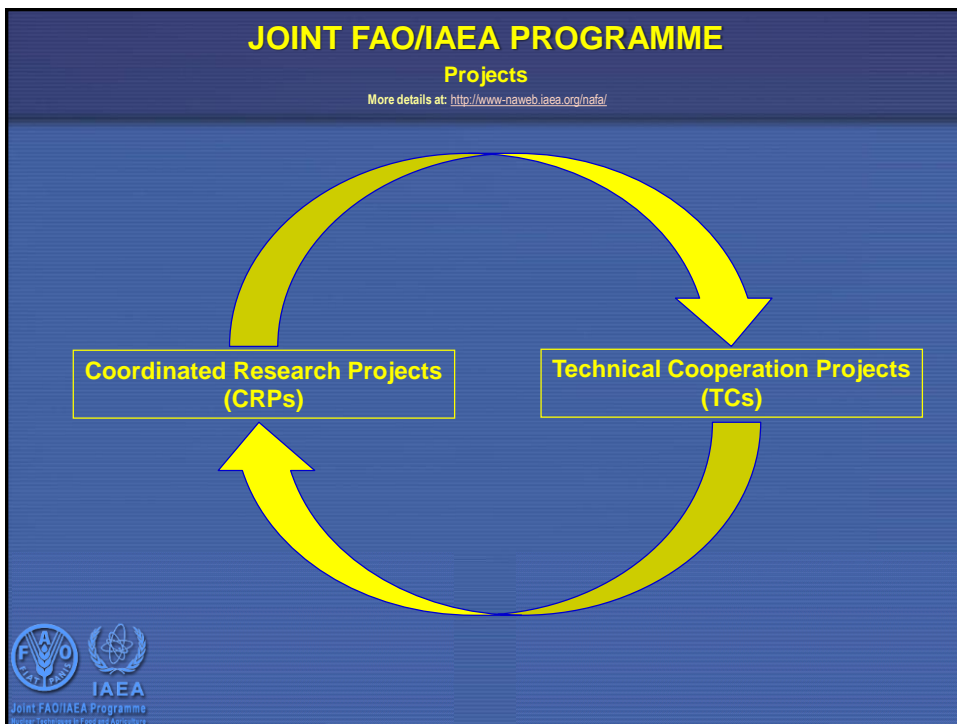
### Projects

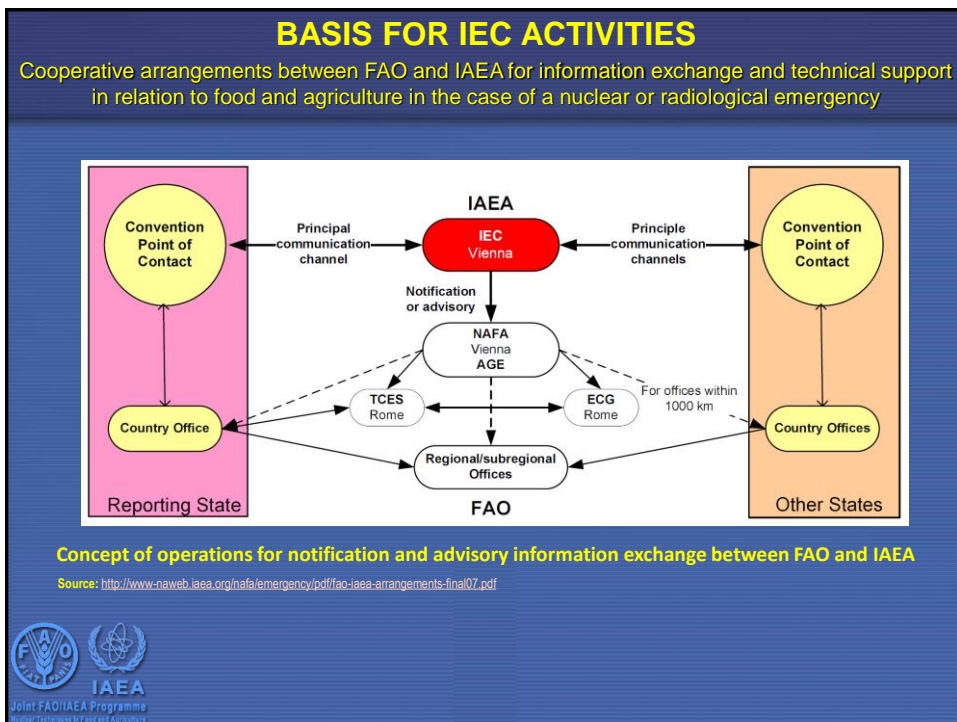
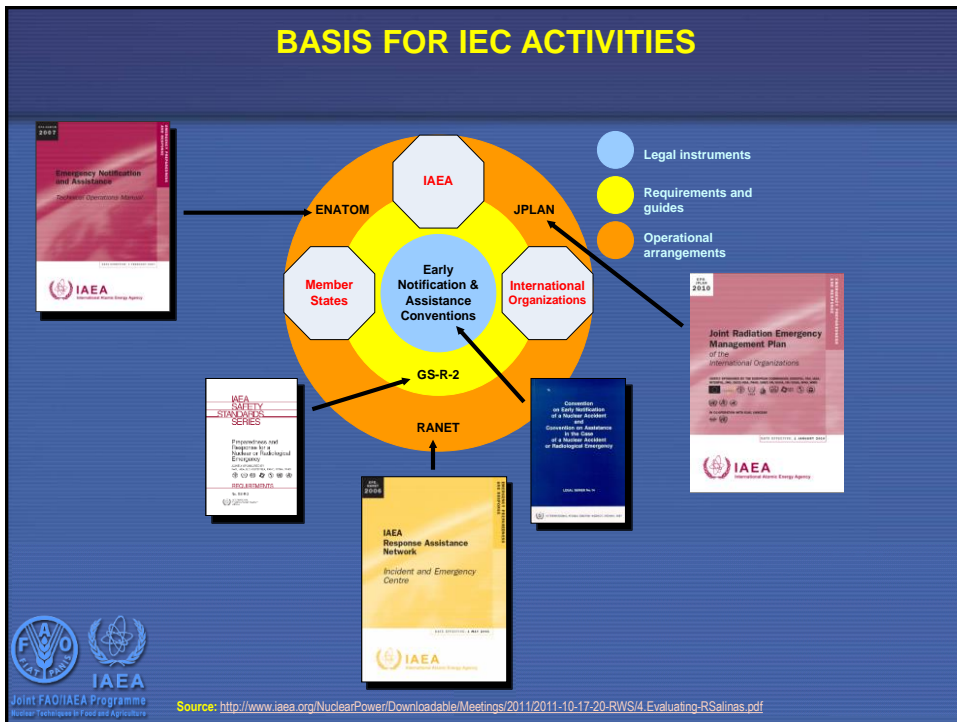
More details at: <http://www-naweb.iaea.org/nafa/>

