The European Commission's science and knowledge service

Joint Research Centre

European Commission

REM data base developments 2016-2018

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Outline

1. REMdb data and system administration

2. REM Data Submission Tool training courses

3. Annual Monitoring Reports

4. Summary of the Euratom Art 36 data submissions

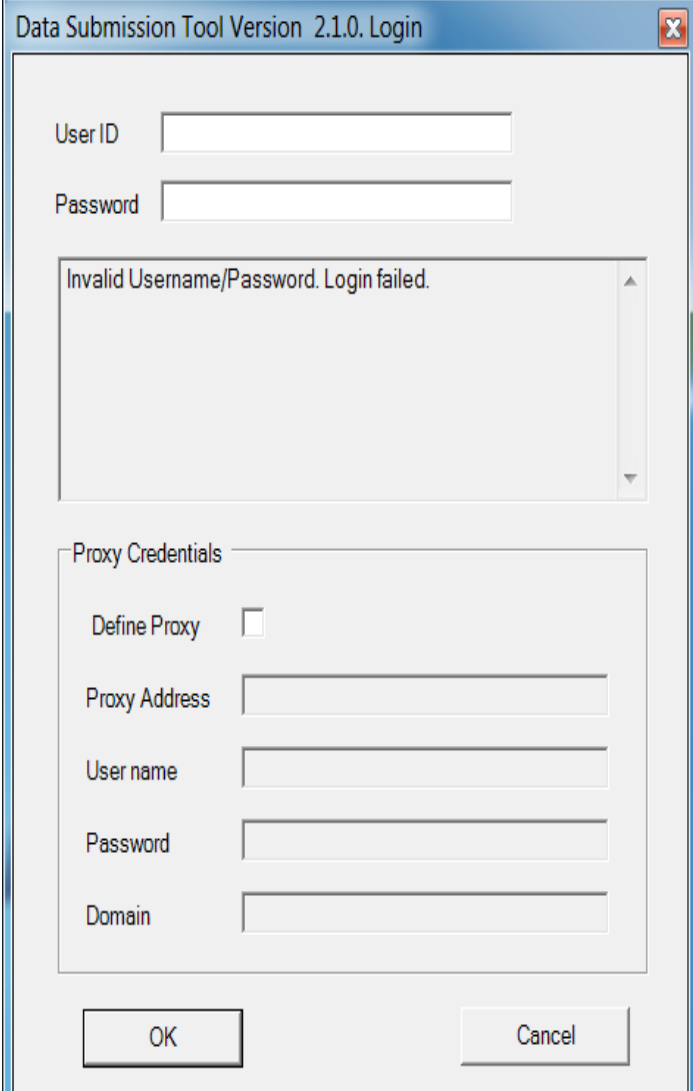# REMdb Data and System administration

- Application Development & Maintenance

- Application Support

- Data Maintenance & Analysis

REMdb Data and System administration

Upgrading Data Submission Tool from version 2.0 to 2.1

Some of the major changes in this version include:

- Handling login error
  - Error was not handled at login
  - The user had access to some data
  - The message was ambiguous and confusing

