

# The European Commission's science and knowledge service

Joint Research Centre

## Environmental Monitoring & Emergency Preparedness

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G.10 Knowledge for Nuclear Safety,  
security and safeguards

*EURATOM Interim Evaluation, JRC Geel,  
18-19 January 2017*





## **Euratom Treaty, Chapter III, Health & Safety**

Art.35-36: MSs to establish monitoring facilities to continuously monitor environmental radioactivity levels and report this periodically to the Commission

Art.39: EC to establish a health and safety documentation and study section to collect this information

## **Council Decision 87/600:**

Community arrangements for the early exchange of information in the event of a radiological emergency

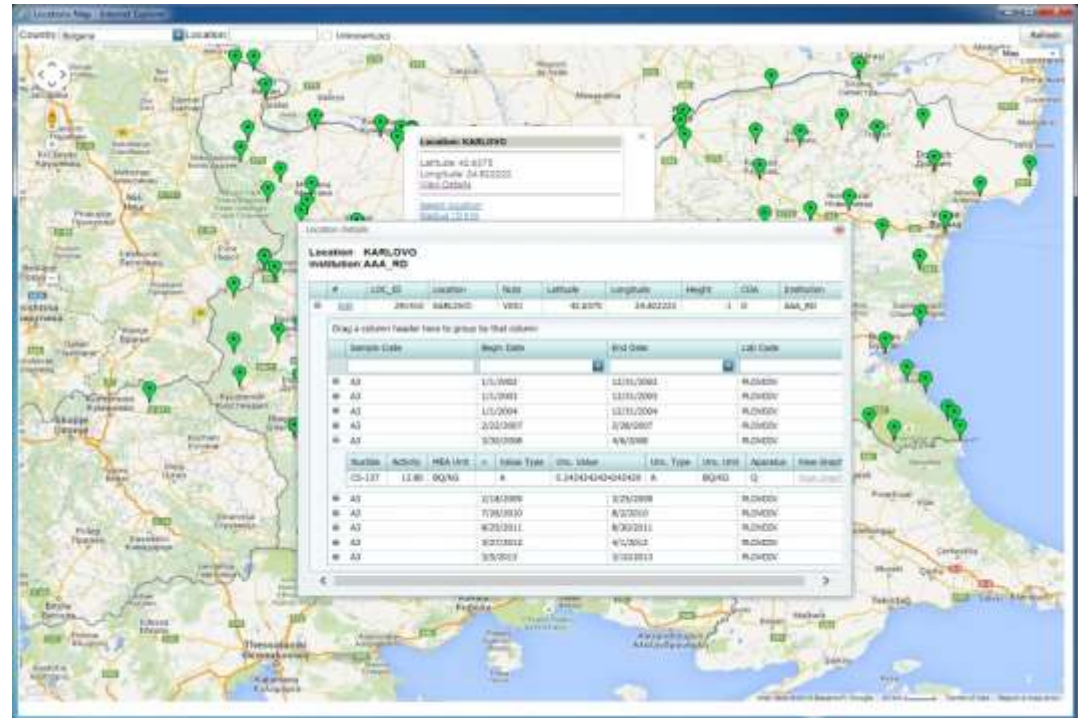
## **Council Directive 2013/59/Euratom:**

EU Basic Safety Standards, Art. 103: Radon Action Plan










European Commission

- Euratom Treaty, Chapter III, Art. 36 & 39
- REMdb: > 2 M records from 1984 onwards
- Standardisation of data-input
- input processing software (REM Data Submission Tool) and reporting software under development
- Two-yearly art35/36 experts meetings (EC+EU28)
- Art35-36 working group (1-2 meetings/year)
- international inter-comparison exercises (IRMM)
- Online access for various levels of end-users





Year	Matrix	Radionuclide(s)	
2003	Air filter	$^{137}\text{Cs}$	
2005	Milk powder	$^{134/137}\text{Cs}$ , $^{40}\text{K}$ , $^{90}\text{Sr}$	
2008	Water	$^{238/234}\text{U}$ , $^{226/228}\text{Ra}$	
2010	Soil	$^{40}\text{K}$ , $^{137}\text{Cs}$ , $^{212/214}\text{Bi}$ , $^{212/214}\text{Pb}$ , $^{226}\text{Ra}$ , $^{230/232}\text{Th}$ , $^{234/235/238}\text{U}$ , $^{238/239/240}\text{Pu}$ , $^{90}\text{Sr}$	
2011	Bilberry	$^{90}\text{Sr}$ , $^{137}\text{Cs}$ , $^{40}\text{K}$	
2012	Water	Gross alpha/beta activity	
2014	Air filter	$^{137}\text{Cs}$	
2016	Air filter	$^{137}\text{Cs}$ , $^{134}\text{Cs}$ , $^{131}\text{I}$ (ENV57/MetroERM)	