Coordinated Research Projects (CRPs)	Technical Cooperation Projects (TCs)
<ul style="list-style-type: none"> <li>✓ Research based project</li> <li>✓ Single activity</li> <li>✓ Interest of contracting institute</li> <li>✓ Seed money for research</li> <li>✓ Not for capacity building</li> <li>✓ Call for specific CRPs</li> <li>✓ Direct submission to the IAEA</li> <li>✓ Approval based on technical merits</li> <li>✓ 5 years</li> <li>✓ Emphasis on technical results</li> </ul>	<ul style="list-style-type: none"> <li>✓ Transfer and adoption of proven technology</li> <li>✓ Variety of activities</li> <li>✓ Involves an array of stakeholders</li> <li>✓ Large amount of funds</li> <li>✓ Strong capacity building component</li> <li>✓ Applications on a 2-year cycle</li> <li>✓ Submission through the NLO</li> <li>✓ Approval based on country priorities</li> <li>✓ 2 – 3 years</li> <li>✓ Emphasis on implementation</li> </ul>

Joint FAO/IAEA Programme  
Nuclear Techniques in Food and Agriculture





## JOINT FAO/IAEA PROGRAMME

### Fukushima accident - Assignment of the Food Monitoring Team (FMT)

- ✓ FMT at the Joint FAO/IAEA Division established immediately after the Fukushima accident, upon decision of the Division Director Mr Qu Liang
- ✓ The assignment directly linked to the daily activities of the IEC
- ✓ Responsibilities:
  - ✓ Compiling data food monitoring received from the Ministry of Health, Labour and Welfare of Japan ([MHLW](#)), through the FAO INFOSAN network
  - ✓ Ensure the dissemination of information on food monitoring and food restrictions through the official IAEA channels  
(Reports published at: <http://www.iaea.org/newscenter/news/tsunamiupdate01.html>)
  - ✓ Provide assistance and advice for agricultural countermeasures and remediation strategies to mitigate immediate and longer term effects arising from radionuclide contamination
  - ✓ Interpretation of standards related to radiological contamination in food and agriculture
  - ✓ Standby preparedness to respond upon an IEC demand



## JOINT FAO/IAEA PROGRAMME

### Activities of the Joint FAO/IAEA Division related to the Fukushima accident Legal background

- **Convention on Early Notification and Assistance conventions** (<http://www-ns.iaea.org/conventions/emergency.asp>)
- **Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency**  
(<http://www-ns.iaea.org/conventions/emergency.asp>)
- **Joint Radiation Emergency Management Plan of the International Organizations (EPR JPLAN 2010), cosponsored by FAO** (<http://www-ns.iaea.org/tech-areas/emergency/inter-agency-matters.asp>)
- **Cooperative Arrangements between FAO and IAEA in Response to Nuclear or Radiological Emergencies** ([Weblink here](#))
- **Inter-Agency Committee on Radiological and Nuclear Emergencies (IACRNE)**  
(<http://www-ns.iaea.org/tech-areas/emergency/iacma/login.asp>)
- **FAO Food Chain Crisis Management Framework (FCC)**  
(<http://www.fao.org/foodchain/fcc-home/en/>)



## JOINT FAO/IAEA PROGRAMME

### Activities of the Joint FAO/IAEA Division related to the Fukushima accident

- **Participation and follow-up to the Joint FAO/IAEA Food Safety Assessment Mission to Japan (26-31 March 2011)**
    - Sampling and monitoring strategies
    - Analytical techniques
    - Data processing and interpretation
    - Agricultural product protection
    - Treatment of contaminated agricultural products
    - Remediation strategies and methodologies
  - **Participation and follow-up to the IAEA Mission on the Remediation of Large Contaminated Areas Off-Site the Fukushima Daiichi Nuclear Power Plant (7-15 October 2011)**
    - Institutional arrangements
    - Stakeholder involvement
    - Radiation protection
    - Remediation strategy implementation
      - Monitoring and mapping
      - Data management
      - Agricultural areas
      - Urban decontamination
      - Forest areas
      - Aquatic areas
      - Waste management
    - Technical meetings and visits
- (Web link to the report: [here](#))



## JOINT FAO/IAEA PROGRAMME

### Activities of the Joint FAO/IAEA Division related to the Fukushima accident

- **FAO Meeting on Internal Coordination - Preparedness and Response to Nuclear and Radiological Emergencies, was held at IAEA Headquarters in Vienna, Austria (30-31 May 2011)**
  - discuss intra-agency coordination, preparedness and response to nuclear and radiological emergencies
  - provide conclusions and recommendations in the context of lessons learned from the Fukushima nuclear emergency
- **FAO Technical Meeting on Preparedness and Response to Nuclear and Radiological Emergencies Affecting Food and Agriculture, including the Application of Agricultural Countermeasures and Remediation Strategies, 14-18 November 2011, FAO Headquarters in Rome, Italy**
- **Participated in and follows-up on the Joint WHO/FAO/IAEA International Experts Working Panel and on the First All-Expert Meeting for the United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR) Assessment of the Levels and Effects of Radiation Exposure**
- **Contributed to the preparation and dissemination of "questions and answers" related to food safety and the application of international standards, including the Joint FAO/WHO Codex Alimentarius Commission Guideline Levels for Radionuclides in Foods** (<http://www.naweb.iaea.org/nafa/faqs-food-agriculture.html>)
- **Developed technical project proposals related to the monitoring and remediation of agricultural lands in Fukushima prefecture.**
- **Supported the Environmental Radioactivity Capacity Building project of the MEXT (Ministry of Education, Culture, Sports, Science and Technology of Japan).**



## JOINT FAO/IAEA PROGRAMME

### Activities of the Joint FAO/IAEA Division related to the Fukushima accident Promoting knowledge & information sharing

- Promoted knowledge and information sharing on radioactive contamination affecting food and agriculture, including the mechanisms and persistence of such contamination, radionuclide transfer rates and international standards.