- Solution
  - User is denied access
  - A clear error message is issued
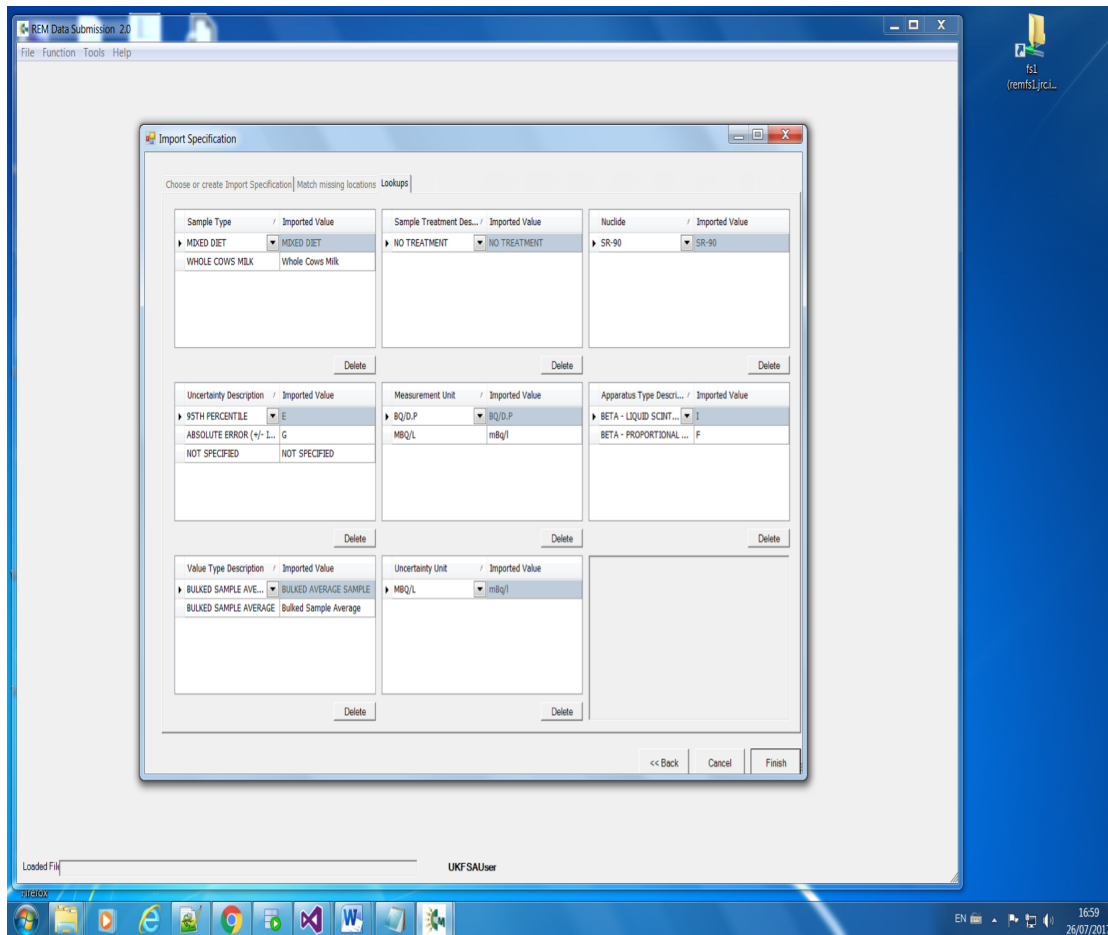
REMdb Data and System administration

- The Import Specification Wizard has been extended to include Uncertainty Units

REMdb Data and System administration

Member State users now have the possibility of modifying their contact information while maintaining read-only privilege on information related to other users.

Migration of DST from VS 13 to VS 15 and from Oracle 10g to Oracle 12c

Why Migrate
- To keep up with technology trends;
- To take advantage of latest improvements.

Challenges
- Libraries and packages need to be replaced (manually);
- Code fragments need to be reviewed and adapted;
- The entire software needs to be recompiled and tested.

This is an an-going iterative process until the system has become stable

REMdb Data and System administration

Application Support

What ?
- Respond to user requests; provide technical support
- Track, analyse, troubleshoot and resolve issues raised by users;

Why?
- Diverse user community – different backgrounds and different levels of computer literacy;
- Dynamic user group – frequent role changes: People move from data submission to other roles and new people come in to handle data submission
- Not all users find time to attend training courses

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REMdb Data and System administration

- **Monitoring Data Submission Progress**

Country Code	Member State	Institute	Status	Submission Date	Note
AT	Austria	AGES	S	17/05/2018	Data from Austria 2017
BE	Belgium	FANC	S	19/07/2018	Belgium_2017_Reseau-DENSE-ESPACE
BG	Bulgaria	EEAMEW	S	27/06/2018	Bulgaria 2017 Air; Bulgaria 2017 Soil
CY	Cyprus	CYDLI	S	19/04/2018	Outdoor air, drinking water, surface watwer, milk and mixed diet. A total of 6 files.
CZ	Czech Republic	SUJB	S	18/06/2018	2017 Aerosols, Water.
DE	Germany	BFSIFS	S	30/05/2018	Germany 2017: Surface water - Lakes. 01/06/2018: Milk, Drinking Water and Surface wate
DK	Denmark	RNL	S	30/07/2018	Data for Denmark samples taken 2017
EE	Estonia	EKK	S	23/06/2018	Estonia 2017 Radiation Environmental Monitoring Data
ES	Spain	CSN	S	27/06/2018	Spain 2017: Mixed Diet, Milk, Drinking Water, Air, Surface Water, Sparse Network.
FI	Finland	STUK	S	20/06/2018	Finland 2017: Drinking Water, Milk
FR	France	IRSN	S	20/06/2018	France 2017: Aerosols, Drinking water, Milk, Rain water, Sea water and Surface water.
GR	Greece	GAEC	S	27/03/2018	ERL Aerosol (T-BETA).
HR	Croatia	SORNS	S	26/06/2018	Enviromental radioactivity monitoring in Croatia
HU	Hungary	NEIAC	S	21/04/2018	Data submission in progress. Remaining data submitted 24/04/2018.
IE	Ireland	EPA			
IT	Italy	ISPRA	S	14/06/2018	ITALY DATA 2017
LT	Lithuania	AAA_RD	S	09/01/2018	Cs-137 and Sr-90 in foodstaff. More submissions followed on 28/03/2018; LEPARD 2017 N
LU	Luxemburg	DSDRP	S	18/04/2018	Milk 2017. Mixed diet 23/04/2018;
LV	Latvia	RDC	S	27/06/2018	Latvia air 2017
MT	Malta	OHSA	S	11/07/2018	Malta submission for 2017
NL	Netherlands	RIVM	S	26/06/2018	Netherlands 2017 drinking water
PL	Poland	PAA	S	27/06/2018	Poland 2017 Sea water Cs-137; Poland 2017 EXTRAD
PT	Portugal	DPRSN			
RO	Romania	NRDIEP	S	18/06/2018	RO 2017 surface water gross beta
SE	Sweden	SSI	S	05/06/2018	Sweden 2017 Milk, Mixed Diet , Surface Water and Drinking Water, Air
SI	Slovenia	SNSA	S	26/06/2018	Slovenia2017
SK	Slovakia	UVZSR	S	01/06/2018	Slovakia REM data 2017.
UK	UKDEFRA	DEFRA	S	08/05/2018	2017 Source Water Data: Tritium, Strontium-90, Caesium-137
UK	UKFSA	FSA	S	23/07/2018	
UK	UKSEPA	SEPA	S	20/06/2018	SEPA Art. 35 Data 2017 - Air, Drinking water, Milk, Mixed Diet, Rain water, Surface water

