

The **COMAR** database – a tool for finding reference materials

Thomas Steiger & Rita Pradel

- Introduction - use of RMs
- COMAR history
- COMAR management
- Facts and figures
- COMAR search tools & CRM information provided
- Search examples

Certified reference materials:

- Calibration
- Quality control
- Method validation
- Assignment of values to properties of other (reference) materials

Certified reference materials:

- are measurement benchmarks
- ensure reliability and comparability
- help to create confidence
- provide traceability in chemical analysis
- are required in quality assurance (ISO 17025)



Find a reference material

One main problem for users:

- How to find the proper RM / CRM needed?



Ways out:

- catalogues of producers
- websites of producers
- **COMAR database (world wide scope)**
- other databases of regional orientation or for special kinds of materials:
GoeReM, JCTLM, RMInfo, VIRM ...



What is COMAR?

COMAR has been developed to assist users (labs) in finding the reference materials they need.

COMAR set-up: ORACLE 9.2 database & PHP 5.1 web interface

COMAR performance:

- Browser independent (Microsoft, Mozilla Firefox, Netscape...)
- CRM information language is English
- Navigation language can be multi-lingual
- Update rights are given to the COMAR coding centres (national or international institutes) and single producers
- CRM classification by harmonised catalogues



History of COMAR

late 1970s: French LNE proposed an RM database

COde d'Indexation des **MA**tériaux de **R**éférence

mid-1980s: COMAR was improved and established by LNE (France),
LGC (United Kingdom) and BAM (Germany)

- not free of charge
- floppy disks updated and distributed once a year

May 1990: broadening co-operation, 7 institutes, first MoU

2001/2002: development of an internet based version by BAM

- free of charge for users since **March 2003**
- available via internet and can be directly updated

2005: Memorandum of Understanding (MoU) renewed

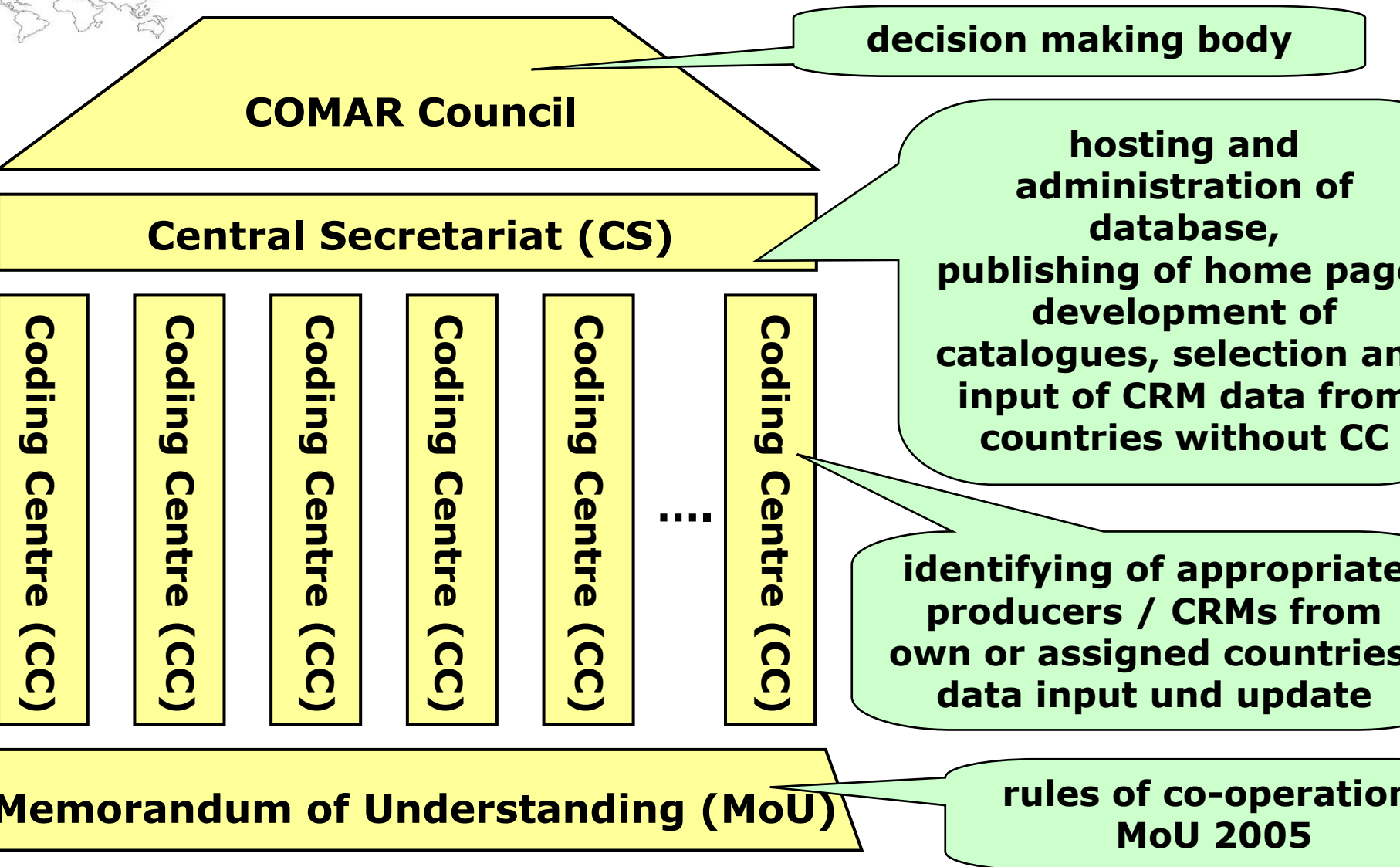
2007/2008: software update and extension of search tools

currently COMAR is supported by 19 national or international institutes
(coding centres)