**BASIS – existing IAEA publications and safety standards:**

- **IAEA online library** (<http://www-pub.iaea.org/books/>)
- **IAEA Safety Standards** (<http://www-pub.iaea.org/books/IAEABooks/Series/33/Safety-Standards-Series>)
- Measurement of Radionuclides in Food and the Environment A Guidebook - Technical Reports Series 295 ([Web link](#))
- Guidelines for Remediation Strategies to Reduce the Radiological Consequences of Environmental Contamination - **Technical Reports Series 475** ([Web link](#))
- Handbook of Parameter Values for the Prediction of Radionuclide Transfer in Terrestrial and Freshwater Environments **Technical Reports Series 472** ([Web link](#))
- Remediation of Sites with Dispersed Radioactive Contamination **Technical Reports Series 424** ([Web link](#))
- Remediation of Sites with Mixed Contamination of Radioactive and Other Hazardous Substances **Technical Reports Series 442** ([Web link](#))




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Nuclear Techniques in Food and Agriculture

## FUKUSHIMA NUCLEAR ACCIDENT



### Development of the food monitoring database

- ✓ Food monitoring data submitted via the FAO INFOSAN Network to IEC / IAEA
- ✓ Records submitted in MS Excel format (unstandardized data formatting)
- ✓ Records used for daily, weekly and monthly reporting to Member States via official IAEA channels (<http://www.iaea.org/newscenter/news/tsunamiupdate01.html>).
- ✓ One year time-frame (15 March 2011- 14 March 2012)
- ✓ Total 125.826 records, each with over 40 attributes, <sup>131</sup>I, <sup>134</sup>Cs and <sup>137</sup>Cs measured in food products for human consumption

**Main goal:**

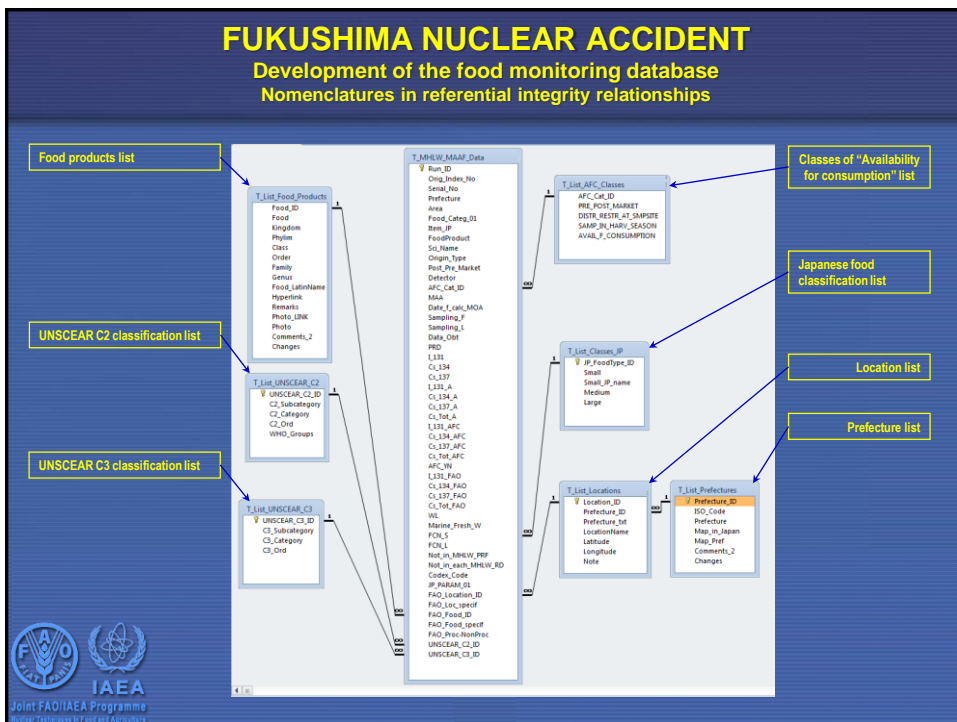
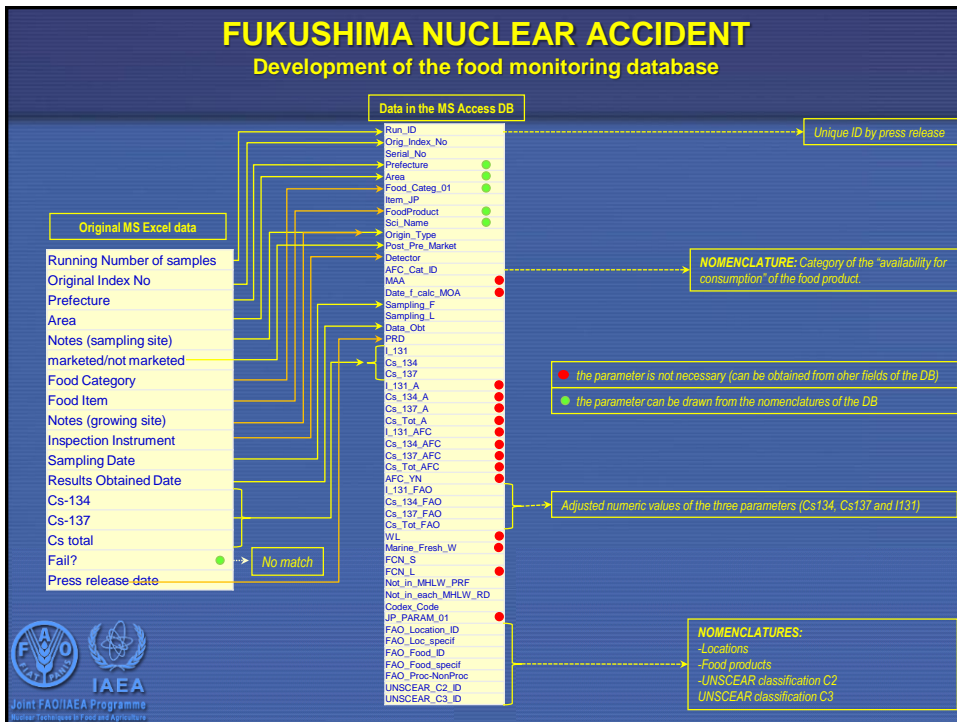
- ✓ Support the UNSCEAR assessment of exposure and dose assessment for the public and environment