| On Schedule |
| Late |
| No Feedback |

Data Maintenance & Analysis
These activities concern cleaning, validating and ensuring the long-term quality of data in REM database.

Catchments
The problem in this case is duplication.
- In some cases the same physical catchment was named slightly differently and each name was assigned a different code
- In other cases, the same catchment name was repeated and each repetition had a different code (ID).

The software identifies catchments by their identifiers (IDs). Results are bound to be inaccurate, inconsistent and incorrect.

149	ETANG D.
155	ETANG GOUILLET
151	ETANG DE ST QUENTIN
153	ETANG DE ST.QUINTIN
152	ETANG DE ST-QUENTIN
163	ETANG ST-QUENTIN
158	ETANG RECEPTEUR
159	ETANG RECEPTEUR
150	ETANG DE SACLAY
162	ETANG SACLAY
167	ETANGS DE SACLAY
169	EXE
465	RIVER EXE
192	GRAN CANAL D'ALSACE
193	GRAND CANAL D'ALSACE
228	IONIAN SEA
229	IONIC SEA
279	LAKE IJESSEL
280	LAKE IJSSEL
301	LIGURIA
302	LIGURIAN SEA
308	LMSt4-MLVA-Wiesbaden
309	LMSt4-MLVA-Wlesbaden
331	MANZANARES
332	MANZARANES
333	MAR MEDITERRANEO
338	MEDITERRANEAN SEA
339	MEDITERRANEE
360	NAPPE PHERATIQUE
361	NAPPE PHREATIQUE
376	NORTH
377	NORTH SEA
409	PO
	PO RIVER

REMdb Data and System administration

NUTS Codes

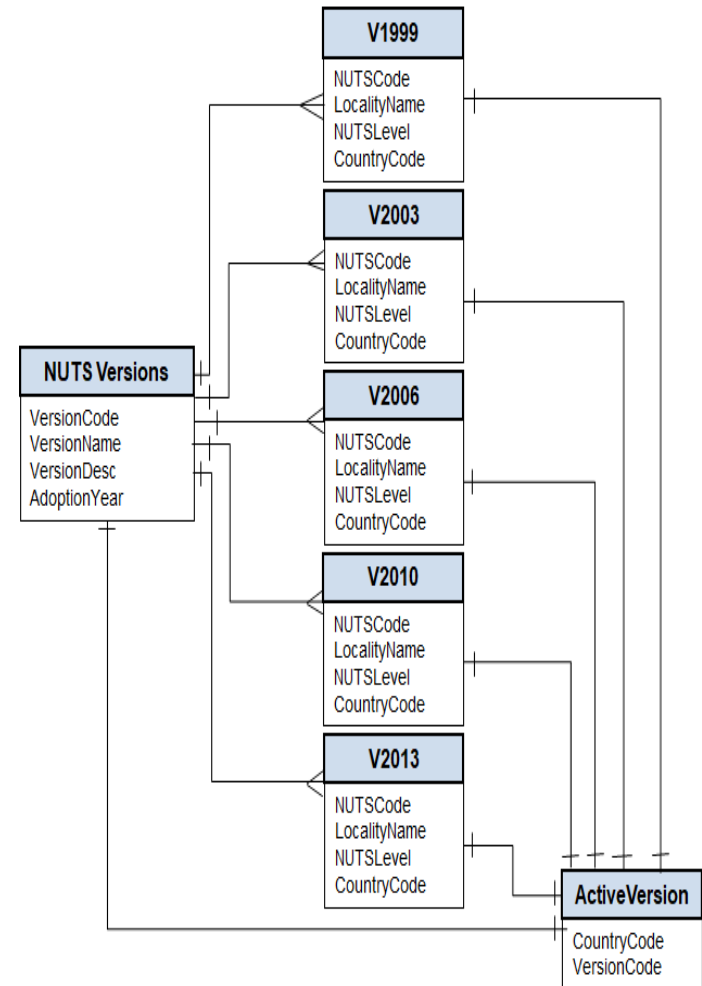Migrating the custom (legacy) codes in REM database to standard EUROSTAT NUTS cods.