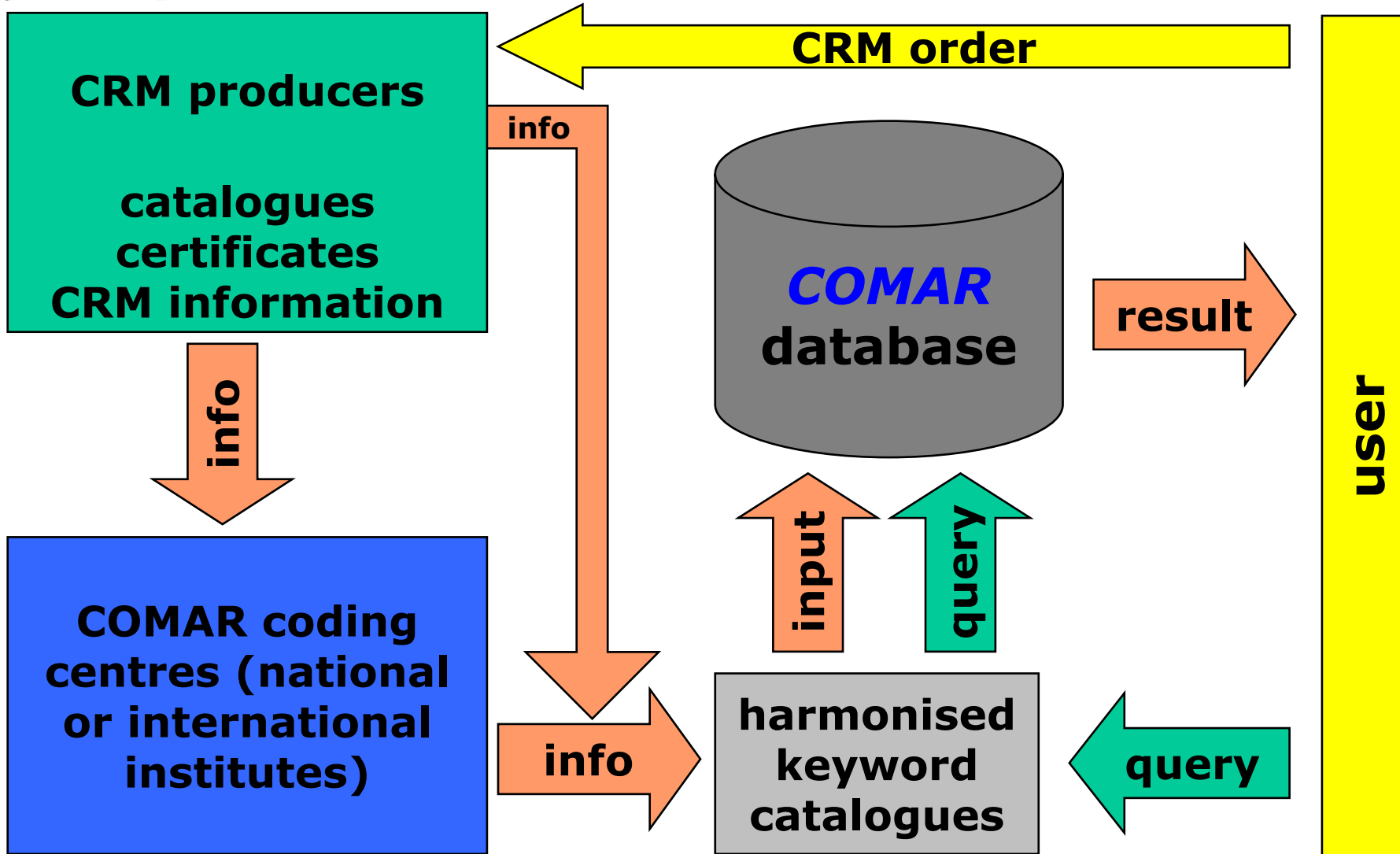
COMAR Central Secretariat

seminar RM Producer & PT Provider Accreditation, Rio de Janeiro, June 2008

COMAR organisation structure



COMAR management





COMAR coding centres – signatories of COMAR MoU

	BAM	Germany		NITE	Japan
	CANMET	Canada		NMIA	Australia
	CENAM	Mexico		NMi	The Netherlands
	CMI	Czech Republic		NIM	China
	GUM	Poland		NPL	India
	IRMM	European Union		SAMTS	Bulgaria
	KRISS	Republic of Korea		SMU	Slovakia
	LGC *	United Kingdom		SP	Sweden
	LNE	France		UNIIM	Russian Federation
				BelGIM	Belarus new coding centre

* currently not signed MoU



About 11000 CRMs from about 220 producers in 24 countries

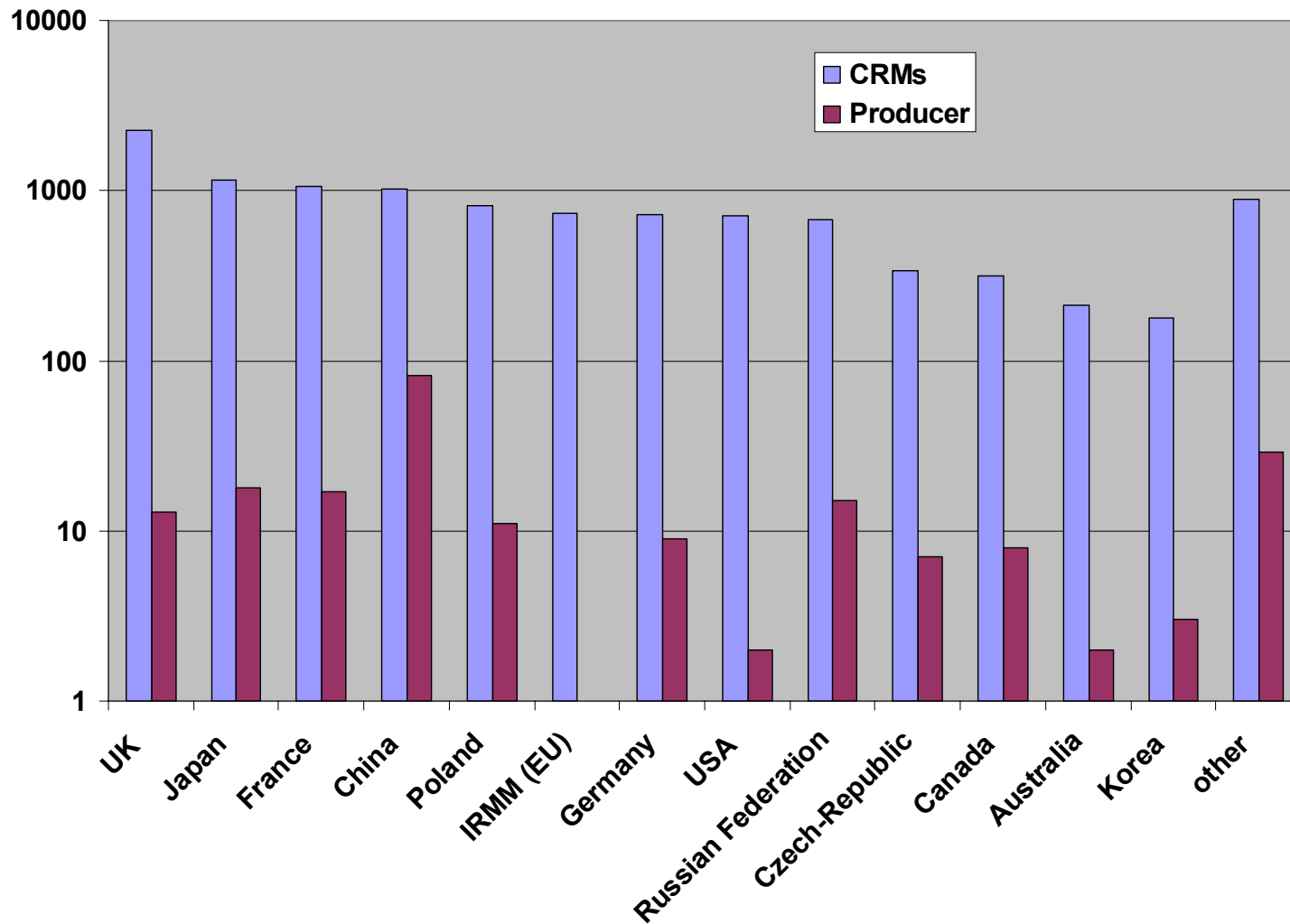
Australia	France	Russian Federation
Austria	Germany	Slovakia
Belarus	India	South-Afrika
Brazil	Japan	Sweden
Bulgaria	Korea	Switzerland
Canada	Mexico	The Netherlands
China	Mongolia	UK
Czech-Republic	Poland	USA