Ranking Number of samples	Original Index No.	Press Release Date	Prefecture	Area	marketed/n of market	Date sampled	Food Product	Inspection Instrument	I-131	Cs-134	Cs-137	Cs total	Fail?
10	89989	04-Jan-12	Iwate	Oshu-shi		27-Dec-11	beef			<25	<25	ND	
11	89990	04-Jan-12	Iwate	Oshu-shi		27-Dec-11	beef			88.8	99.7	188.5	
12	89991	04-Jan-12	Iwate	Kutumaki-machi		27-Dec-11	beef			<25	<25	ND	
13	89992	04-Jan-12	Iwate	Hachimantai-shi		27-Dec-11	beef			<25	<25	ND	
14	89993	04-Jan-12	Iwate	Hachimantai-shi		27-Dec-11	beef			<25	<25	ND	
15	89994	04-Jan-12	Iwate	Takizawa-mura		27-Dec-11	beef			<25	<25	ND	
16	89995	04-Jan-12	Iwate	Yamada-machi		27-Dec-11	beef			<25	<25	ND	
17	89996	04-Jan-12	Iwate	Otsuchi-cho		27-Dec-11	beef			<25	<25	ND	
18	89997	04-Jan-12	Iwate	Kutumaki-machi		27-Dec-11	beef			<25	<25	ND	
19	89998	04-Jan-12	Iwate	Oshu-shi		27-Dec-11	beef			84.1	100	187.1	
20	89999	04-Jan-12	Iwate	Kutumaki-machi		28-Dec-11	beef			<25	<25	ND	
21	90000	04-Jan-12	Iwate	Kutumaki-machi		28-Dec-11	beef			<25	<25	ND	
22	90001	04-Jan-12	Iwate	Ichinohe-machi		28-Dec-11	beef			<25	<25	ND	
23	90002	04-Jan-12	Iwate	Kutumaki-machi		28-Dec-11	beef			<25	<25	ND	
24	90003	04-Jan-12	Iwate	Ichinoseki-shi		28-Dec-11	beef			<25	<25	ND	

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## FUKUSHIMA NUCLEAR ACCIDENT

### Development of the food monitoring database

#### RESULT:

- ✓ Referential integrity database developed by the FMT at the Joint FAO/IAEA Division
- ✓ Main table (original data) maintained
- ✓ Seven external tables, containing nomenclatures linked to the main table using unique ID entries
- ✓ Main table 125.826 entries (records), each with over 40 attributes for the 1 year timeframe.

#### NOMENCLATURE LISTS:

- ✓ Availability for consumption list (7 categories, each with 4 attributes)
  - ✓ Location list with 1.076 sampling locations, each with geo-coordinates
  - ✓ Prefecture list of 47 prefectures
  - ✓ Food product list with 655 food products with taxonomy (where applicable)
  - ✓ Japanese categorization list: 87 small, 34 medium, 19 large categories
  - ✓ UNSCEAR C2 categorization list: 13 categories, 27 subcategories
  - ✓ UNSCEAR C3 categorization list: 6 categories, 14 subcategories
- ✓ Established relationships enabling multiple-purpose reporting at individual and cumulative level.



## FUKUSHIMA NUCLEAR ACCIDENT

### Development of the food monitoring database

#### Availability for consumption table

AFC_Cat	PRE_POST_MARKET	DISTR_RESTRICT_AT_SMP SITE	SAMP_IN_HARV_SEASON	AVAIL_F_CONSUMPTION
0	Pre-marketed	No	No	No
1	Pre-marketed	No	Yes	Yes
2	Pre-marketed	Yes	Yes or No	No
3	Pre-marketed	Yes	Yes or No	Yes
4	Pre-marketed	No	Yes	Yes
5	Pre-marketed	No	Yes	Yes
6	Pre-marketed	Yes or No	No	No
M	Post-marketed	No	Yes	Yes



## FUKUSHIMA NUCLEAR ACCIDENT Development of the food monitoring database

### Japanese large classification (n=20)

Large	Subclasses JP
Algae 9	1
Beverages 16	6
Cereal 1	12
Confectioneries 15	5
Eggs 12	1
Fats and Oils 14	5
Fish and Shellfishes 10	13
Food for Spicified Health	1
Fruits 7	7
Meats 11	9
Milk 13	5
Mushrooms 8	1
Nuts and Seeds 5	1
Potatoes and Starches 2	4
Pulses 4	6
Seasonings and spices 17	7
Sugar and Sweetner 3	1
Unknown Nr 100	1
Unknown Nr 200	1
Vegetables 6	14

### Japanese medium classification (n=36)

Medium	Subclasses JP
Alcoholic beverages 30	1
Algae 18	1
Animal meats 21	4
Chicken and poultrys 22	2
Confectioneries 29	5
Eggs 25	1
Fats and Oils 28	5
Food for Spicified Health Use and other	1
Fresh Fruit /Fruit juice beverages 16	1
Fruits 34	5
Green and yellow vegetables 10	5
Jams 15	1
Meats (Offals) 23	1
Milk and dairy products 26	4
Mushrooms 17	1
Nuts and Seeds 9	1
Other beverages 31	3
Other cereals/Other cerealsproducts 3	3
Other pulses and its products 8	1
Other vegetables 11	6
Others 24	2
Others 27	1
Pickles 13	2
Potatoes and Starches 4	3
Raw fishes and shellfishes 19	8
Rice/Rice Products 1	2
Seafood, processed products 20	5
Seasonings 32	6
Soybean and, Soybean products 7	5
Spices and others 33	1
Starch / Starch products 5	1
Sugar and Sweetner 6	1
Unknown Nr 100	1
Unknown Nr 200	1
Vegetable juices 12	1
Wheat/Wheat products 2	7

### Japanese small classification (n=101)

Small	Subclasses JP
Age (Fried Tofu) 20	1
Algae 47	1
Animal fats 79	1
Apple 42	1
Banana 41	1
Beefs 61	1
Beer 67	1
Biscuits 63	1
Bread (except Japanese buns) 4	1
Buckwheat/buckwheatproducts 10	1
Butters 76	1
Cabbage 30	1
Cakes and pastries 82	1
Candies 64	1
Carrot 26	1
Cheese 72	1
Chicken 65	1
Chinese Cabbage 34	1
Chinese Noodles 7	1
Citrus fruits 40	1
Coffees and cocoas 90	1
Com/Com products 11	1
Cucumber 31	1
Daikon(Japanese white radish) 32	1
Eggs 70	1
Fermented milk and lactic acid bacteria bever	1
Fish ham and sausage 60	1
Flour 3	1
Food for Spicified Health Use and others 99	1
Fresh Fruit/Fruit juice beverages 45	1
Hams and sausages 63	1
Jams 44	1
Japanese buns 5	1
Japanese white radish and others 38	1
Leaf vegetables 37	1
Mackerels, Sardines 48	1
Margarines 77	1
Mayonnaise 55	1
Meats (Offals) 67	1
Milk 71	1
Miso 66	1

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## FUKUSHIMA NUCLEAR ACCIDENT Development of the food monitoring database