Macro activities:
- Acquisition of new codes.
- Mapping and verification with stakeholders
- Modifying DB Structure
- Monitoring Reports
- Updating historical data

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REMdb Data and System administration

State of the art:

- Mapping has been completed for practically all member states.
- Data for Belgium has been verified and validated because it was intended to get Belgium involved in the beta test.
- All required database objects have been created.

NUTS Code – ER Diagram

REM Data Submission Tool training courses

Data are submitted by the Member States directly into REMdb using a tool developed and maintained by JRC: **REMdb Submission Tool**.

JRC organizes and hosts on a yearly basis a training course on the Data Submission tool, explaining its usage and giving practical examples.

Each participants is given a PC loaded with a copy of the Submission Tool.

Each participants is asked to bring a sample copy of their own datasets in order to practice with.

Feedback provided at the end of the training poses the basis for the next one.

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REM Data Submission Tool training courses

The objectives are that, after attending the course, participants should:

- have an overview of the REM activities and routine monitoring of environmental radioactivity levels in Europe;
- know how to submit data through the REM DST;
- know how to check compliance and quality or their data using the REM DST;
- know how their data are being compiled, collated and checked by the JRC;
- know how their data are being reported to the European Community through a series of annual monitoring reports on environmental radioactivity levels published by the EC.

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REM Data Submission Tool training courses

REMdb Submission Tool

What it is used for → Submitting environmental radioactivity data to the REM Database.

Who are the users → Researchers/laboratories of EU and non-EU Member States who submit the data.
The tool allows viewing, updating, and extensively searching data.

How the data are used → Compilations of the information received from the Member States are published by the Commission as a series of annual monitoring reports and available for on-line browsing.

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REM Data Submission Tool training courses

13-14 December **2016**
9 participants from 7 countries
- REMdb submission tool v2.0

13-14 November **2018**
8 participants from 8 countries
- REMdb submission tool v2.1
- REMdb Webcheck

26-27 September **2017**
8 participants from BG, ES, GR, IE, LT, PL & RO
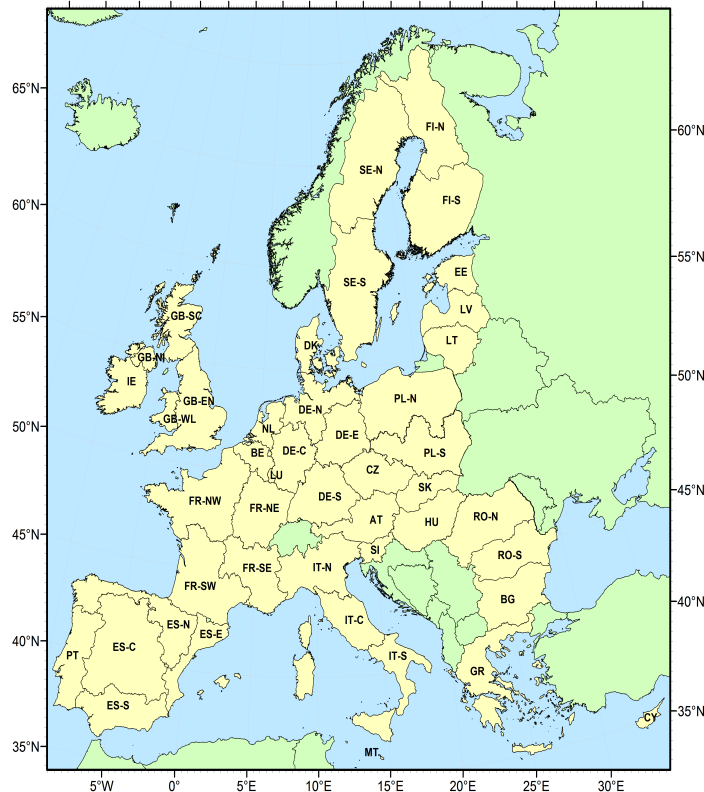- REMdb submission tool v2.1

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Annual Monitoring Report 2007-2011

- BG and RO first included;
- Covering 5 years to catch up with delay;
- Same structure as for previous reports;

