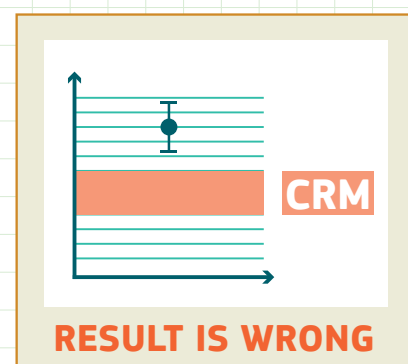
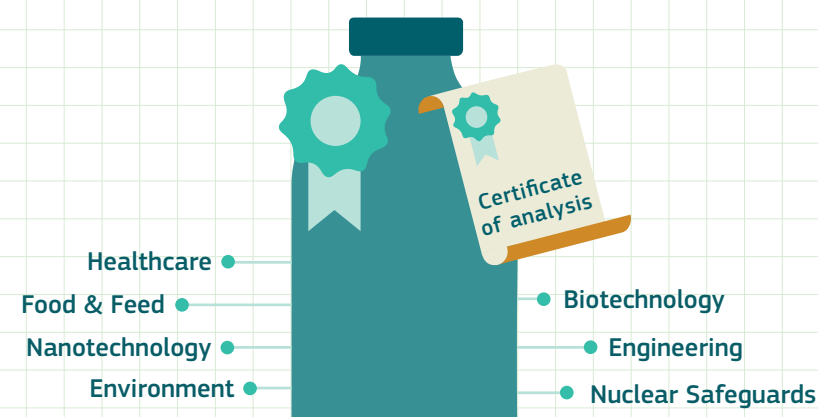


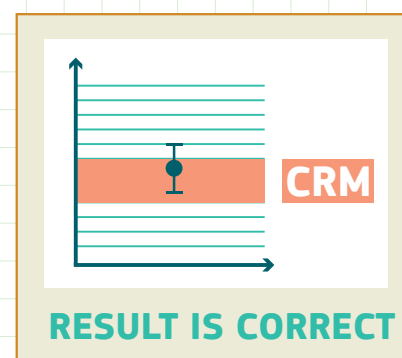
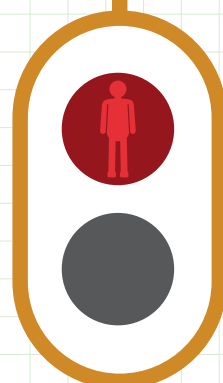
Confidence in measurements

Laboratories around the world need to check if they can measure correctly. They analyse Certified Reference Materials (CRMs) and compare their results with the certified values.

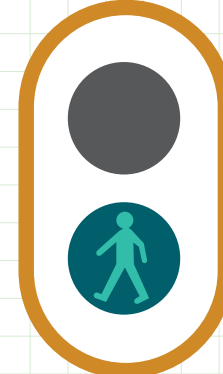
CREATING
IMPACT



Routine samples are not correctly analysed.



Routine samples are also correctly analysed.



eu|academy

LEARN MORE!

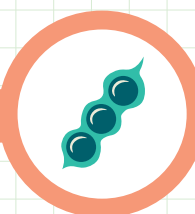


Free online training course
Estimation of uncertainties and the use of reference materials (EURM)
academy.europa.eu

Reference Materials at the forefront

Supporting EU policies

1998-2024



GMO CRMs

ERM-BF410 to ERM-BF447
(Regulation (EC) No 1829/2003, and (EU) 619/2011 on genetically modified food and feed)

2008

2010

2011



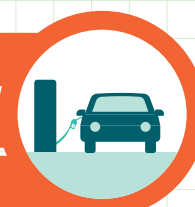
Proteins in human serum

ERM-DA470k/IFCC, ERM-DA471/IFCC, ERM-DA474/IFCC
(IVD Regulation 2017/746)

