



Hungarian Atomic Energy Authority



ENVIRONMENTAL MONITORING IN HUNGARY

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Recent changes in the national regulatory framework

..since publication of new EU BSS

New Govt. Decree on radiation protection
(beginning of 2016)



The authority for radiation protection has been changed: Health Officers Services - > HAEA (workers and public, not patients)

Amendment to the Act on Atomic Energy and many govt. and ministerial decrees...

New or renewed Govt. decree on environmental monitoring



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Hungarian legislation



2000/473/Euratom - Commission recommendation of 8 June 2000 on the application of Article 36 of the Euratom Treaty concerning the monitoring of the levels of radioactivity in the environment for the purpose of assessing the exposure of the population as a whole

The **Act CXVI of 1996 on Atomic Energy** distributes (+ overlaps) the responsibility among ministers and authorities

- Cabinet of the prime minister – quality of surface waters and air
- Ministry of Agriculture – quality of food and feedstuffs
- Ministry of Interior – emergency management
- HAEA – nuclear safety + radiation protection
- Ministry of Health – rad. prot. of population (radiohygiene tasks)

Several separated monitoring networks were established and operated by different Ministries, parallel working.

Gov. Decree No. 489/2015 on monitoring radiation conditions relevant for public exposure of natural and artificial origin and on the scope of quantities obligatory to be measured

- ❖ **National Environmental Radiation Monitoring System**
- ❖ **Operative organization of the NERMS is the Radiation Information Supply Centre (RISC) operated by the HAEA**



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Members of the National Environment Radiation Monitoring System (NERMS)

1. Ministry led by the minister responsible for protection against disasters
2. Ministry led by the minister responsible for health
3. Ministry led by the minister responsible for environmental protection
4. Ministry led by the minister responsible for agricultural policy
5. Ministry led by the minister responsible for supervision of food chain
6. Ministry led by the minister responsible for education
7. Ministry led by the minister responsible for defence
8. Ministry led by the minister responsible for organization of public administration,
9. Hungarian Meteorological Service
10. Hungarian Academy of Science
11. Hungarian Atomic Energy Authority
12. MVM Paks Nuclear Power Plant Ltd.
13. National Public Limited Company for Radioactive Waste Management
14. Mecsekérc Ltd.
15. National Public Health Institute for Public Health Directorate Department of Radiobiology and Radiohygiene



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About National Environment Radiation Monitoring System

NERMS Steering Committee

- chairman is delegated by HAEA
- make out the Operational Program
- annual sampling / measurement program
- coordination of monitoring networks
- approving / publishing the annual reports

NERMS Information Centre

- on-line collection of data sent by Data Suppliers
- data processing and analysis, dose calculation
- preparation of annual reports

Data Suppliers = Members' Monitoring networks

- supervising networks
- reporting networks
- execution of annual sampling & radiological measurement program
- monitoring plans are approved by the organizations and supervising Ministries, coordinated by Steering Committee

The annual report is available on the Hungarian Atomic Energy Authority website

- I. Analyses of the collected data and determination of the annual effective radiation burden of the population**
- II. Publishing the results**
- III. Informing the population of Hungary**
- IV. Sharing the data with EU (REM database, JRC Ispra)**

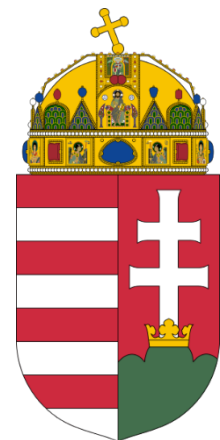
Capital: Budapest
Language: Hungarian
Population: 9 879 000
Area: 93 030 km²
GDP Total: €257.148E9
GDP per capita: €26.270