Annual Monitoring Reports

- Textual part

- Dense network maps & tables

- Sparse network graphs

- Appendices

Sampling media	Radionuclide categories	
	Dense network	Sparse network
airborne particulates	gross ß ^{137}Cs	^{7}Be ^{137}Cs
surface water	residual ß ^{137}Cs	^{137}Cs
drinking water	^{3}H ^{90}Sr ^{137}Cs	^{3}H ^{90}Sr ^{137}Cs
milk	^{90}Sr ^{137}Cs	^{90}Sr ^{137}Cs
mixed diet	^{90}Sr ^{137}Cs	^{90}Sr ^{137}Cs

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Legend:

- · sample location
- + regional average
- EU (no data reported)
- Outside EU (in 2011)

- A < 0.03 Bq m^{-3}
- 0.03 Bq m^{-3} ≤ A < 0.10 Bq m^{-3}
- 0.10 Bq m^{-3} ≤ A < 0.30 Bq m^{-3}
- 0.30 Bq m^{-3} ≤ A

Fig. A10
Sampling locations and geographical averages by year for ^{137}Cs in airborne particulates, 2011

Azores and Madeira (Portugal) Canary Islands (Spain) Malta
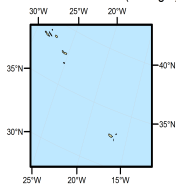
Table A10: Geographical and time averages

YEAR	:	2011
SAMPLE TYPE	:	airborne particulates (Bq m^{-3})
NUCLIDE CATEGORY	:	caesium-137 (^{137}Cs)

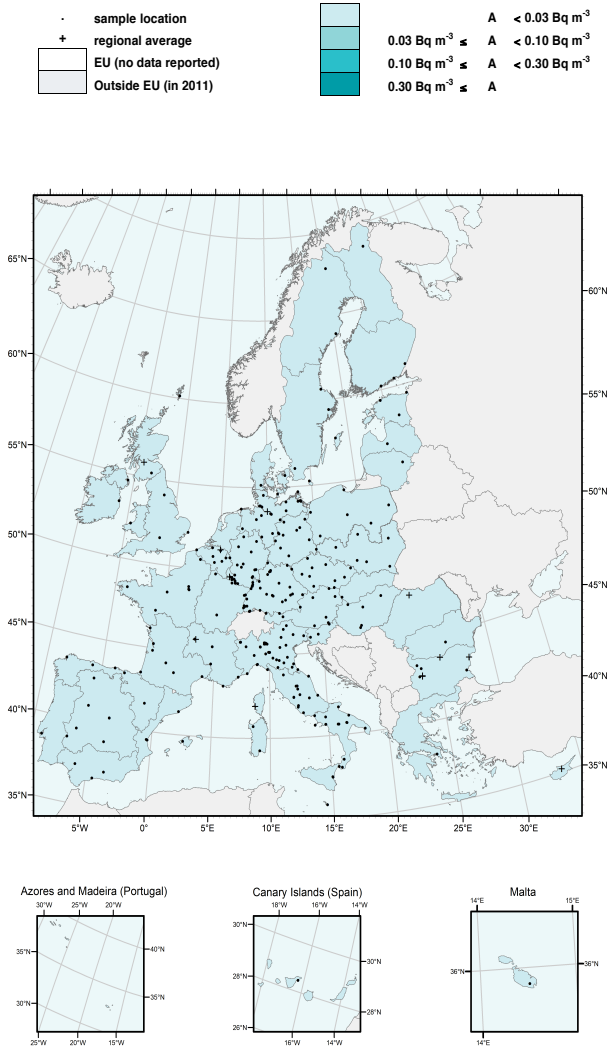| Country	N	L	1st quarter	2nd quarter	3rd quarter	4th quarter	Annual average	Monthly max M
AT	543	10	<RL	<RL	<RL	<RL	<RL	<RL
BE	96	8	<RL	<RL	<RL	<RL	<RL	<RL
BG	143	8	<RL	<RL	<RL	<RL	<RL	<RL
CY	11	1	<RL	<RL	<RL	<RL	<RL	<RL
CZ	677	10	<RL	<RL	<RL	<RL	<RL	<RL
DE - N	4207	24	<RL	<RL	<RL	<RL	<RL	<RL
DE - C	3849	22	<RL	<RL	<RL	<RL	<RL	<RL
DE - S	4693	32	<RL	<RL	<RL	<RL	<RL	<RL
DE - E	2859	11	<RL	<RL	<RL	<RL	<RL	<RL
DE	15608	89	<RL	<RL	<RL	<RL	<RL	<RL
DK	117	3	<RL	<RL	<RL	<RL	<RL	<RL
EE	161	3	<RL	<RL	<RL	<RL	<RL	<RL
ES - N	110	5	<RL	<RL	<RL	<RL	<RL	<RL
ES - C	173	7	<RL	<RL	<RL	<RL	<RL	<RL
ES - S	145	4	<RL	<RL	<RL	<RL	<RL	<RL
ES - E	96	4	<RL	<RL	<RL	<RL	<RL	<RL
ES	524	20	<RL	<RL	<RL	<RL	<RL	<RL
FI - N	57	1	<RL	<RL	<RL	<RL	<RL	<RL
FI - S	362	3	<RL	<RL	<RL	<RL	<RL	<RL
FI	419	4	<RL	<RL	<RL	<RL	<RL	<RL
FR - NW	488	9	<RL	<RL	<RL	<RL	<RL	<RL
FR - NE	119	3	<RL	<RL	<RL	<RL	<RL	<RL
FR - SW	214	6	<RL	<RL	<RL	<RL	<RL	<RL
FR - SE	295	7	<RL	<RL	<RL	<RL	<RL	<RL
FR	1116	25	<RL	<RL	<RL	<RL	<RL	<RL
GB - EN	10	3	<RL	<RL	<RL	<RL	<RL	<RL
GB - WL	4	1	<RL	<RL	<RL	<RL	<RL	<RL
GB - SC	17	3	<RL	<RL	<RL	<RL	<RL	<RL
GB - NI	4	1	<RL	<RL	<RL	<RL	<RL	<RL
GB	35	8	<RL	<RL	<RL	<RL	<RL	<RL
GR	10	1	<RL	<RL	<RL	<RL	<RL	<RL
HU	237	5	<RL	<RL	<RL	<RL	<RL	<RL
IE	26	1	<RL	<RL	<RL	<RL	<RL	<RL
IT - N	1353	34	<RL	<RL	<RL	<RL	<RL	<RL
IT - C	783	9	<RL	<RL	<RL	<RL	<RL	<RL
IT - S	467	14	<RL	<RL	<RL	<RL	<RL	<RL
IT	2603	57	<RL	<RL	<RL	<RL	<RL	<RL
LT	60	1	<RL	<RL	<RL	<RL	<RL	<RL
LU	111	2	<RL	<RL	<RL	<RL	<RL	<RL
LV	3	1			<RL	<RL	<RL	<RL
MT	40	1	<RL	<RL	<RL	<RL	<RL	<RL
NL	52	1	<RL				<RL	<RL
PL-N	6	6				<RL	<RL	<RL
PL-S	6	6				<RL	<RL	<RL
PL	12	12				<RL	<RL	<RL
PT	59	1			<RL	<RL	<RL	<RL
RO - N	12	1	<RL	<RL	<RL	<RL	<RL	<RL
RO – S	4	1	<RL		<RL	<RL	<RL	<RL
RO	16	2	<RL	<RL	<RL	<RL	<RL	<RL
SE - N	143	2	<RL	<RL	<RL	<RL	<RL	<RL
SE - S	291	4	<RL	<RL	<RL	<RL	<RL	<RL
SE	434	6	<RL	<RL	<RL	<RL	<RL	<RL
SI	37	3	<RL	<RL	<RL	<RL	<RL	<RL
SK	24	1	<RL	<RL	<RL	<RL	<RL	<RL