### UNSCEAR C2 expert group (13 categories, 27 subcategories)

C2_C	C2_Category	C2_Subcategory
1	Algae	Algae
1	Vegetables	Leafy vegetables
1	Vegetables	Other vegetables
1	Vegetables	Root vegetables
2	Mushrooms	Mushrooms
3	Fruits	Fresh and processed fruits
3	Fruits	Juices
4	Marine species (e.g. Fish and Shellfish)	Crustaceans (Marine)
4	Marine species (e.g. Fish and Shellfish)	Marine fish and migratory fish
4	Marine species (e.g. Fish and Shellfish)	Molluscs (marine)
4	Marine species (e.g. Fish and Shellfish)	Other marine species
5	Freshwater fish and shellfish	Crustaceans (freshwater)
5	Freshwater fish and shellfish	Freshwater fish
5	Freshwater fish and shellfish	Molluscs (freshwater)
6	Meat	Beef / cattle
6	Meat	Other meat
6	Meat	Pork meat (excl wild boar)
6	Meat	Poultry
7	Eggs	Poultry eggs
8	Milk and dairy products	Milk
8	Milk and dairy products	Other dairy products
9	Cereals	Other cereals
9	Cereals	Rice and rice products (excl oil)
9	Cereals	Wheat and wheat products
10	Food of mixed composition	Food of mixed composition
11	Other plants	Other plants
12	Unclassified	Unclassified product

### UNSCEAR C3 expert group (6 categories, 14 subcategories)

C3_Ord	C3_Category	C3_Subcategory
1	Terrestrial ecosystems	Cultivated mushrooms
1	Terrestrial ecosystems	Cultivated plants or crops
1	Terrestrial ecosystems	Domesticated animals
1	Terrestrial ecosystems	Unclassified mushrooms
1	Terrestrial ecosystems	Wild animals
1	Terrestrial ecosystems	Wild mushrooms
1	Terrestrial ecosystems	Wild plants
2	Marine ecosystems	Marine aquaculture
2	Marine ecosystems	Marine wild
3	Freshwater ecosystems	Freshwater aquaculture
3	Freshwater ecosystems	Freshwater wild
4	Others	Others
5	Brackish ecosystems	Brackish aquaculture
5	Brackish ecosystems	Brackish wild
6	Unclassified	Unclassified

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## FUKUSHIMA NUCLEAR ACCIDENT

### Development of the food monitoring database



#### Location list (1087 entries with unique ID)

Location_ID	Prefecture_ID	LocationName	FAO_LPK_ID	Latitude	Longitude
879	9	Aizubara	sho	44.626229°	144.27398°
1	4	Aikba	sho	35.864127°	140.02321°
1237	9	Abira	sho	42.762384°	141.81805°
745	16	Aishi	mura	35.841768°	137.74750°
2	24	Adachi	ku	35.775464°	139.804679°
3	20	Agai	machi	37.618399°	139.490761°
4	20	Agano	sho	37.834021°	139.22085°
992	18	Agematsu	machi	35.784078°	137.694069°
491	21	Ageo	shi	35.977380°	139.59320°
5	13	Aikawa	machi	35.528790°	139.35371°
6	6	Aizubange	machi	37.561481°	139.82154°
7	6	Aizumimachi	machi	37.438504°	139.84111°
8	6	Aizuumematsu	shi	37.494761°	139.92503°
771	3	Ajigasawa	machi	40.779922°	140.20809°
11	30	Akashi	shi	34.641209°	134.9737°
12	24	Akatsubo	shi	35.728920°	139.254120°
13	24	Akushima	shi	35.700755°	139.35354°
895	2	Akita	shi	39.720000°	140.30200°
14	9	Akashi	sho	43.051870°	144.84796°
1099	11	Ama	sho	36.090271°	133.09709°
15	11	Aomi	machi	36.030769°	140.21478°
772	30	Anamizu	machi	37.230995°	139.91249°
773	18	Anan (Nagano)	sho	35.235467°	137.65053°
1015	48	Anan (Fukushima)	shi	33.921748°	143.65946°
16	1	Anjo	shi	34.958441°	137.08029°
17	8	Annaka	shi	36.526360°	139.88726°
878	18	Aoki	mura	36.370341°	139.12883°
879	3	Aomori (Aomori)	shi	40.822072°	140.74764°
1086	40	Arigaonawa	sho	34.960327°	135.24431°
1027	10	Asago	shi	35.338685°	134.85335°
19	4	Asahi (Chiba)	shi	35.726144°	140.46646°
449	18	Asahi (Nagano)	mura	36.120313°	137.86611°
774	30	Asahi (Toyama)	machi	35.460246°	139.90311°
900	20	Asahi (Nagasaki)	machi	38.280240°	140.60000°
1108	9	Asahikawa	shi	43.770634°	142.34481°
20	21	Asaka	shi	35.797252°	139.93999°
21	6	Asakawa	machi	37.089195°	140.43300°
1109	35	Asakura	shi	33.423412°	139.66570°
22	23	Asahiaga	shi	36.348100°	139.44800°
1110	9	Asahiya	shi	41.348401°	141.59390°
23	13	Asahiya	shi	35.443082°	139.36248°
1118	9	Asahiya	sho	42.726662°	141.87790°
1013	43	Asahiya	shi	34.691443°	134.74450°

#### Prefecture list (47 entries with unique ID)

Prefecture_ID	ISO_Code	Prefecture
1	JP-01	Aichi
2	JP-02	Aomori
3	JP-03	Chiba
4	JP-04	Ehime
5	JP-05	Fukui
6	JP-06	Fukushima
7	JP-07	Gifu
8	JP-08	Gunma
9	JP-09	Hiroshima
10	JP-10	Hokkaido
11	JP-11	Iwate
12	JP-12	Ishikawa
13	JP-13	Ishizu
14	JP-14	Iwate
15	JP-15	Kanagawa
16	JP-16	Kyoto
17	JP-17	Miyagi
18	JP-18	Miyazaki
19	JP-19	Multiple pref.
20	JP-20	Nagano
21	JP-21	Nagasaki
22	JP-22	Nara
23	JP-23	Niigata
24	JP-24	Oita
25	JP-25	Osaka
26	JP-26	Okazawa
27	JP-27	Oosaka
28	JP-28	Saga
29	JP-29	Saitama
30	JP-30	Shiga
31	JP-31	Shimane
32	JP-32	Shizuoka
33	JP-33	Tochigi
34	JP-34	Tokushima
35	JP-35	Tokyo
36	JP-36	Fukuoka
37	JP-37	Yamaguchi
38	JP-38	Yamaguchi
39	JP-39	Yamaguchi
40	JP-40	Yamaguchi
41	JP-41	Yamaguchi
42	JP-42	Yamaguchi
43	JP-43	Yamaguchi
44	JP-44	Yamaguchi
45	JP-45	Yamaguchi
46	JP-46	Yamaguchi
47	JP-47	Yamaguchi

← 1 →

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## FUKUSHIMA NUCLEAR ACCIDENT

### Development of the food monitoring database

#### DATABASE NORMALIZATION:

#### JOINT FAO/IAEA DIVISION

- ✓ Ivancho Naletoski,
- ✓ Gerd Dercon,
- ✓ Carl Blackburn
- ✓ David Byron
- ✓ Stephan Nielsen