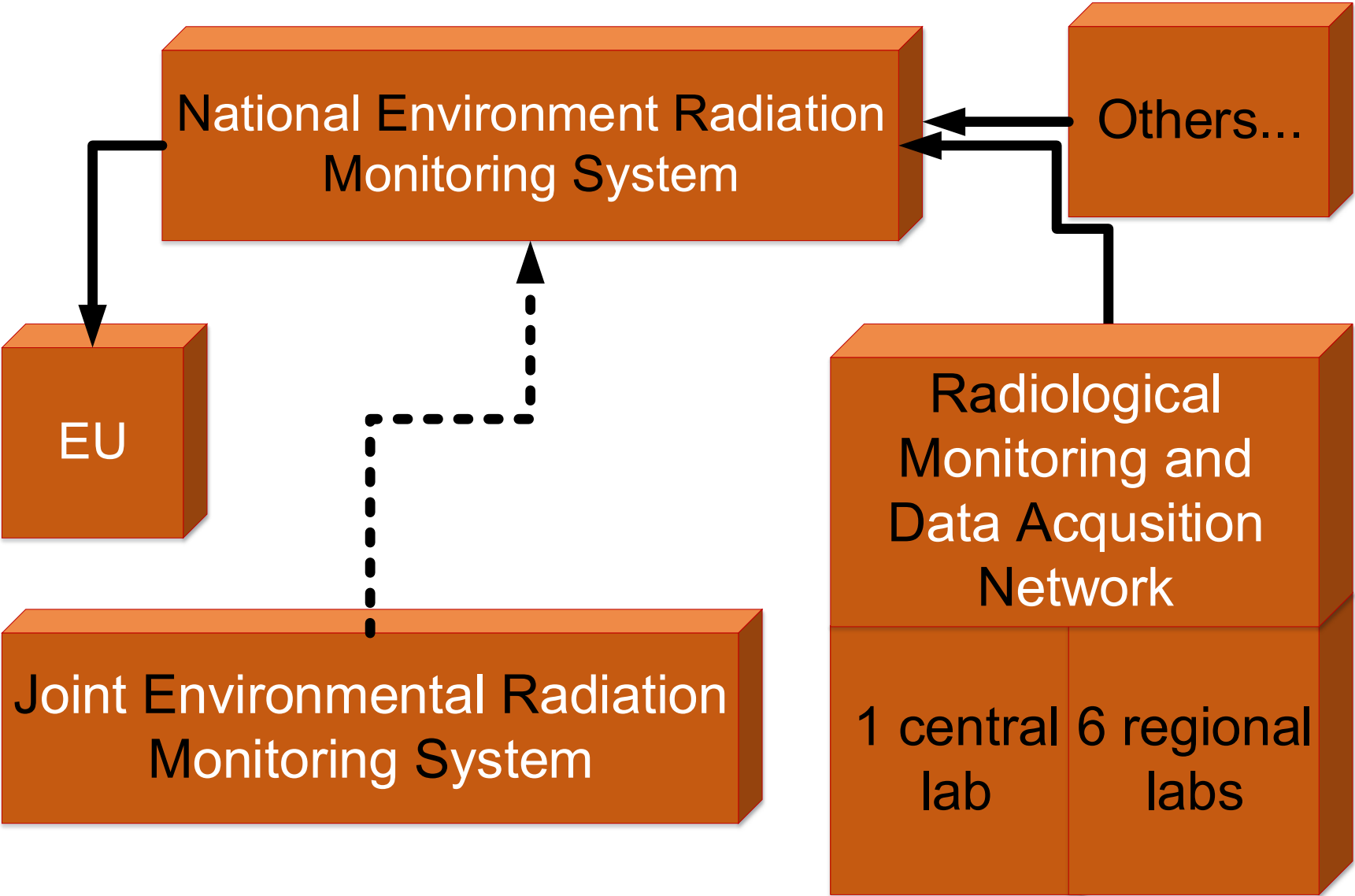
Notable facilities

NPP: 4 × blocks. 2 GWe total.;
2 × 1.2 GW VVER ≈ 2028 (?)
2 × Research reactors
(100 kW & 10 MW)
2 × ILW/LLW storage facility;
1 uranium mine – not operational

58 different types of taxes



Environmental Monitoring in Hungary



Who provides the data?