## 2014 EC ILC

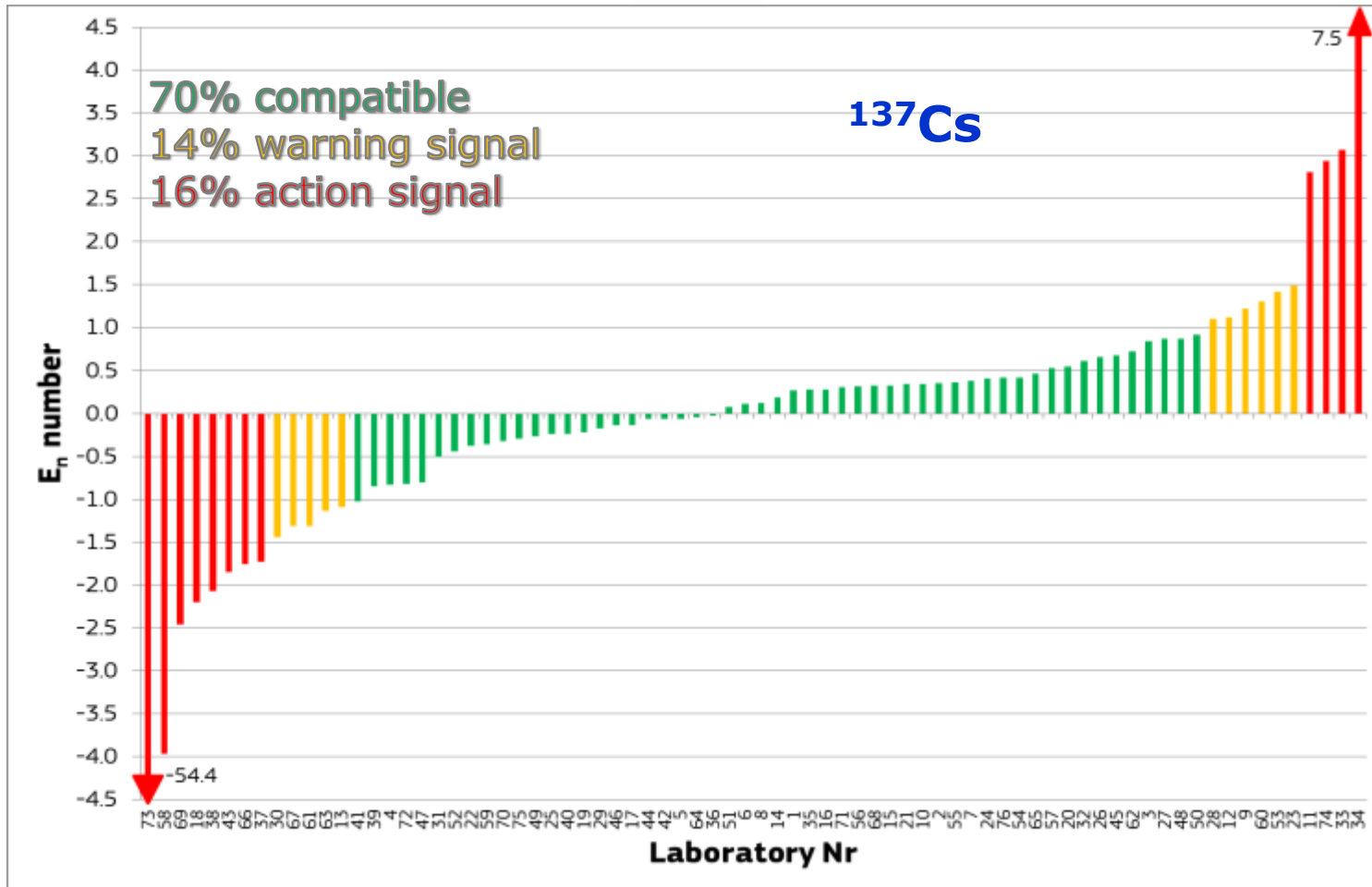
*76 laboratories*

*32 European countries*

- 68 laboratories nominated by 26 EU MS*
- 8 laboratories reporting to EURDEP\* from 6 non-EU countries*