#### MINISTRY OF AGRICULTURE, FORESTRY AND FISHERIES (MAFF), TOKYO, JAPAN



- ✓ Yukiko Yamada
- ✓ Hiroki Ishida

#### UNSCEAR

- ✓ Jane Simmonds
- ✓ Philippe Verger

- ✓ Formatting source data to an appropriate format, acceptable for MS Access
- ✓ Multiple check-ups of the data consistency
- ✓ Purifying nomenclature lists
  - Locations, food products
  - Setting-up classification lists
  - Assigning taxonomy of food products (where appropriate)
- ✓ Setting-up queries for final consistency check-up

#### EXTENSIVE LONG TERM DEMAND FOR THE WHOLE TEAM!

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## FUKUSHIMA NUCLEAR ACCIDENT

### Development of the food monitoring database

#### Main switchboard

#### Datasheet reports

#### Graphical reports

#### Reports on the events at geographical level

**List of Prefectures (POSITIVE)**

Prefecture:

ISO\_Code JP-11

Locations and samples: Total locations: 70, Total samples: 3245

Status of all samples in the prefecture: Sampled\_From: 2011, Sampled\_To: 2012

#### Reports on events at food product level

**Foodstuffs (ONLY POSITIVE)**

Foodstuffs:

Food\_ListName: Auricularia auricula-japonica

Hyperlink: [http://www.fao.org/docstore/2012/20120101\\_01.pdf](http://www.fao.org/docstore/2012/20120101_01.pdf)

Number of Prefectures: 1, Number of Samples: 1

Joint FAO/IAEA Programme  
Nuclear Techniques in Food and Agriculture

## FUKUSHIMA NUCLEAR ACCIDENT

### Support the UNSCEAR assessment of radiation doses for public and environment

**UNITED NATIONS** **NATIONS UNIES**

**UNITED NATIONS SCIENTIFIC COMMITTEE ON THE EFFECTS OF ATOMIC RADIATION (UNSCEAR)**

VIENNA INTERNATIONAL CENTRE  
P.O. BOX 100, A-1400 VIENNA, AUSTRIA

TEL: (043 1) 29690-4000  
E-MAIL: [secret@unscear.org](mailto:secret@unscear.org)

TEL: (043 1) 29690-1000  
WEB SITE: [www.unscear.org](http://www.unscear.org)

8 December 2012

Dear Mr. Qu Liang,

Thank you for your letter of 25 September 2012 regarding the database on radionuclide concentrations in foodstuffs from Japan in the context of the Fukushima nuclear accident (March 2011–March 2012). On behalf of the Scientific Committee, I would like to express my sincere gratitude for the support and efforts of your staff involved in developing the database, which has become an essential tool for the ongoing UNSCEAR assessment of the levels and effects of radiation exposure due to the nuclear accident after the 2011 great east-Japan earthquake and tsunami.

I know that the database was established through intense efforts of many people of several organizations under the guidance of FAO/IAEA. It is impressive that approximately 126,000 records on radionuclide concentrations in over 200 types of foodstuffs in all 47 prefectures in Japan have been collected in collaboration with the Japanese authorities, including the Ministry of Agriculture, Forestry and Fisheries (MAFF). I understand that these data were provided through the FAO/WFP International Food Safety Authorities Network (INFOSAN) based on information published and provided by the Japanese Ministry of Health, Labour and Welfare (MHLW) and compiled by the Joint FAO/IAEA Division of Nuclear Techniques in Food and Agriculture.

I can assure you that the database was made available to the respective Expert Groups for the UNSCEAR Fukushima assessment in September 2012 and is now being used for the assessment of radiation doses for the public and the environment. This assessment, which will include information on how the database was developed, will be submitted to the Scientific Committee at its next session in May 2013 at which the Committee is expected to finalize its evaluation for the United Nations General Assembly. The final report to the Assembly will acknowledge the contribution made by your staff to this assessment.

Once again, let me thank you and your staff for the dedication and contribution to this important work, and for the excellent collaboration between UNSCEAR and the Joint FAO/IAEA Division.

Yours sincerely,

Miklos Csik, Secretary  
United Nations Scientific Committee  
on the Effects of Atomic Radiation

Mr. Qu Liang  
Director  
Joint FAO/IAEA Division  
of Nuclear Techniques in Food and Agriculture  
Vienna  
Email: [q.liang@iaea.org](mailto:q.liang@iaea.org)

cc: Dr. Wolfgang Weiss ([wolfgang.weiss@protonmail.com](mailto:wolfgang.weiss@protonmail.com))

Joint FAO/IAEA Programme  
Nuclear Techniques in Food and Agriculture

## FUKUSHIMA NUCLEAR ACCIDENT

### Future considerations

Are the common (global) nomenclatures possible and useful?

- **Common location nomenclatures on a cloud server**
  - Update of the records according to an SOP by authorized personnel
  - Use existing nomenclatures of vector layer shape files, available free online (<http://www.gadm.org/>)
  - The use of field devices for initial data entry (cell phones, PDAs; <http://www.droiddb.com/>)
  - Use of build in grid-lines instead of degrees and/or administrative borders (Google Maps / Google Earth).
  - Use GPS to filter entry data (location, administrative area, designated inspection, designated laboratories etc)
- **Fine tuning of the food product nomenclature**
  - Subdivide the parts of the food products?*
    - Food product:* horse radish; *Sample:* root or leaf;
    - Food product:* Salmon; *Sample:* liver
  - Subdivide the according to processing type?*
    - boiled
    - fried
    - pickled
  - Automatic classification (assign the food product into appropriate classification group)?*
  - Predefined formatting for individual entry fields?*
  - Other relevant subdivisions?*

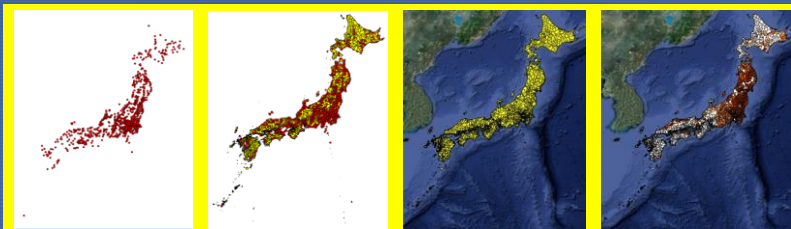
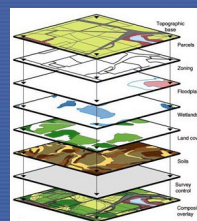


## FUKUSHIMA NUCLEAR ACCIDENT

### Future considerations

Can they facilitate emergency response, information exchange and transparency?