European and international institutions:

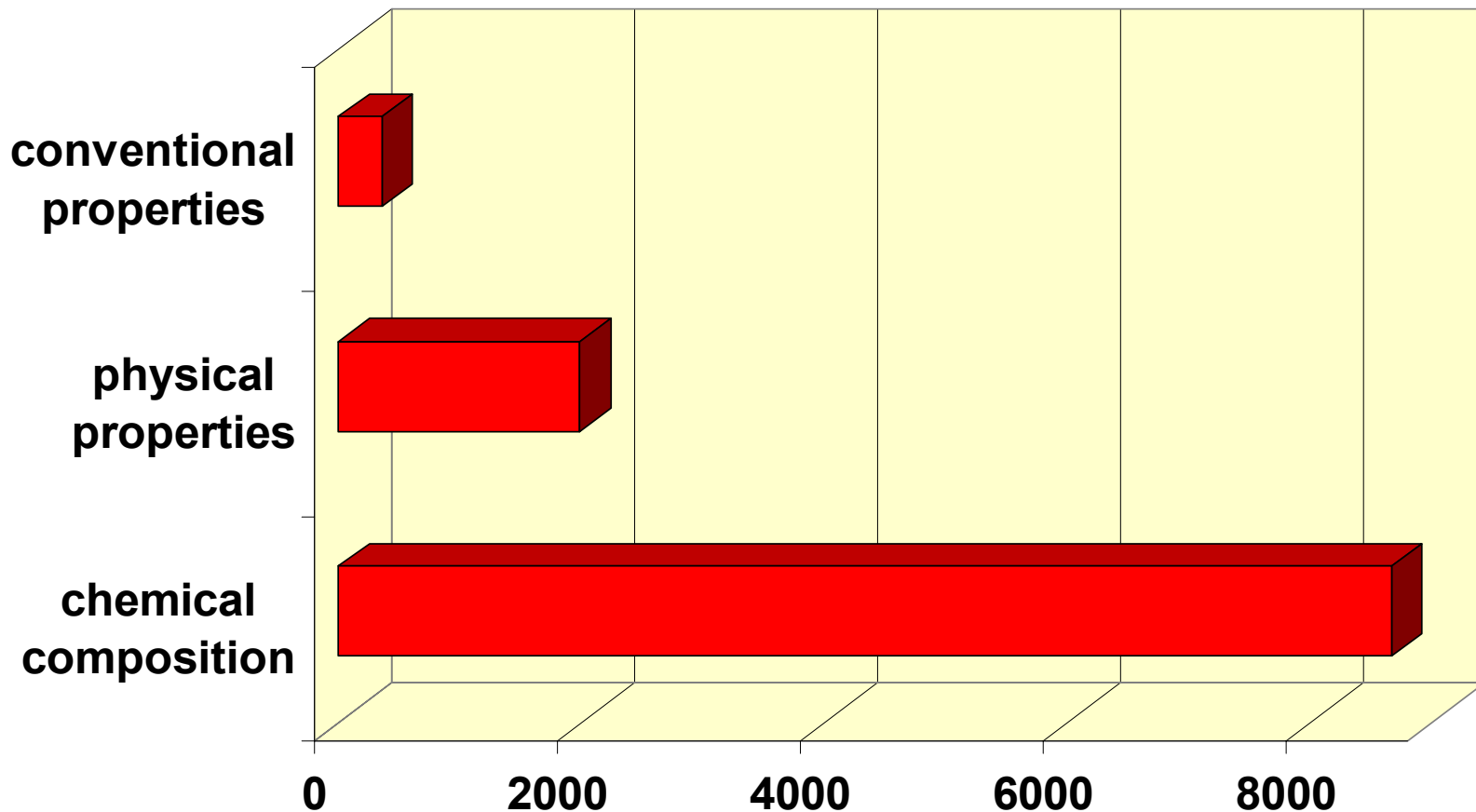
IRMM/BCR

IAEA

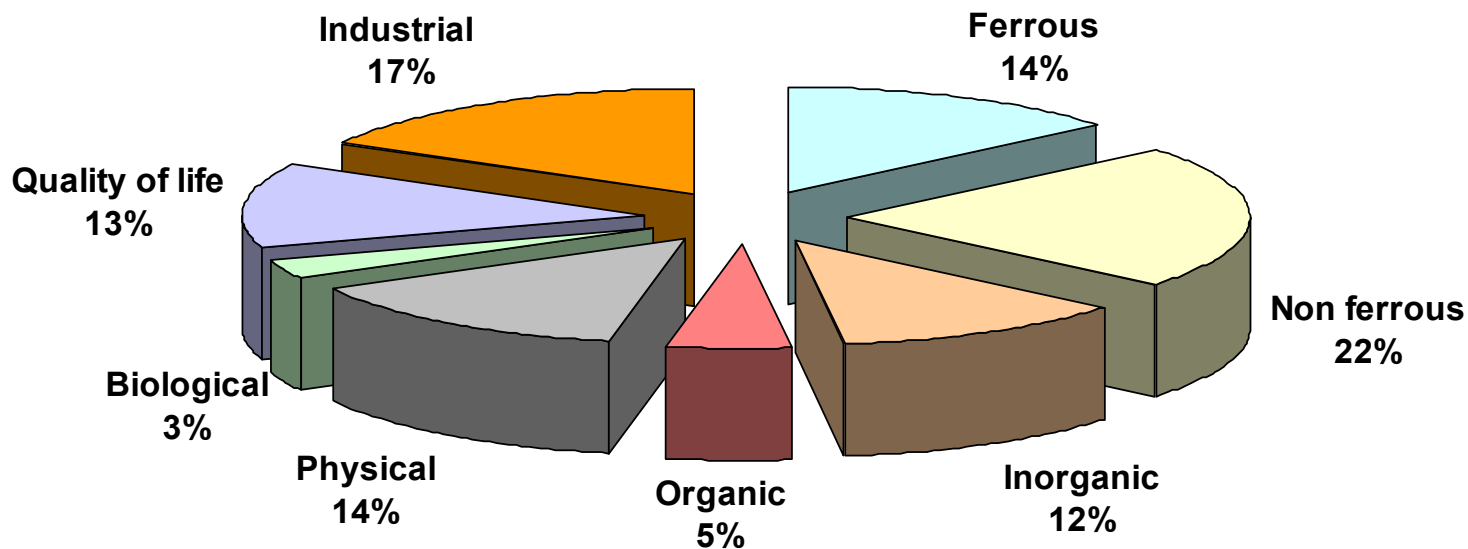
Number of CRMs and producers by countries (Mai 2008)