RL : reporting level for ^{137}Cs in air, i.e. 3.0 E-02 Bq m^{-3} (see Appendix B)

N : number of measurements considered in calculating the annual concentration.
L : number of sampling locations considered in calculating the annual concentration.
Monthly max : maximum monthly average in the year.
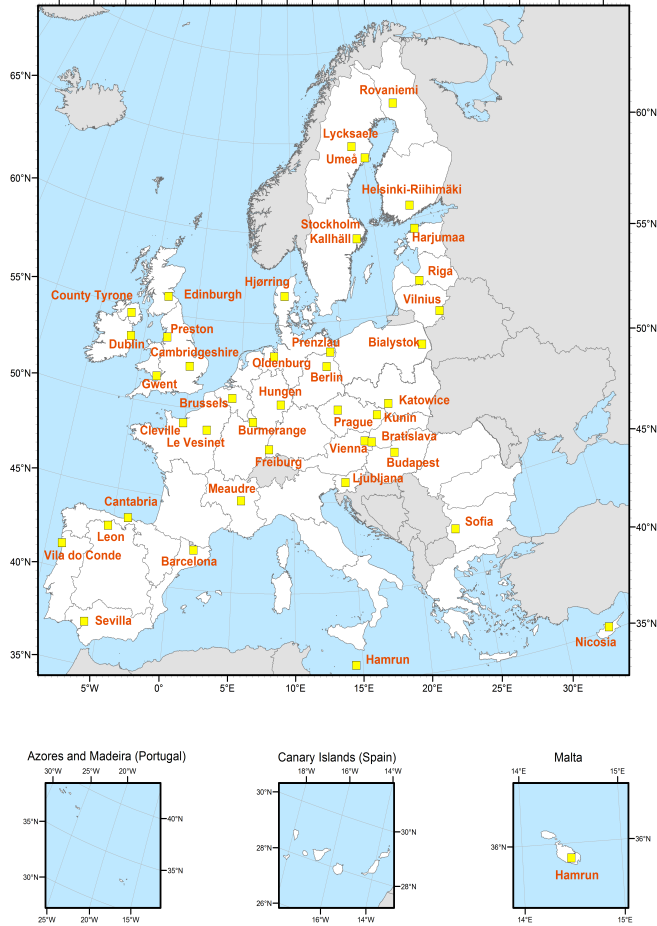M : month during which the maximum occurred.