- Possible multi layer reporting = multi sectorial analysis?
- Use of single-source nomenclatures (cloud servers)?
- Link multiple databases on single nomenclatures?
- Convention on reporting systems (parameters and data formats)?
- Shift from multi-step to single step (or no step) mapping solutions (live update)
- Use free software for transfer of suitable solutions to Member States
  - use of free web software resources?
  - support consortia that produce serious freeware in this area?



## RECENT INITIATIVES WITH THE JOINT FAO/WHO CODEX ALIMENTARIUS COMMISSION CONCERNING THE REVIEW OF THE CODEX GUIDELINE LEVELS FOR RADIONUCLIDES IN FOOD

### PARTS OF THIS COMPONENT:

1. Joint FAO/WHO Food Standards Programme; Codex Committee On Contaminants In Foods; Seventh Session; Moscow, Russian Federation, 8 – 12 April 2013 ([Web Link](#))
2. Proposed draft revision of guideline levels for radionuclides in foods ([Web Link](#))
3. Matters of interest arising from other International Organizations activities of the Joint FAO/IAEA Division of Nuclear Techniques in Food and Agriculture relevant to Codex work (in continuation)



## RECENT INITIATIVES WITH THE JOINT FAO/WHO CODEX ALIMENTARIUS COMMISSION CONCERNING THE REVIEW OF THE CODEX GUIDELINE LEVELS FOR RADIONUCLIDES IN FOOD

### 1. The Joint FAO/IAEA Division promotes the mandates of both , the FAO and IAEA for over 50 years

*For almost 50 years, the Joint FAO/IAEA Division of Nuclear Techniques in Food and Agriculture (the Joint FAO/IAEA Division) has uniquely promoted the mandates of both FAO, in its efforts to eliminate world hunger and reduce poverty through sustainable agricultural and rural development, improved nutrition and food security, and the International Atomic Energy Agency (IAEA), through peaceful uses of atomic energy to accelerate and expand the contributions of nuclear technologies to promote global health and prosperity.*

### 2. The mission of the Joint FAO/IAEA Division to strengthen for use of nuclear techniques capacities in Member States

*The mission of the Joint Division is to strengthen capacities for the use of nuclear techniques for sustainable food security and to disseminate these techniques through international activities in research, training and outreach in its Member States. The Joint Division consists of five sections on food and environmental protection, soil and water management, plant breeding and genetics, animal production and health, and insect pest control.*

### 3. The Joint FAO/IAEA Division to strengthen the efforts with sister divisions in FAO to improve food safety

*The Joint Division will continue to strengthen its joint efforts with sister divisions in FAO Headquarters to improve food safety, protect consumer health, and facilitate international agricultural trade by providing assistance in four main areas, namely, coordinating and supporting research, providing technical and advisory services, providing laboratory support and training, and collecting, analyzing and disseminating information. The activities related to the work of Codex are the use of ionizing radiation, the control of food contaminants, and the management of nuclear and radiological emergencies affecting food and agriculture.*



## RECENT INITIATIVES WITH THE JOINT FAO/WHO CODEX ALIMENTARIUS COMMISSION CONCERNING THE REVIEW OF THE CODEX GUIDELINE LEVELS FOR RADIONUCLIDES IN FOOD

### PREPAREDNESS AND RESPONSE TO NUCLEAR AND RADIOLOGICAL EMERGENCIES AFFECTING FOOD AND AGRICULTURE

#### 4. FAO works with IAEA through the Joint FAO/IAEA Division on preparedness and response to nuclear emergencies

*FAO works in partnership with the IAEA through the Joint FAO/IAEA Division in preparing for and responding to nuclear or radiological emergencies affecting food and agriculture, including the application of FAO capabilities as a critical counterpart in defining and implementing agricultural countermeasures and remediation strategies in response to such events.*

#### 5. The Joint FAO/IAEA Division works under the recognized international conventions, documents and standards

*These activities are carried out within the context of FAO obligations as a full party to the [Convention on Early Notification of a Nuclear Accident and on Assistance in the Case of a Nuclear Accident or Radiological Emergency](#), and under the FAO cosponsored [Joint Radiation Emergency Management Plan of the International Organizations \(EPR JPLAN 2010\)](#), which provides the management tools for coordinating international organization arrangements in preparing for, and responding to, nuclear and radiological emergencies. These practical arrangements are also reflected in the [Cooperative Arrangements between FAO and IAEA in Response to Nuclear or Radiological Emergencies](#).*



## RECENT INITIATIVES WITH THE JOINT FAO/WHO CODEX ALIMENTARIUS COMMISSION CONCERNING THE REVIEW OF THE CODEX GUIDELINE LEVELS FOR RADIONUCLIDES IN FOOD

### Criteria for Food and Drinking (Potable) Water Contaminated as a Result of a Nuclear or Radiological Emergency

#### 6. After the Fukushima accident, Japanese Government introduces measures to minimize the risk for human health

*In the immediate aftermath of the Fukushima accident in March 2011, considerable attention focused on the radioactive contamination of food produced in Japan and sold on national and international markets. Japan quickly introduced restrictions on the distribution and consumption of contaminated food, milk and drinking (potable) water in terms of operational intervention levels and an extensive monitoring programme was put in place. Monitoring programmes were also put in place by importing countries which were often based on guidelines for international trade set by the Joint FAO/WHO Codex Alimentarius Commission. In April 2012 Japan revised downwards the maximum permitted concentrations in foodstuffs. In general, the values of activity concentrations established by Japan are lower than those recommended by international organizations for application within the accident state and state(s) impacted by a release following a nuclear or radiological emergency.*

#### 7. The criteria for the restriction are presented in IAEA safety standards

*The criteria for the restriction of consumption of contaminated food, milk and water within the accident state and state(s) impacted by a release following a nuclear or radiological emergency (both in terms of generic criteria expressed in dose and in operational intervention levels expressed in measurable quantities) are presented in the [IAEA Safety Standard on Criteria for Use in Preparedness and Response for a Nuclear or Radiological Emergency \(GSG-2\)](#), co-sponsored by FAO, IAEA, ILO, PAHO and WHO.*

#### 8. In June 2012 IAEA Radiation Safety Standards Committee (RASSC) discusses the reference levels, in July 2012 Codex Alimentarius Commission initiated a review of the guideline levels for radionuclides

*During its 32<sup>nd</sup> meeting in June 2012, the RASSC had detailed discussions on reference levels for foodstuffs contaminated as a result of a nuclear or radiological emergency, with particular reference to the situation in Japan following the Fukushima accident. In July 2012 the Joint FAO/WHO Codex Alimentarius Commission initiated a review of its guideline levels for radionuclides in foods contaminated following a nuclear or radiological emergency and applicable to foods traded internationally. The contamination of foodstuffs was also discussed at the 17<sup>th</sup> Inter-Agency Committee on Radiation Safety and at the 33<sup>rd</sup> RASSC meeting, both held in November 2012.*