Early warning gamma-dose rate measuring network:

- Ministry responsible for Economy
- Ministry responsible for Defence
- Ministry responsible for Environmental Protection
- Ministry responsible for Education
- Ministry responsible for Disaster Management

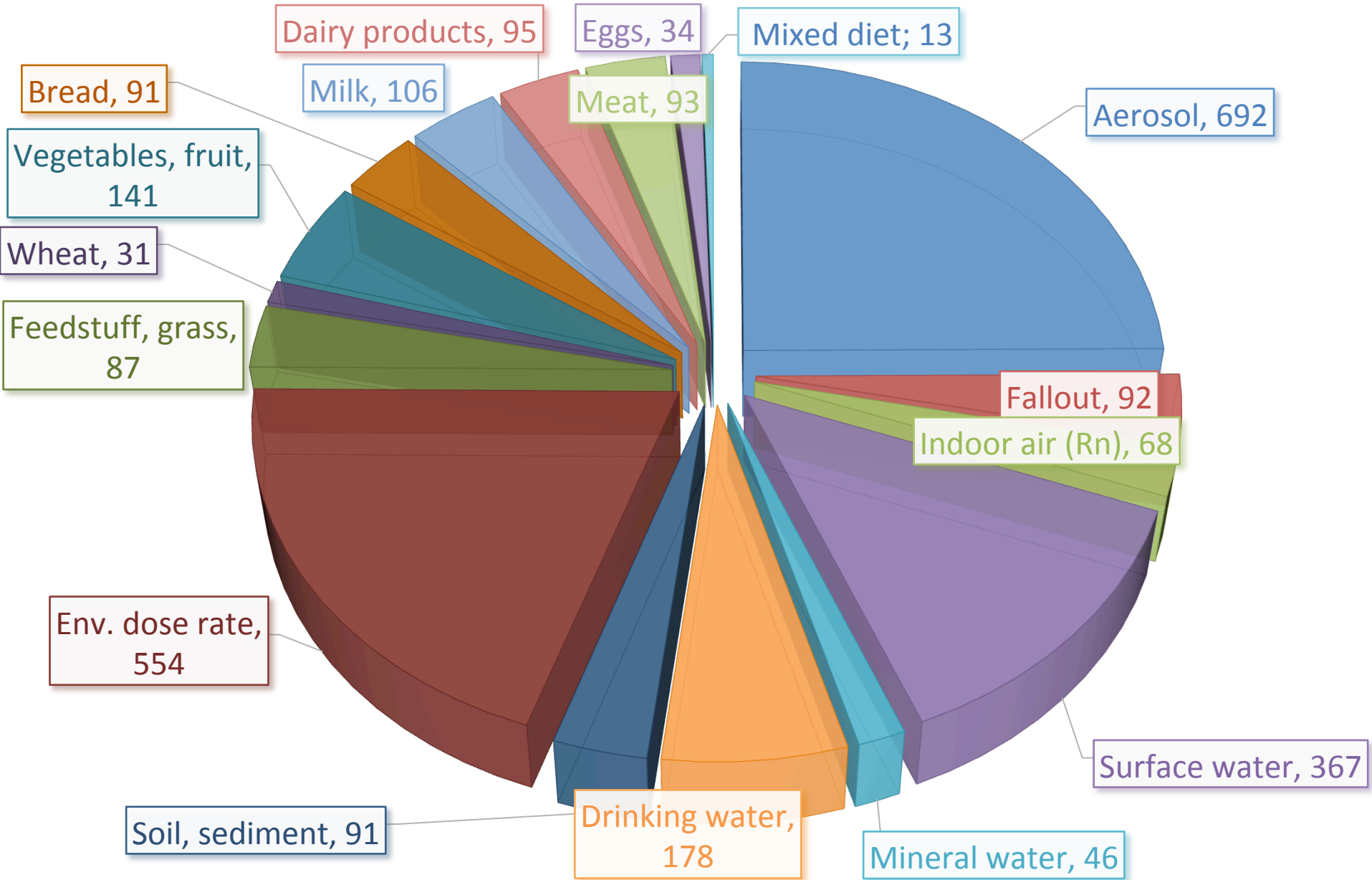
Complex radiological monitoring system:

- Ministry responsible for Agriculture
- National Food Chain Safety Office
- **Ministry responsible for Health (NPHI) → RAMDAN**
- Hungarian Academy of Sciences
- Nuclear Power Plant Paks
- Public Agency for Radioactive Waste Management