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Fig. M11
Sampling locations for ^{90}Sr and ^{137}Cs in milk considered in Figures M12 – M42

Fig. M26
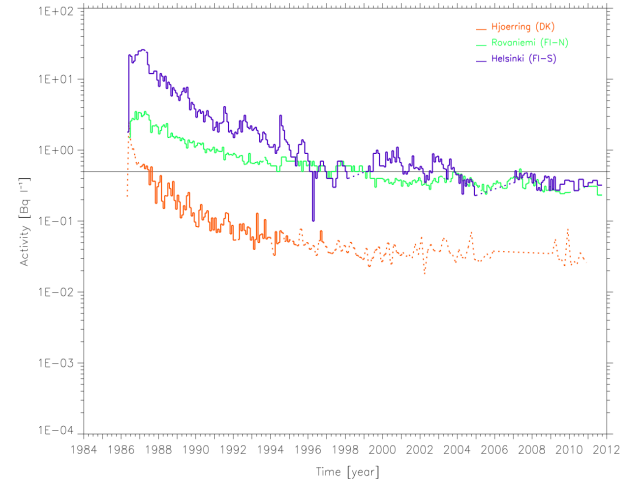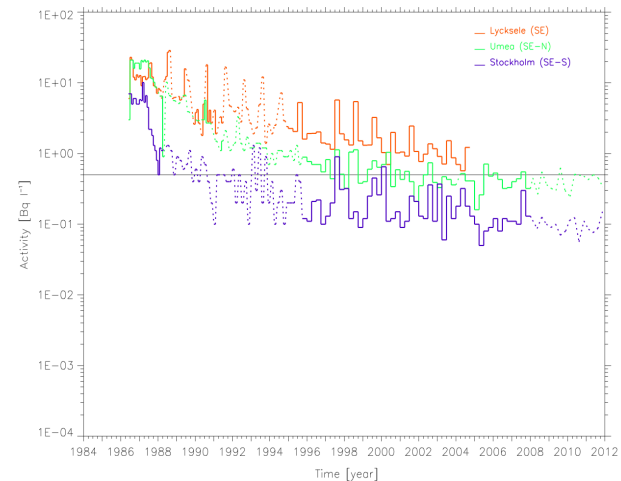Activity trends for ^{137}Cs in milk (Hjørring, Rovaniemi and Helsinki)

Fig. M27
Activity trends for ^{137}Cs in milk (Lycksele, Umeå and Stockholm)

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Annual Monitoring Reports: Next

- More automated report production developed:
  - MR 2012-2014 (incl. Croatia)
  - MR 2015-2016
- Review of layout of future reports:
  - content (sample type/nuclides, networks)
  - Data representation

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Summary of the Euratom Art 36 data transmisions

DATA DELIVERED FOR 2015 (2018-09-17)

COUNTRY	AIRBORNE PARTICULATES		MILK (COW, FRESH)		DRINKING WATER			MIXED DIET		SURFACE WATER	
	CS–137	T–BETA	CS–137	SR–90	CS–137	H–3	SR–90	CS–137	SR–90	CS–137	R–BETA
AT	🟩	🟥	🟩	🟩	🟩	🟩	🟩	🟩	🟨	🟩	🟩
BE	🟩	🟩	🟩	🟩	🟥	🟩	🟥	🟩	🟩	🟩	🟩
BG	🟩	🟩	🟥	🟥	🟩	🟥	🟩	🟩	🟥	🟩	🟥
CY	🟩	🟩	🟩	🟩	🟩	🟥	🟥	🟩	🟥	🟩	🟥
CZ	🟩	🟥	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩
DE	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟥
DK	🟩	🟥	🟩	🟥	🟥	🟩	🟩	🟩	🟥	🟩	🟥
EE	🟩	🟥	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟥
ES	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩
FI	🟩	🟥	🟩	🟨	🟩	🟩	🟩	🟩	🟩	🟩	🟥
FR	🟩	🟥	🟩	🟩	🟩	🟩	🟥	🟥	🟥	🟩	🟥
GR	🟩	🟩	🟩	🟥	🟥	🟩	🟥	🟩	🟩	🟥	🟥
HR	🟩	🟥	🟩	🟩	🟩	🟥	🟩	🟩	🟩	🟩	🟩
HU	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩
IE	🟩	🟩	🟩	🟩	🟥	🟩	🟩	🟩	🟨	🟩	🟩
IT	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟨	🟩	🟩
LT	🟩	🟥	🟩	🟩	🟥	🟩	🟥	🟩	🟩	🟩	🟩
LU	🟩	🟩	🟩	🟥	🟩	🟩	🟥	🟩	🟥	🟩	🟥
LV	🟥	🟥	🟥	🟨	🟩	🟩	🟩	🟩	🟩	🟩	🟥
MT	🟩	🟥	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟥
NL	🟩	🟩	🟩	🟩	🟥	🟩	🟥	🟩	🟩	🟥	🟩
PL	🟥	🟥	🟨	🟥	🟩	🟥	🟥	🟥	🟥	🟩	🟥
PT	🟩	🟥	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩
RO	🟩	🟩	🟥	🟥	🟥	🟩	🟥	🟨	🟨	🟩	🟥
SE	🟩	🟥	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟥
SI	🟩	🟥	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟥
SK	🟩	🟥	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟥
UK-EN	🟩	🟥	🟥	🟥	🟩	🟩	🟩	🟩	🟩	🟩	🟥
UK-NI	🟩	🟥	🟥	🟥	🟥	🟥	🟥	🟩	🟩	🟥	🟥
UK-SC	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟥
UK-WL	🟩	🟥	🟥	🟩	🟩	🟩	🟩	🟥	🟥	🟩	🟥