\*European Radiological Data Exchange Platform





where  
 x  
 X  
 U<sub>lab</sub>  
 U<sub>ref</sub>

participant's result  
 assigned reference value  
 expanded uncertainty of a participant's result  
 expanded uncertainty of the assigned reference value

$$E_n = \frac{x - X}{\sqrt{U_{lab}^2 + U_{ref}^2}}$$

The laboratory code is the confidential code communicate individually to each participating laboratory

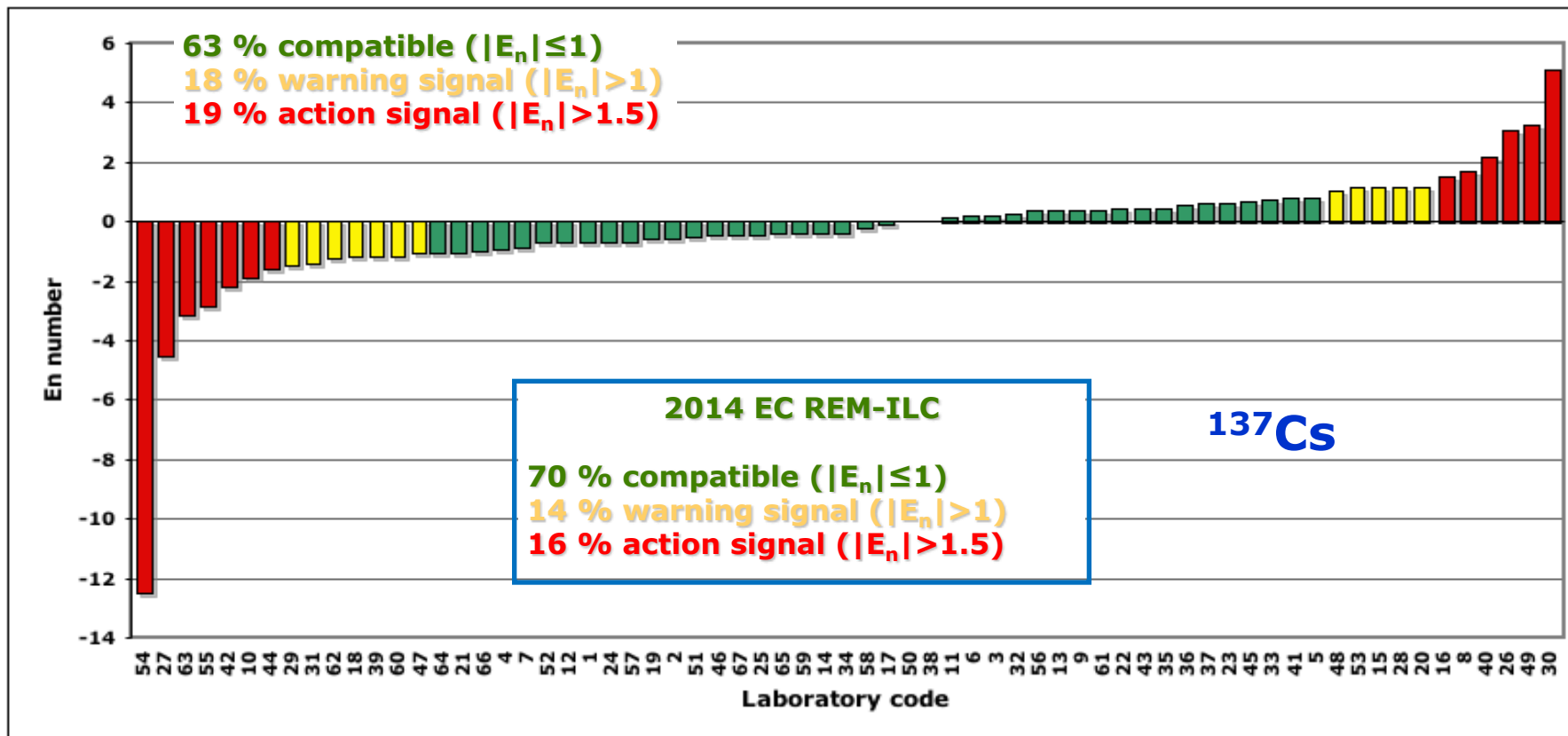


## Metrology for radiological early warning networks in Europe

The MetroERM project aims to deliver metrologically sound measurements of fundamental radiological quantities such as ambient dose equivalent rate, radioactive concentrations in air and ground contamination levels in real-time. It will provide the opportunity to comprehensively address the harmonization of the radiological early warning networks in Europe.