Number of CRMs according to certified properties March 2008



Distribution of CRM by fields of application - March 2008





Overview about CRMs contained in COMAR Heavy Metal Constituents in Matrix Materials (1)

Agriculture
Leaves, Vegetables, other Plants

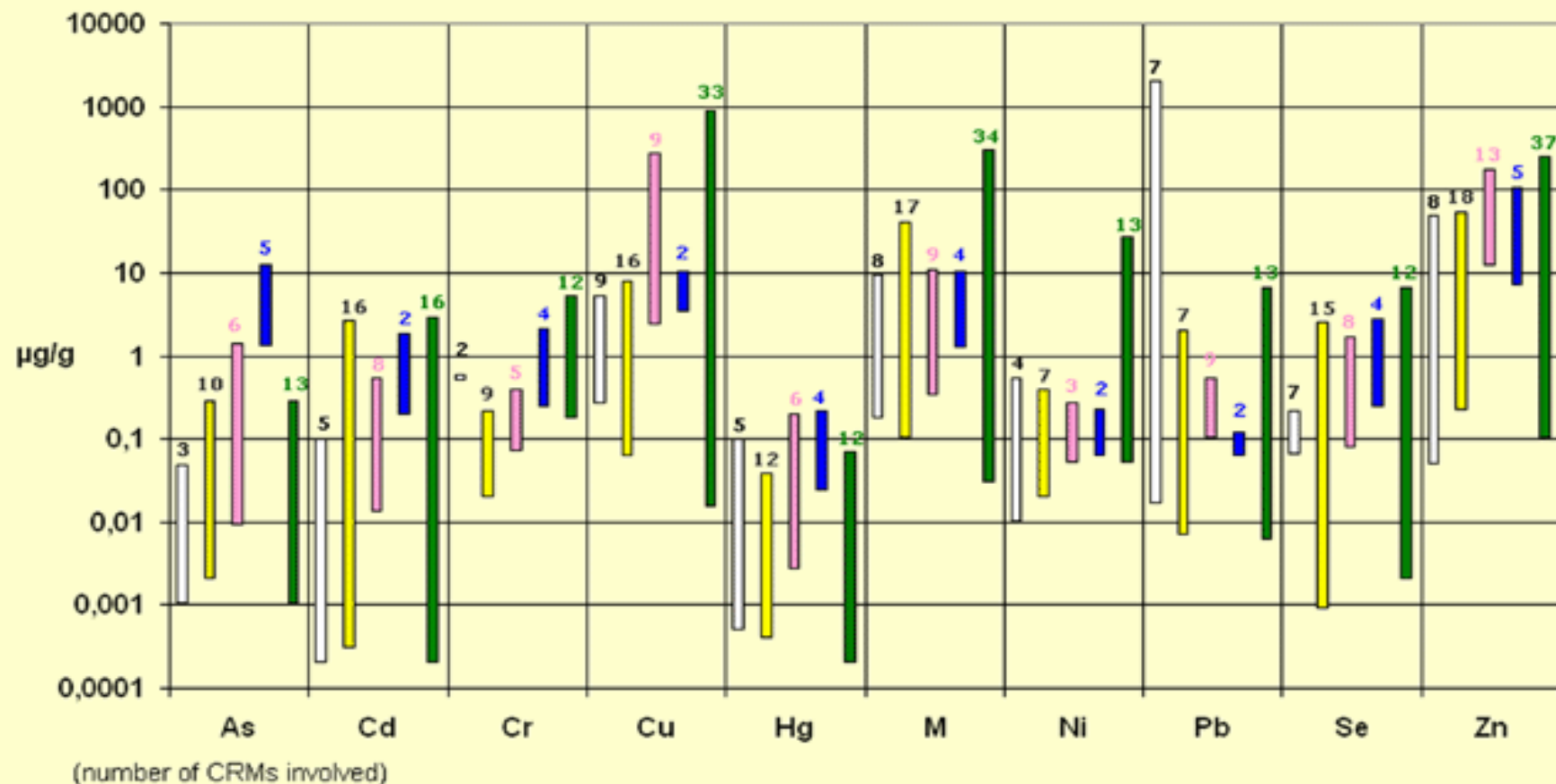




Overview about CRMs contained in COMAR Heavy Metal Constituents in Matrix Materials (2)