🟩 available for MR	🟨 not eligible for MR	🟥 not available

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Summary of the Euratom Art 36 data transmisions

DATA DELIVERED FOR 2016 (2018-09-17)

COUNTRY	AIRBORNE PARTICULATES		MILK (COW, FRESH)		DRINKING WATER			MIXED DIET		SURFACE WATER	
	CS–137	T-BETA	CS–137	SR–90	CS–137	H–3	SR–90	CS–137	SR–90	CS–137	R-BETA
AT											
BE											
BG											
CY											
CZ											
DE											
DK											
EE											
ES											
FI											
FR											
GR											
HR											
HU											
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IT											
LT											
LU											
LV											
MT											
NL											
PL											
PT											
RO											
SE											
SI											
SK											
UK-EN											
UK-NI											
UK-SC											
UK-WL											

Legend:
- available for MR
- not eligible for MR
- not available

European Commission

Summary of the Euratom Art 36 data transmisions

DATA DELIVERED FOR 2017 (2018-09-17)

COUNTRY	AIRBORNE PARTICULATES		MILK (COW, FRESH)		DRINKING WATER			MIXED DIET		SURFACE WATER	
	CS-137	T-BETA	CS-137	SR-90	CS-137	H-3	SR-90	CS-137	SR-90	CS-137	R-BETA
AT											
BE											
BG											
CY											
CZ											
DE											
DK											
EE											
ES											
FI											
FR											
GR											
HR											
HU											
IE											
IT											
LT											
LU											
LV											
MT											
NL											
PL											
PT											
RO											
SE											
SI											
SK											
UK-EN											
UK-NI											
UK-SC											
UK-WL											

Legend:
- available for MR (green)
- not eligible for MR (yellow)
- not available (red)

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Trends in monitoring

Reported item	Sampling year		
	2015	2016	2017*
Countries with few ST/Nucl. (≥ 7 missing)	DK, PL, RO, GB-NI	DK, MT, PL, GB-EN, UK-SC, GB-NI	DK, GR, MT, RO, GB-NI
ST/Nucl. poorly reported (≥ 14 missing)	Air/G-beta Drink/Sr-90 Surf/R-beta	Air/G-beta Drink/Sr-90 Surf/R-beta	Air/G-beta Surf/R-beta
Countries with many ST/Nucl. (≤ 3 missing)	AT, BE, BG, CZ, DE, EE, ES, FI, HU, IT, MT, NL, PT, SE, SI, SK, UK-EN, UK-SC	AT, BE, CZ, DE, EE, ES, FI, HU, IT, PT, SE, SI, SK, UK-SC	AT, BE, BG, CZ, DE, EE, ES, FI, HR, HU, IT, NL, SE, SI, SK, UK-SC
ST/Nucl. poorly reported (≤ 7 missing)	Air/Cs-137 Milk/Cs-137 Drink/H-3 Diet/Cs-137 Surf/Cs-137	Air/Cs-137 Milk/Cs-137 Surf/Cs-137	Air/Cs-137 Milk/Cs-137 Diet/Cs-137 Surf/Cs-137

* Without IE and PT data

Thanks

Questions?

You can contact us at REMdbsupport@ec.europa.eu

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Stay in touch!

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Application Development & Maintenance

- Upgrade Data Submission Tool from vs 2.0 to 2.1
- Migration DST from Visual Studio 2013 to t VS 2015
- Migration DST from Oracle RDBMS version 10g to version 12c.