## RECENT INITIATIVES WITH THE JOINT FAO/WHO CODEX ALIMENTARIUS COMMISSION CONCERNING THE REVIEW OF THE CODEX GUIDELINE LEVELS FOR RADIONUCLIDES IN FOOD

### 9. During Fukushima Ministerial Conference in December 2012, the Chairperson suggests to secure conformity with the reference values for radioactive substances

*This topic was also considered at the Fukushima Ministerial Conference on Nuclear Safety held in Japan from 15-17 December 2012, specifically in presentations by FAO and WHO. The Chairperson's summary of Working Session 3 reports that "it is important to globally strengthen methods for monitoring food, including agricultural and fishery products, at every stage of production and distribution, to secure conformity with the reference values related to radioactive substances in food in affected regions."*

### 10. There are several sets of international standards for various purposes

*Currently there are several sets of international standards for radioactive substances in food and drinking (potable) water which are to be used in an emergency but for various purposes, for example, (i) for restriction of consumption of contaminated food, milk and water within the accident state and state(s) impacted by a release following a nuclear or radiological emergency and (ii) for foodstuffs traded internationally, which have been contaminated following a nuclear or radiological emergency. These standards differ in values of dose which are set as criteria for the population of an accident state(s) in an emergency and for non-affected countries.*

### 11. RASSC identifies that greater clarity among Member States is required in order to improve the harmonization

*In addition, there are international standards for radioactive substances in food and drinking (potable) water to be applied in existing exposure situations. Further confusion is caused as some States have established a different set of numerical values for specific radionuclides, for example due to different food production and consumption patterns. The discussions at RASSC have identified a critical need on the part of Member States for greater clarity in relation to the use of the various national and international standards that are currently in place as a first step towards improved harmonization.*



## RECENT INITIATIVES WITH THE JOINT FAO/WHO CODEX ALIMENTARIUS COMMISSION CONCERNING THE REVIEW OF THE CODEX GUIDELINE LEVELS FOR RADIONUCLIDES IN FOOD

### 12. IAEA is addressing the criteria for implementation of restrictive measures through the IAEA Safety Standards

*The IAEA is addressing in detail the technical basis and explanation for criteria to be used for restrictions on the distribution and consumption of contaminated food, milk and water within the accident state and state(s) impacted by a release following a nuclear or radiological emergency within the process of review and revision of the IAEA Safety Standard on Preparedness and Response for a Nuclear or Radiological Emergency (GS-R-2, co-sponsored by FAO, IAEA, ILO, OECD/NEA, PAHO, OCHA and WHO).*

### 13. IAEA will establish a Working Group together with other relevant international organizations to develop a Technical Document in order to summarize various national and international standards

*The IAEA Secretariat has decided to establish a Working Group, together with relevant international organizations, to carry out work in relation to the control of foodstuffs and in support of the IAEA Action Plan on Nuclear Safety. A Technical Document (TECDOC) developed by the Working Group will document the various national and international standards, the basis on which they have been derived and the circumstances in which they are intended to be used. The document will provide a full and detailed explanation of existing standards, including numerical values and their application. It will be developed and submitted to RASSC for consideration in late 2013; presented as an information document to the 8<sup>th</sup> Session of the Codex Committee on Contaminants in Foods in early 2014; and finalized for publication in mid-2014.*

### 14. The TECDOC will facilitate the understanding and application of different standards

*The TECDOC will be a valuable inventory that will be of use to all States as an information document and will form the basis for international discussions on ways to facilitate the understanding of numerical values and their application. The document will have added credibility through the involvement of other international organizations (EC, FAO, ICRP, NEA/OECD and WHO).*



## RECENT INITIATIVES WITH THE JOINT FAO/WHO CODEX ALIMENTARIUS COMMISSION CONCERNING THE REVIEW OF THE CODEX GUIDELINE LEVELS FOR RADIONUCLIDES IN FOOD

### FOOD TRACEABILITY, AUTHENTICITY AND THE DETECTION OF ADULTERATION

#### 15. The Joint Division will support Member States for improvement of food traceability in order to improve food safety

*The Joint Division provides support to FAO and IAEA Member States for the implementation of holistic food safety and control systems. This includes the development of isotopic and related analytical techniques to verify the origin of food and hence audit information-based traceability systems, and to verify the authenticity of foodstuffs or detect adulteration to combat fraud, enhance food safety and enable international trade in food commodities.*

#### 16. Capacity building in this field to be implemented through an existing regional technical cooperation project

*Capacity building activities in this field include a regional technical cooperation project on building technological capacity for food traceability and food safety control systems through the use of nuclear analytical techniques. The project involves 13 countries in South East Asia.*

#### 17. Research component in the field of food traceability to be implemented through a coordinated research project

*Joint Division activities also include the coordination of a current international research project on the implementation of nuclear techniques to improve food traceability, involving 15 countries world-wide, and a new international research project (D52038) on accessible technologies for the verification of origin of dairy products as an example control system to enhance global trade and food safety, to commence in 2013.*



## RECENT INITIATIVES WITH THE JOINT FAO/WHO CODEX ALIMENTARIUS COMMISSION CONCERNING THE REVIEW OF THE CODEX GUIDELINE LEVELS FOR RADIONUCLIDES IN FOOD

### MYCOTOXINS IN AGRICULTURAL COMMODITIES

#### 18. The Joint FAO/IAEA Division currently supports two projects on the control of mycotoxins in food

*The Joint FAO/IAEA Division currently provides technical advice and support to FAO sister divisions in two projects focusing on the control of mycotoxins in food. One project aims to develop online tools to enable the calculation of the performance of sampling plans for mycotoxins in foods; the other, in collaboration with WHO, is to gather and collate statistically reliable data on levels of mycotoxins in sorghum in Ethiopia, Sudan, Mali and Burkina Faso.*

#### 19. The Joint FAO/IAEA Division also supports a Technical Cooperation project in Indonesia aimed on development of screening and confirmatory methods for aflatoxins in animal feeds

*The Joint FAO/IAEA Division also provides technical management and laboratory support for an IAEA Technical Cooperation project in Indonesia (INS/5/040) which aims to develop screening and confirmatory methods for aflatoxins in animal feeds to support national mycotoxin reduction programmes and enhance national reference laboratory activities of the Indonesian Research Centre for Veterinary Science.*



## JOINT FAO/IAEA PROGRAMME IN FOOD AND AGRICULTURE

Animal Production and Health Subprogramme



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**Thanks**