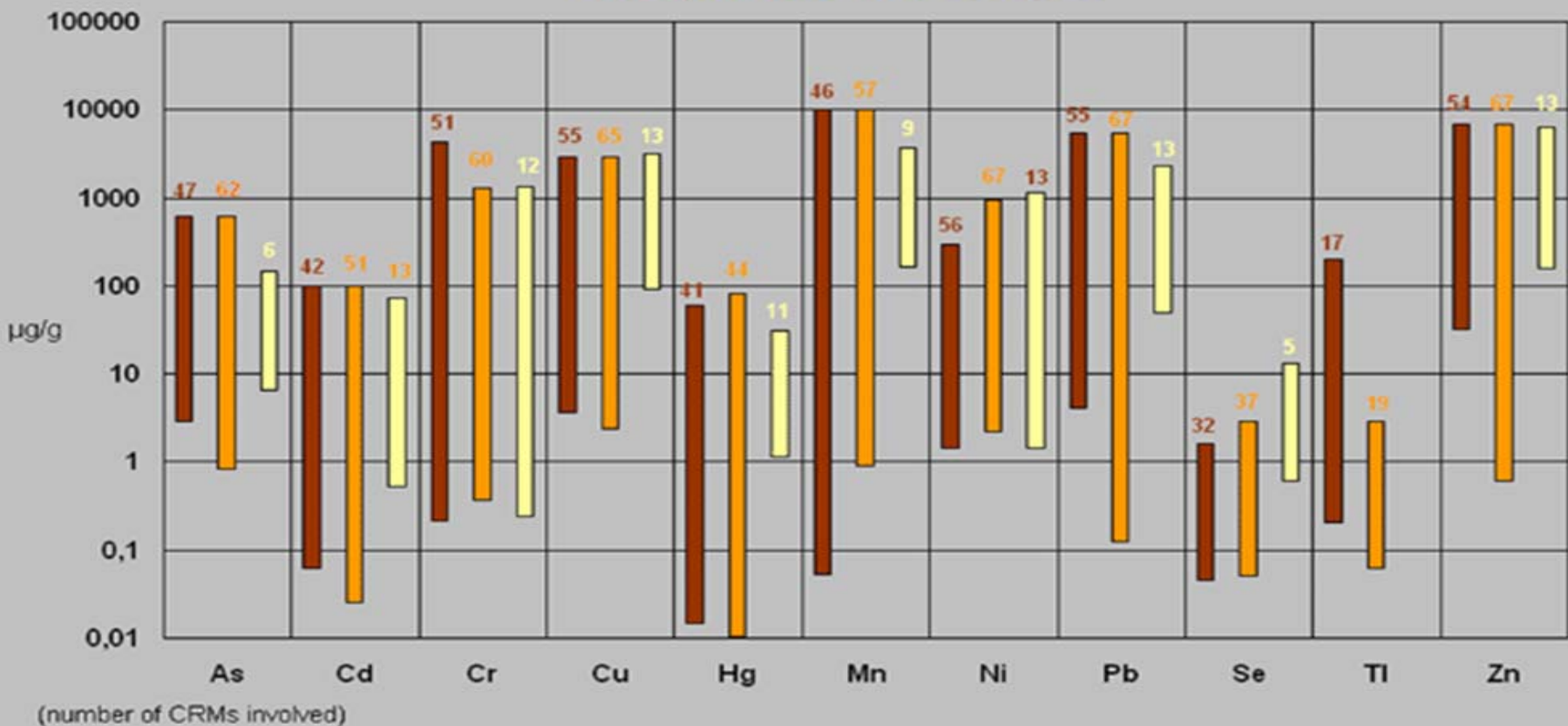
Foodstuffs

Milk, Corn, Meat, Fish, other Foodstuffs



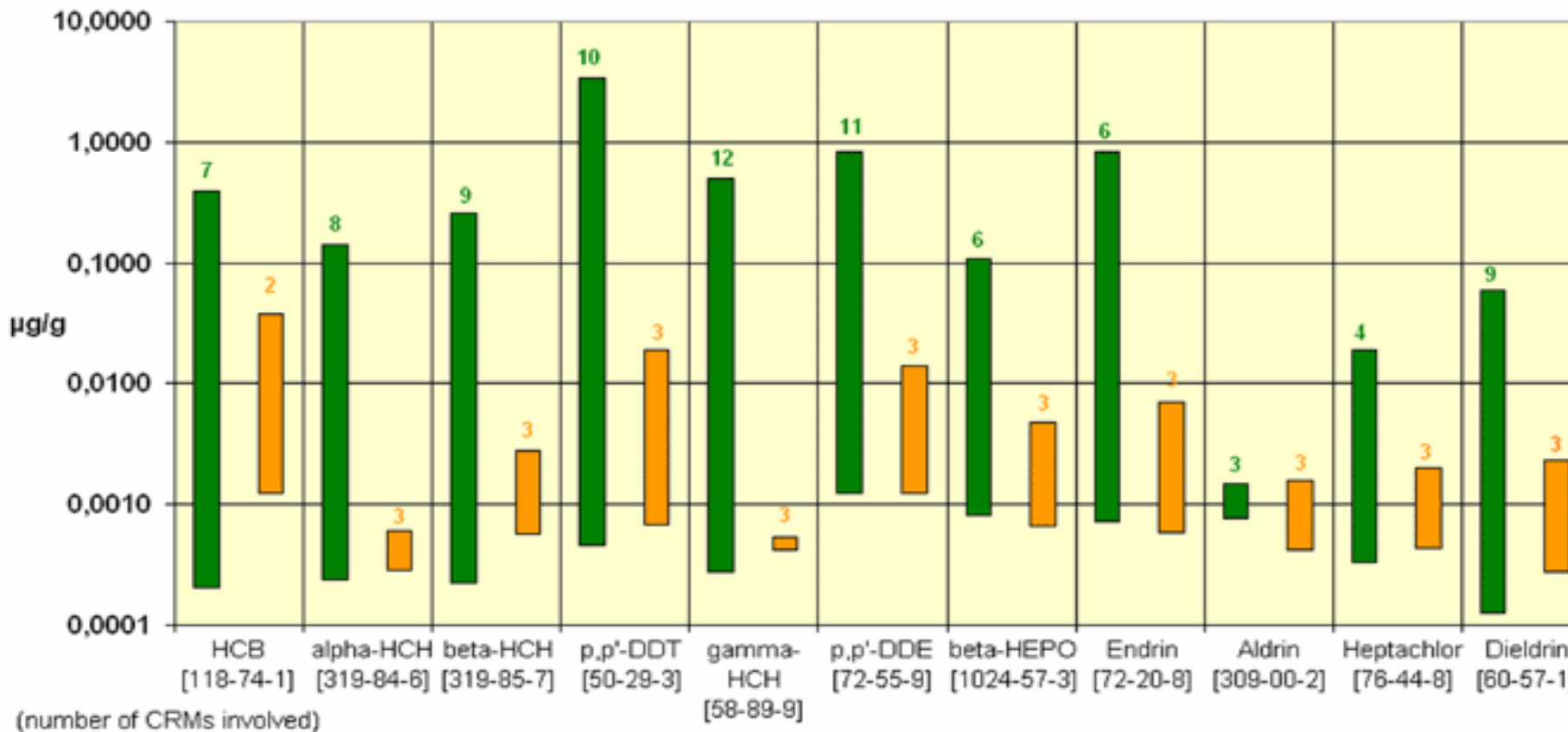
Overview about CRMs contained in COMAR Heavy Metal Constituents in Matrix Materials (3)