2005

2018

2023



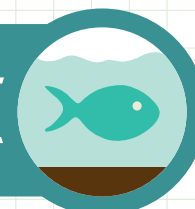
Fiscal fuel marker CRMs

ERM-EF317, ERM-EF318k and ERM-EF319 (Council Directive 95/60/EC and EC Decision 2001/574/EC and 2022/197)

2015

2018

2022



Priority substances in the field of water policy

ERM-CA100, IRMM-427/428, ERM-CC537a and ERM-CE100 (Water Framework Directive 2000/60/EC and Directive 2013/39/EU)

2018

2019

2022



Pesticide reference materials in cucumber, soya and wheat

ERM-BC403, ERM-BC700, ERM-BC706
(Regulation (EC) No 396/2005)

Science for Policy
Joint Research Centre



EU Science Hub
joint-research-centre.ec.europa.eu

Joint Research Centre



Reference Materials

From the European Commission

1957

Treaties of Rome

"The Commission shall set up a Joint Nuclear Research Centre. It shall organise a **Central Bureau of Nuclear Measurements**."(CBNM)

1973

The **Bureau Communautaire de Référence (BCR)** was established and the first activities of the EC in the field of metrology started.

1994

Institute for Reference Materials and Measurements (IRMM) took over the BCR tasks (responsibility for the management of all existing CRMs).

2004

Accreditation to ISO Guide 34 (first in Europe) which became ISO 17034 in 2016.

2016

RM activities of IRMM continue under the name **Joint Research Centre (JRC)** located in Geel (Belgium).

A BRIEF HISTORY OF INNOVATION

CBNM

BCR

IRMM

ISO GUIDE 34

JRC Geel

ISO 17034

1963

First reference materials produced: targets and reference samples certified for neutron physics applications

1973

First **EURISOTOPE** CRMs by the CBNM

1977

First **non-nuclear** RMs produced

1984

Production of the first **non-nuclear isotopic CRM**: $^{10}\text{B}/^{11}\text{B}$ isotope amount ratio (IRMM-011)

1987

First CRMs for **neutron dosimetry** nickel certified for cobalt impurity and isotopic composition (EC-NRM 521)

1998

First **Genetically Modified Organism** CRM: Roundup Ready Soybean

1998

Production of RMs for validation of tests for **bovine spongiform encephalopathy BSE** (mad cow disease)

1999

First CRM in collaboration with IFCC: **cortisol in serum** (IRMM/IFCC-451)

2006

First **ERM-CRM for acrylamide in toasted bread** (ERM-BD273)

2010

First certified **nanoparticle** CRM (ERM-FD100)

2012

First copy number concentration CRM for diagnosis and treatment monitoring of **chronic myeloid leukaemia** (ERM-AD623)

2014

First CRM for **radionuclide activity concentration** (IRMM-426), wild berries

2015

First **fresh tissue** CRM processed for PFAS in fish (IRMM-427)

2016

First **surface water** CRM certified for PAHs (ERM-CA100)

2016

First **presence/absence CRM**: *Staphylococcus aureus* enterotoxin in cheese powder (IRMM-359)

2017

First CRMs for Abeta 42 in cerebrospinal fluid for **early detection of Alzheimer's disease** (ERM-DA480/IFCC to ERM-DA483/IFCC)

2018

First CRM for modern **pesticides in food** (ERM-BC403)

2020

COVID-19 RMs for the identification of the **corona virus** or **antibodies** against the corona virus (EURM-017 to EURM-019)

2020

Novel CRM **simulating airborne particulate matter PM2.5 for air quality monitoring** (ERM-CZ110)

2020

First CRM for **somatic cell count** in milk (ERM-BD001a/b)

2022

First **autoimmune** CRM in collaboration with NIBSC and WHO (ERM-DA477/IFCC)

2022

First CRM for **chlorinated paraffins** in fish (ERM-CE100)

2023

First CRM for **food processing contaminants** infant formula (ERM-BD087)



Certified Reference Materials, CRM
catalogue of the JRC
crm.jrc.ec.europa.eu