### Deliverables:

- Evaluation report: analysis of questionnaires on GDR and air concentration monitoring devices in Europe
- Technical report: Data harmonisation procedures for EURDEP
- Inter laboratory exercise:  $^{131}\text{I}$ ,  $^{134}\text{Cs}$  and  $^{137}\text{Cs}$  on air filters



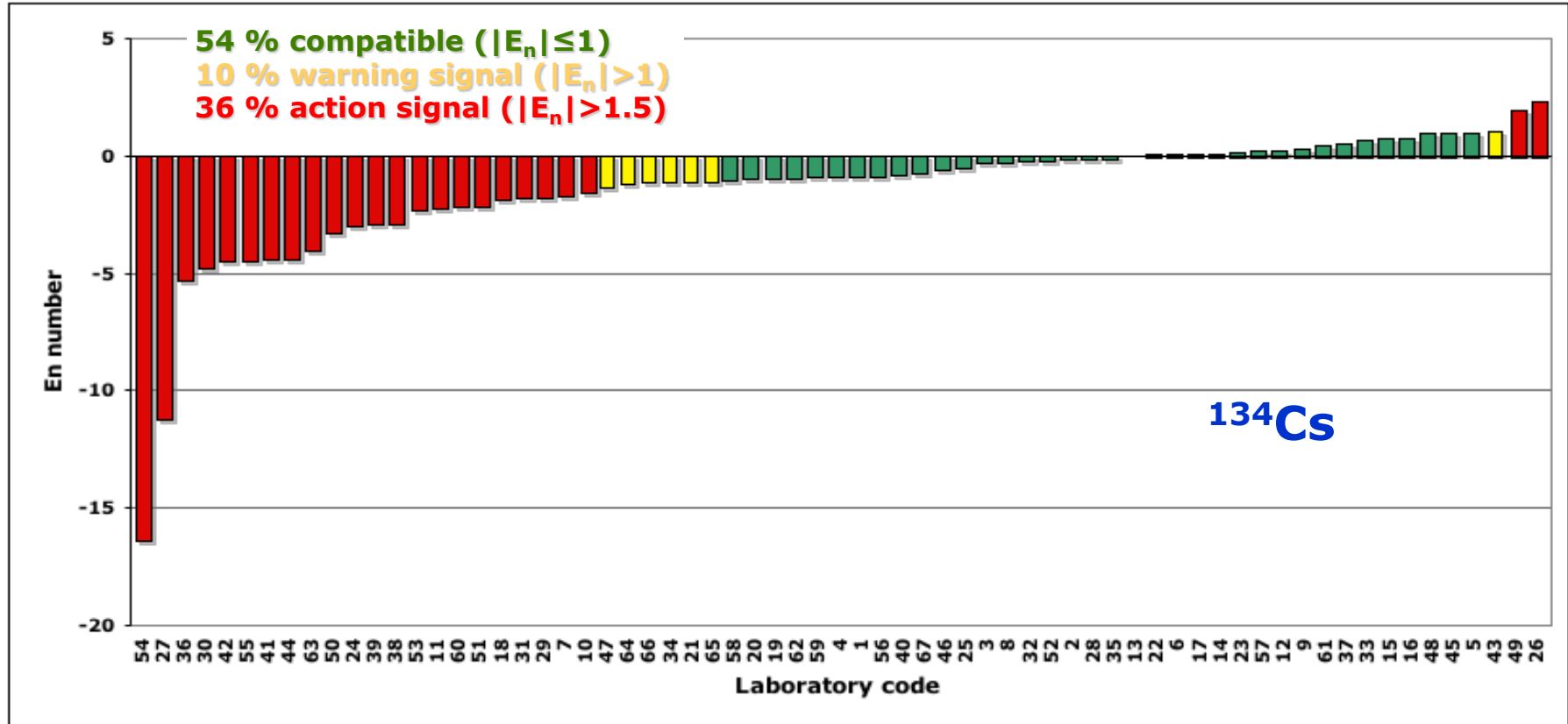
where  
 $x$   
 $X$   
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 $U_{ref}$