Environment
Soils, Sediments, Sludges



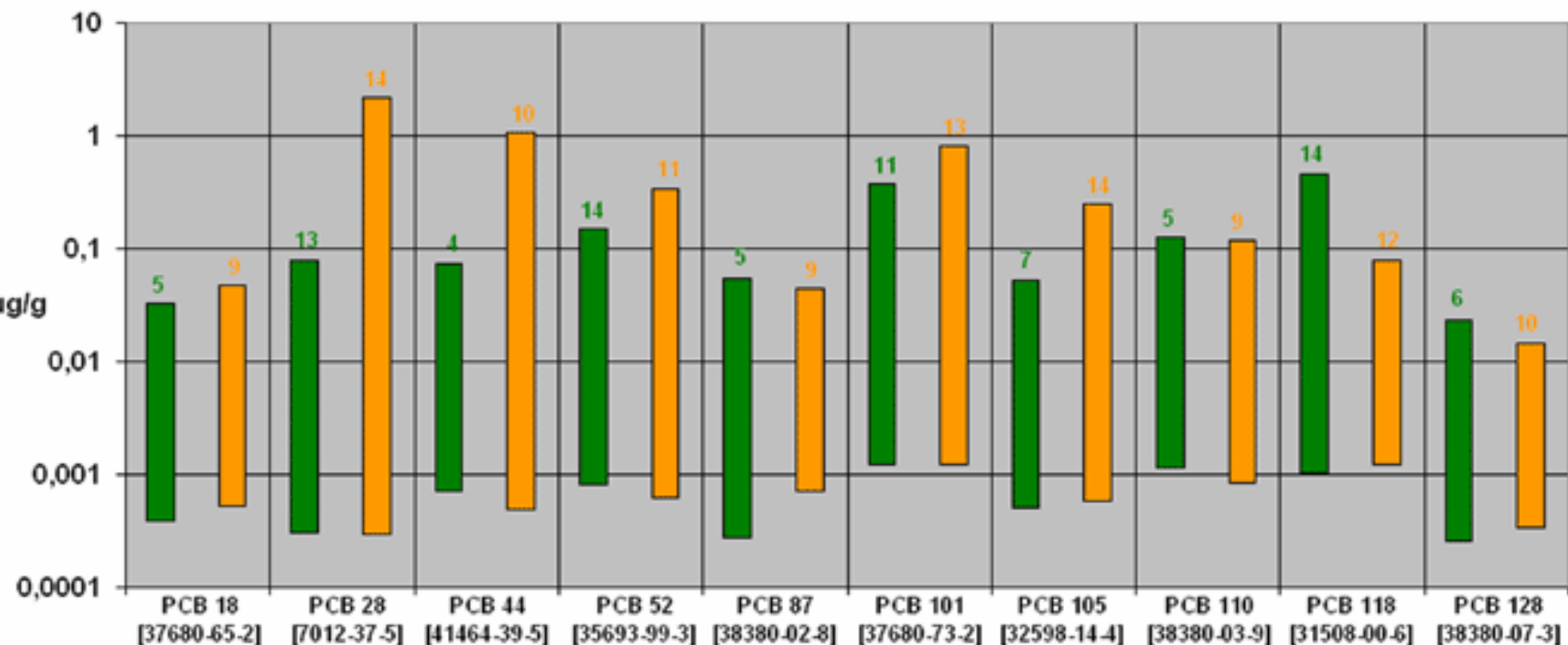
Overview about CRMs contained in COMAR Organic Constituents in Matrix Materials (1)

Pesticides Foodstuffs and Sediments



Overview about CRMs contained in COMAR Organic Constituents in Matrix Materials (2)

Polychlorinated Biphenyls Foodstuffs, Sediments



(number of CRMs involved)

Contained CRM information

Producer	complete address of the producer	
Additional information (purchase, experts, QMS)	(pdf files, if available)	
CRM name	e.g. BAM-376	
Description	e.g. pure copper, Cu 99,5	
Application description	e.g. intended use	
Packaging / storage	e.g. 40 g bottle; storage at -20 °C	
Form of material	e.g. disc	
Chemical composition		
Elements	e.g. Ag	163.0 µg/g
Molecules (CAS-No.)	e.g. alpha-HCH (319-84-6)	32.0 µg/kg
Physical/conventional properties		
Physical properties (ISO-No.)	e.g. Activity / 9-33	4 - 400 kB
Conventional properties	e.g. Flash point /ISO 1516	10.3 - 9.8
Data files	certificate, report, references (if available)	
Quality	CRM, RM	
Status	available, out of stock, under development	

Searching in COMAR

- **Full text search in the CRM description field**
- **Search using harmonized catalogues**
 - ✓ **certified properties**
 - ✓ **field of application**
- **Setting lower and upper limit values for quantity of interest**
- **Use of Boolean operators in query construction**
- **Restrict search to selected producers or countries**
- **Important:**
 - ✓ **Use only COMAR navigation tools (not “back” and “forward” of your browser) !**
 - ✓ **Comprehensive user guide available from COMAR website**

COMAR catalogues

Search is supported by following catalogues:

- fields of application (e.g. environment)
- physical properties (e.g. kinematic viscosity)
- conventional properties (e.g. hardness Vickers)
- form of material (e.g. powder)
- elements (e.g. As)
- molecules (e.g. alpha-HCH, CAS No. 319-84-6)

Catalogues prepared for CRM update, presently not released for users:

- element / molecule groups (e.g. pesticides)
- matrix (e.g. soil)



COMAR



Search CRM

Examples

Production

Submit CRM

COMAR

SS

Contact points

Member directories

Chairman

Members: ~11000

2008-03-13

access to database


Welcome to **COMAR**

the international database for certified reference materials

The mission of *COMAR* is to disseminate information on available certified reference materials.

The *COMAR* database lists thousands of certified reference materials (CRMs) produced world-wide by about 200 producers in 27 countries.

The use of *COMAR* is free of charge. *COMAR* is a non-commercial network of national and international organisations, and we are open for further international participation.

COMAR is kindly funded by  **BAM**

Enter [COMAR database](#) for CRM search.
New users have to register. Helpful [information](#) for your first login.

[What is a reference material?](#)

[What is a certified reference material?](#)

Login screen


<http://www.comar.bam.de/home/>

this site uses cookies to handle your session data. It will not work with cookies turned off.

To use the COMAR database it is necessary to register. Already registered users should enter their user name and password and click on the "Login" button below. New users should click on the "Sign Up" button.

User

Password



[Logout - www.comar.bam.de](#)

click button "Sign Up"

Login screen

This site uses cookies to handle your session data. It will not work with cookies turned off.