RAMDAN – sampling

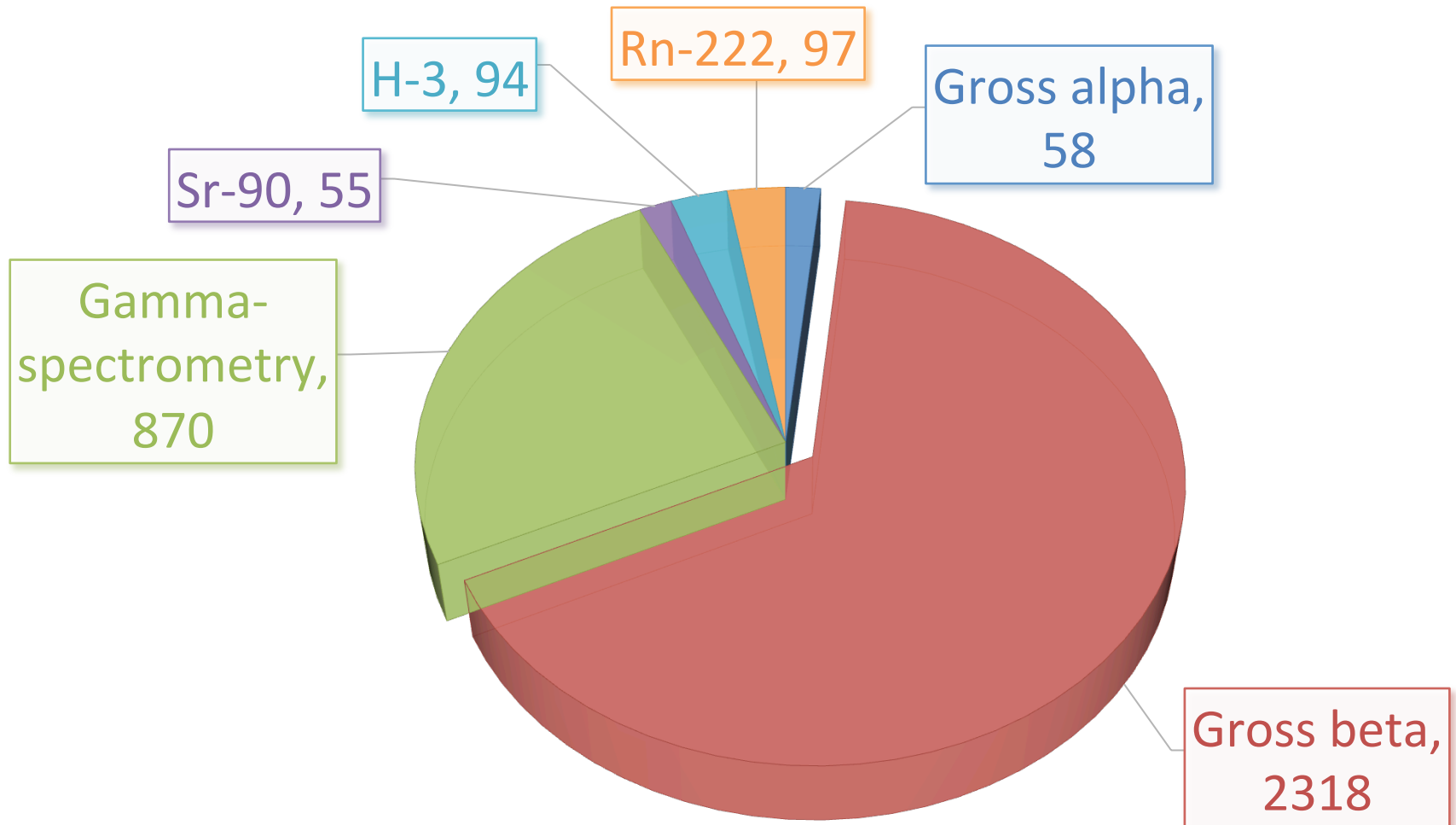
Sample type	Dense network	Sparse network
Aerosol/fall-out	Cs-137, gross-beta	Cs-137, Be-7
Outdoor γ	Env. dose rate	Env. dose rate
Surface water	Cs-137, residue beta	Cs-137
Drinking water	H-3, Sr-90, Cs-137 and natural isotopes (e.g. K-40, Rn-222)	H-3, Sr-90, Cs-137 and natural isotopes (e. g. K-40, Rn-222)
Milk	Cs-137, Sr-90	Cs-137, Sr-90, K-40
Mixed diet	Cs-137, Sr-90	Cs-137, Sr-90, C-14