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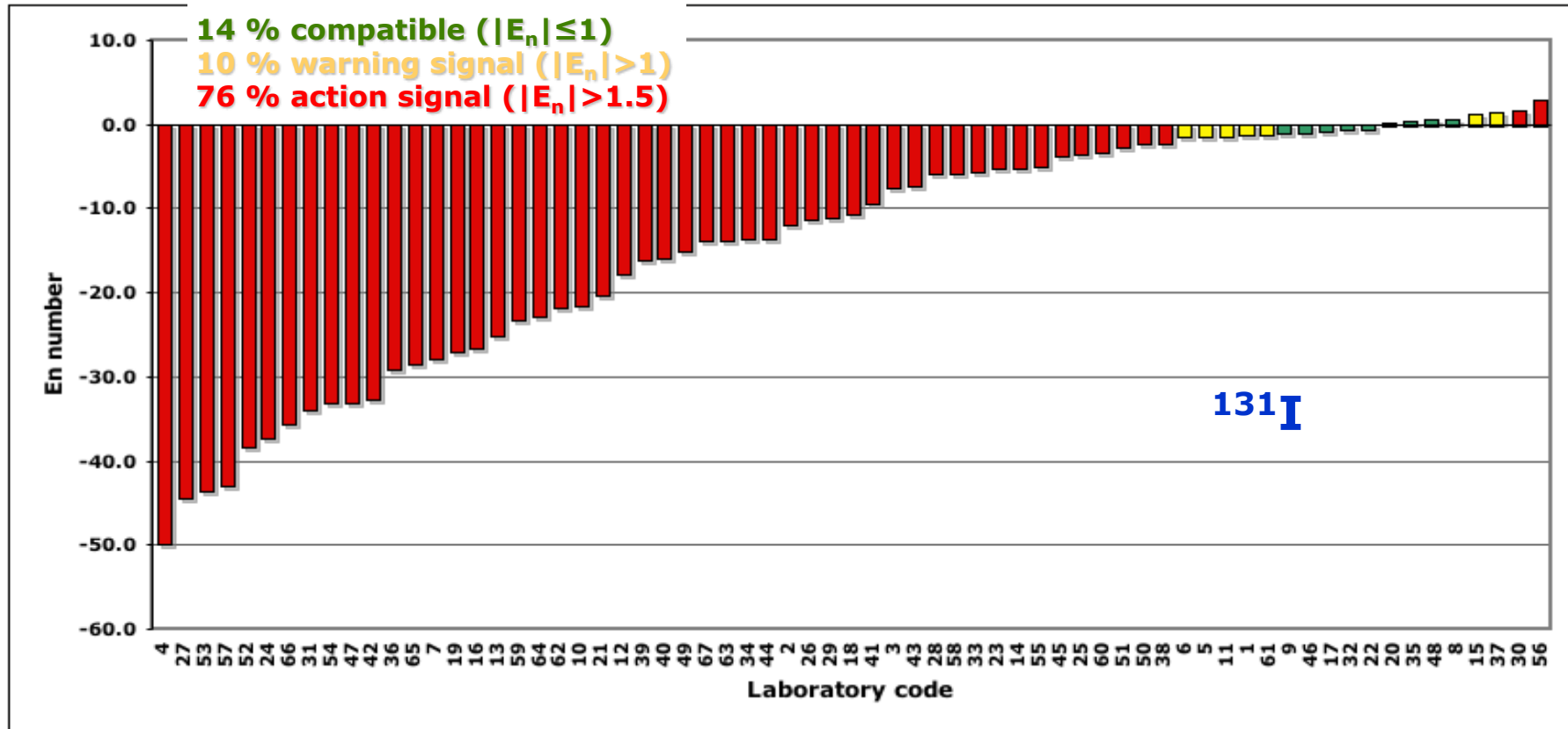


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## Conclusions

- Almost all of the participants reported **reliable measurement results**.
  - 137Cs and 134Cs results quite satisfactory
  - measurement results were in **good agreement** with spiked activity values
  - 137Cs picture comparable to that of the previous ILCs
  - 131I need extensive investigation
- Uncertainties often underestimated

**Permanent need for such comparisons to reaffirm the performance of the laboratories.**

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