Sign Up

User

Email

Select your preferred language. ▼

Password

Retype password

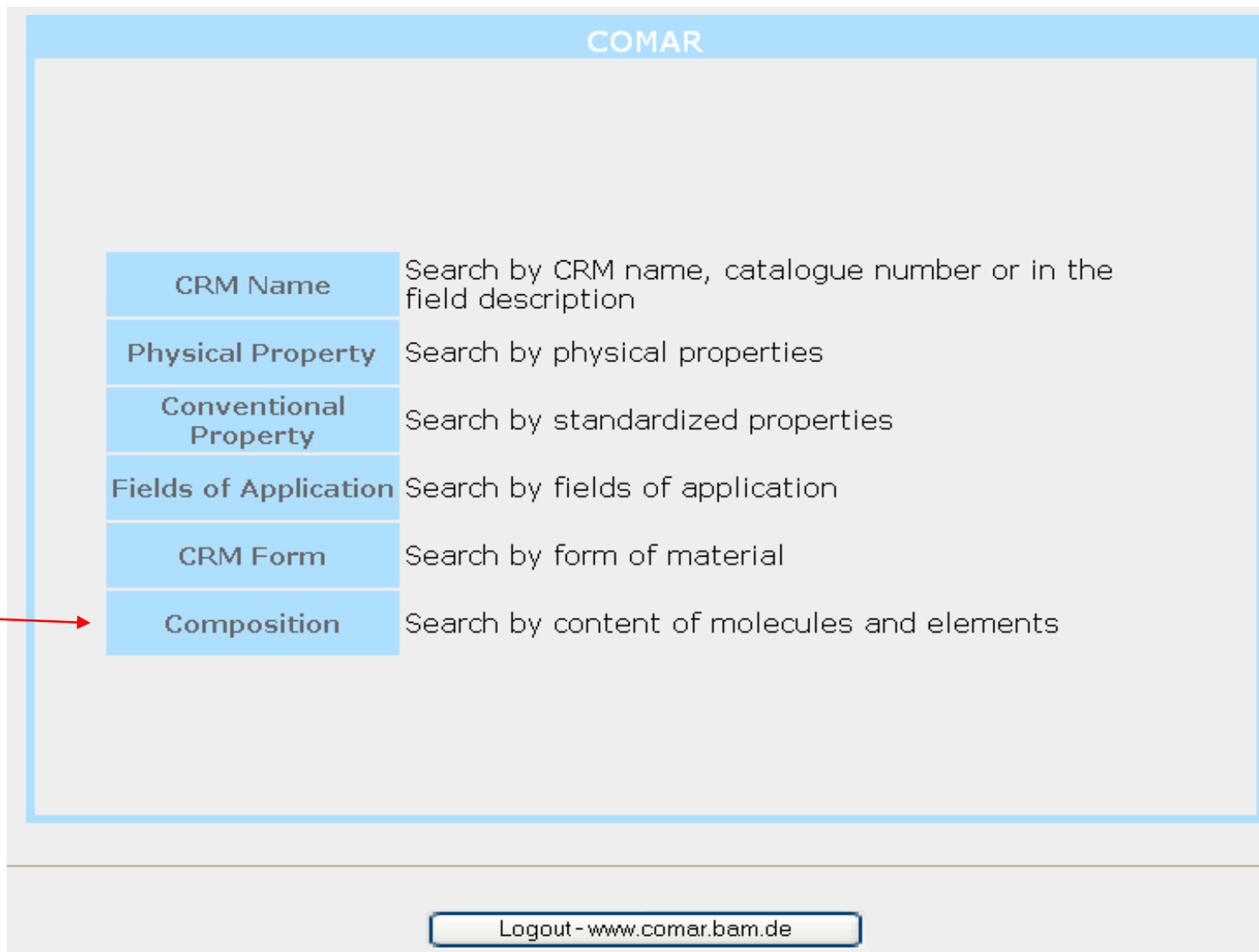
Comment

register to database

fill input fields

[Logout - www.comar.bam.de](#)

Start screen for users

A screenshot of the COMAR user interface. At the top, the word "COMAR" is displayed in a light blue header bar. Below this, a list of search options is presented in a table-like format. Each option consists of a blue button with white text and a corresponding description to its right. The options are: "CRM Name" (Search by CRM name, catalogue number or in the field description), "Physical Property" (Search by physical properties), "Conventional Property" (Search by standardized properties), "Fields of Application" (Search by fields of application), "CRM Form" (Search by form of material), and "Composition" (Search by content of molecules and elements). A red arrow points from the text "Click one of the buttons" to the "Composition" button. At the bottom of the screen, there is a button labeled "Logout - www.comar.bam.de".

**Click one
of the
buttons**

Screen composition

navigation bar for switching to search routes

COMAR Startpage CRM Name/ Description Physical Property Conventional Property Fields of Application CRM Form Composition

element catalogue

number of hits

Number of CRMs found: 11145

ment

Molecule / CAS_No.

Main Application

click [+] to open input field for search in CRM description

N O

Description

Form

Country

Producer

mark boxes and click "Apply Filter" button

Apply Filter

Show Results

Clear Search

Screen composition

COMAR Startpage CRM Name/ Description Physical Property Conventional Property Fields of Application CRM Form Composition

Number of CRMs found: 11145

Form fields with red arrows pointing to them:

- Country dropdown menu
- Structure / CAS_No. input field
- Fields of Application dropdown menu
- Description input field
- Manufacturer dropdown menu
- Product Name dropdown menu

all catalogues open and ready for selecting

input fields ready for entering

Apply Filter

Show Results

Clear Search

Screen composition

Example: search for As, Cd, Hg and Cr in soil

COMAR Startpage CRM Name/ Description Physical Property Conventional Property Fields of Application CRM Form Composition

1. select

2. click [+] and add to que

Number of CRMs found: **11036**

Element	Description	
As		[+]
As		
Au		
B		
Ba		
Be		
Bi		
Br		
C		
Ca		
Cd		
Ce		
Cl		
Co		
Cr		
Cs		
Cu		
Dy		
Er		
Eu		

repeat procedure for each element

Apply Filter Show Results Clear Search

Screen composition

Example: search for As, Cd, Hg and Cr in soil

COMAR Startpage CRM Name/ Description Physical Property Conventional Property Fields of Application CRM Form Composition

Number of CRMs found: **219**

search result

Element

A	N	O	Element	Unit	min	max	..
<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	As	% <input type="text" value=""/>	<input type="text" value=""/>	<input type="text" value=""/>	[+] [-]
<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	Cd	% <input type="text" value=""/>	<input type="text" value=""/>	<input type="text" value=""/>	[+] [-]
<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	Hg	% <input type="text" value=""/>	<input type="text" value=""/>	<input type="text" value=""/>	[+] [-]
<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	Cr	% <input type="text" value=""/>	<input type="text" value=""/>	<input type="text" value=""/>	[+] [-]

Molecule / CAS_No.

Main Application

A	N	O	Description	[+]
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		[+]

Form

Country

Producer

Click [+] to open input field for searching in the RM description

Apply Filter

Show Results

Clear Search

Screen composition

Example: search for As, Cd, Hg and Cr in soil

COMAR Startpage CRM Name/ Description Physical Property Conventional Property Fields of Application CRM Form Composition

Number of CRMs found: 44 **3. new result**

Element

A	N	O	Element	Unit	min	max	..
<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	As	% <input type="button" value="v"/>	<input type="text"/>	<input type="text"/>	<input type="button" value="[-]"/>
<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	Cd	% <input type="button" value="v"/>	<input type="text"/>	<input type="text"/>	<input type="button" value="[-]"/>
<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	Hg	% <input type="button" value="v"/>	<input type="text"/>	<input type="text"/>	<input type="button" value="[-]"/>
<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	Cr	% <input type="button" value="v"/>	<input type="text"/>	<input type="text"/>	<input type="button" value="[-]"/>

Molecule / CAS_No.

Main Application

A	N	O	Description	[+]
<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	soil 1. enter	<input type="button" value="[-]"/>

Form

Country **2. click**

Producer



Screen composition

Example: search for As, Cd, Hg and Cr in soil

COMAR Startpage CRM Name/ Description Physical Property Conventional Property Fields of Application CRM Form Composition

Number of CRMs found: **44**

Element

A	N	O	Element	Unit	min	max	..
<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	As	% <input type="button" value="v"/>	<input type="text"/>	<input type="text"/>	<input type="button" value="[-]"/>
<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	Cd	% <input type="button" value="v"/>	<input type="text"/>	<input type="text"/>	<input type="button" value="[-]"/>
<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	Hg	% <input type="button" value="v"/>	<input type="text"/>	<input type="text"/>	<input type="button" value="[-]"/>
<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	Cr	% <input type="button" value="v"/>	<input type="text"/>	<input type="text"/>	<input type="button" value="[-]"/>

Molecule / CAS_No.