RAMDAN sampling in 2017



RAMDAN

No. of measurements in 2017



ConvEx-3 exercise, 2017 June

Ba-133	<u>Reported value</u>	A	P	<u>Final score</u>
<u>Target value</u>	34,18			
SZEGED	34,8	A	A	A
DEBRECEN	34,7	A	A	A
GYŐR	32,7	A	A	A
SZEKSZÁRD	32,1	A	A	A
BUDAPEST	34,2	A	A	A
MISKOLC	31,6	A	N	W
NPHI-DRR	32,6	A	A	A

Cs-137	<u>Reported value</u>	A	P	<u>Final score</u>
<u>Target value</u>	18,84			
SZEGED	21,9	A	A	A
DEBRECEN	18,4	A	A	A
GYŐR	19,7	A	A	A
SZEKSZÁRD	19,2	A	A	A
BUDAPEST	20,5	A	N	W
MISKOLC	21,3	A	N	W
NPHI-DRR	21,0	A	A	A

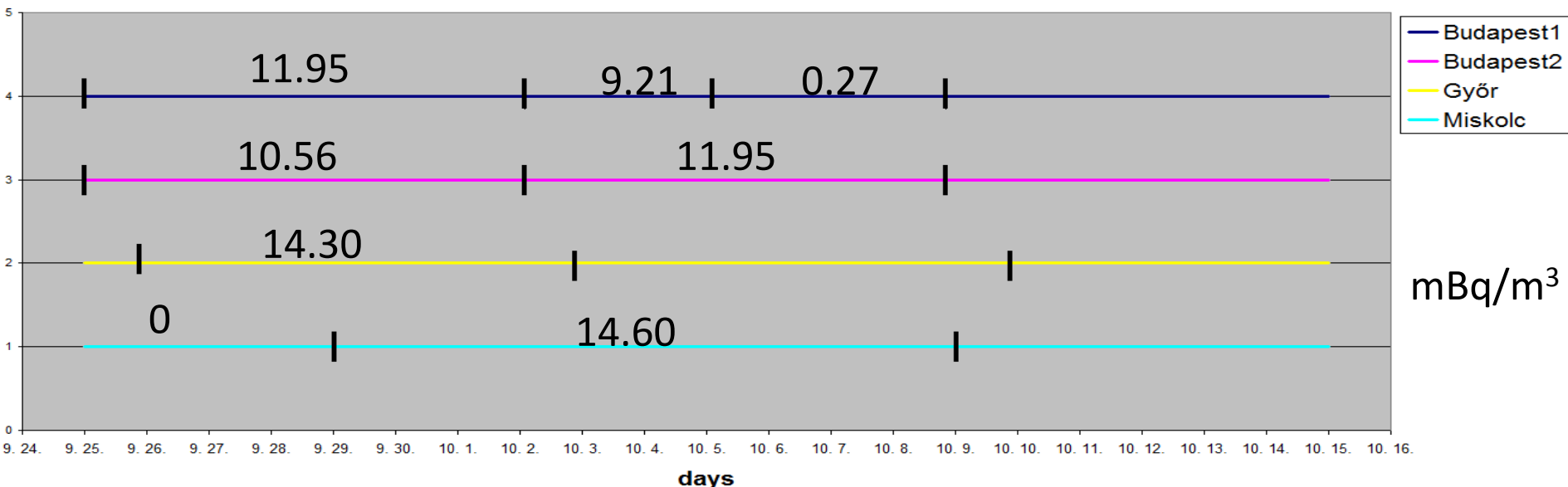
Cs-134	<u>Reported value</u>	A	P	<u>Final score</u>
<u>Target value</u>	20,4			
SZEGED	20,1	A	A	A
DEBRECEN	19,7	A	A	A
GYŐR	19,0	A	A	A
SZEKSZÁRD	18,9	A	A	A
BUDAPEST	17,9	A	A	A
MISKOLC	18,5	A	A	A
NPHI-DRR	18,5	A	A	A

Sample: 500 ml water;
 Reporting: within 1 hour
 (A=accuracy, P=precision, W=warning,
 N=not acceptable); mBq/l

$$P = \sqrt{\frac{u_{target}}{A_{target}} + \frac{u_{reported}}{A_{reported}}} * 100$$

Ru-106 in air (2017 October)

- Warning from HERCA on the 3rd of October
- Contacting the regional laboratories
- Extra measurements (not routine)
- Extra filter changing and prompt measurements





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Thank You for your attention!