Main Application

A	N	O	Description	..
<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	soil	<input type="button" value="[-]"/>

Form

Country

Producer

1. mark box (arrow pointing to Country checkbox)

2. click button (arrow pointing to Apply Filter button)

Screen composition

Search for As, Cd, Hg and Cr in soil e.g. in Germany

COMAR Startpage CRM Name/ Description Physical Property Conventional Property Fields of Application CRM Form Composition

Number of CRMs found: 44

Element	Unit	min	max	..
<input type="radio"/> A <input type="radio"/> N <input type="radio"/> O <input checked="" type="radio"/> As	%			[+] [-]
<input type="radio"/> As <input type="radio"/> N <input type="radio"/> O <input checked="" type="radio"/> Cd	%			[+] [-]
<input type="radio"/> Cd <input type="radio"/> N <input type="radio"/> O <input checked="" type="radio"/> Hg	%			[+] [-]
<input type="radio"/> Hg <input type="radio"/> N <input type="radio"/> O <input checked="" type="radio"/> Cr	%			[+] [-]

Molecule / AS_No.

Main Application

A	N	O	Description	
<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	soil	[+] [-]

Country	
<input checked="" type="checkbox"/>	GERMANY
	CHINA
	CZECH-REPUBLIC
	GERMANY
	JAPAN
	SLOVAKIA
	THE NETHERLANDS
	UNITED-KINGDOM

1. open

2. select

3. click [+] and add to query

Screen composition

Search for As, Cd, Hg and Cr in soil e.g. in Germany

COMAR Startpage CRM Name/ Description Physical Property Conventional Property Fields of Application CRM Form Composition

Number of CRMs found: 2

← new result

Element	Unit	min	max	..
<input type="radio"/> A <input type="radio"/> N <input type="radio"/> O As	%			[+] [-]
<input type="radio"/> A <input type="radio"/> N <input type="radio"/> O Cd	%			[+] [-]
<input type="radio"/> A <input type="radio"/> N <input type="radio"/> O Hg	%			[+] [-]
<input type="radio"/> A <input type="radio"/> N <input type="radio"/> O Cr	%			[+] [-]

Molecule / CAS_No.

Main Application

Description	..
<input type="radio"/> A <input type="radio"/> N <input type="radio"/> O soil	[+] [-]

Form

Country

Producer

Apply Filter

Show Results

Clear Search

← click button for results



View search results

Search for As, Cd, Hg and Cr in soil e.g. in Germany

Number of results: 2

Page: 1 of 1

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Next

Print Preview

Back to Selection Page

1	CRM Name	Status	Year	Country	Validity
	<u>BAM-U110</u>	available	2006	GERMANY	
Producer BAM/Division I.1 Inorganic Chemical Analysis					
Trace elements in contaminated soil; certified properties: total and aqua regia extractable (ISO 11466) mass fractions					
For the verification of analytical results obtained by standardised procedures as well as for the validation of modified or new analytical procedures. Furthermore, it can be used for quality control or calibration purposes if X-ray fluorescence spectrometry					
or other methods of direct solid state analysis are applied. unit size: 60 g					
Fields of Application		Inorganics ----Rocks, Soils			
2	CRM Name	Status	Year	Country	Validity
	<u>BAM-U111</u>	available	2007	GERMANY	2010
Producer BAM/Division I.1 Inorganic Chemical Analysis					
Trace elements in contaminated soil; certified properties: total and aqua regia extractable (ISO 11466) mass fractions					
The material is intended for the verification of analytical results obtained by standardised procedures as well as for the validation of modified or new analytical methods.					
The CRM is available as a powder with particle sizes below 63 µm and is supplied in 100 ml brown glass bottles containing (43 ± 1) g.					
Fields of Application		Inorganics ----Rocks, Soils			

Number of results: 2

Page: 1 of 1

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Print Preview

Back to Selection Page

View search results – print preview

Search for As, Cd, Hg and Cr in soil

GERMANY Print Screen CRM

 rpradel2  partner

COMAR VERSION 2.37

Please use the print function of your browser.

Act:	Status:	Year:	Country:	Validity:
110	available	2006	DE	
Center:	BAM Division I.1 Inorganic Chemical Analysis			
Description:	Trace elements in contaminated soil; certified properties: total and aqua regia extractable (ISO 11466) mass fractions			
Field of Application:	Inorganics	Rocks, Soils		

Act:	Status:	Year:	Country:	Validity:
111	available	2007	DE	2010
Center:	BAM Division I.1 Inorganic Chemical Analysis			
Description:	Trace elements in contaminated soil; certified properties: total and aqua regia extractable (ISO 11466) mass fractions			
Field of Application:	Inorganics	Rocks, Soils		

[Back](#)

View search results

Search for As, Cd, Hg and Cr in soil

Number of results: 2

Page: 1 of 1

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Print Preview

Back to Selection Page

1	CRM Name	Status	Year	Country	Validity
	BAM-U110	available	2006	GERMANY	
Producer		BAM/Division I.1 Inorganic Chemical Analysis			
Trace elements in contaminated soil; certified properties: total and aqua regia extractable (ISO 11466) mass fractions For the verification of analytical results obtained by standardised procedures as well as for the validation of modified or new analytical procedures. Furthermore, it can be used for quality control or calibration purposes if X-ray fluorescence spectrometry or other methods of direct solid state analysis are applied. unit size: 60 g					
Fields of Application		Inorganics -----Rocks, Soils			
2	CRM Name	Status	Year	Country	Validity
	BAM-U111	available	2007	GERMANY	2010
Producer		BAM/Division I.1 Inorganic Chemical Analysis			
Trace elements in contaminated soil; certified properties: total and aqua regia extractable (ISO 11466) mass fractions The material is intended for the verification of analytical results obtained by standardised procedures as well as for the validation of modified or new analytical methods. The CRM is available as a powder with particle sizes below 63 µm and is supplied in 100 ml brown glass bottles containing (43 ± 1) g.					
Fields of Application		Inorganics -----Rocks, Soils			

Click and details

Number of results: 2

Page: 1 of 1

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Next

Print Preview

Back to Selection Page

Detailed information of the CRM (1)

Search for As, Cd, Hg and Cr in soil: BAM-U111

Please use the print function of your browser.

Data of CRM

Producer: BAM Division I.1 Inorganic Chemical Analysis

Contact: Angelika Selmke
Address 1: Bundesanstalt fuer Materialforschung und -pruefung
Address 2: Richard-Willstaetter-Str. 11
Address 3: 12489 Berlin
Phone: +49 (0)30 8104-2061
Fax: +49 (0)30 8104-1117
Email: sales.crm@bam.de
WWW: <http://www.bam.de/>

QM Statement:
Additional Information: [p180.pdf](#)

Product: BAM-U111	Year: 2007
Status: complete	Validity: 2010

Description:

Trace elements in contaminated soil; certified properties: total and aqua regia extractable (ISO 11466) mass fractions

Application Description:

The material is intended for the verification of analytical results obtained by standardised procedures as well as for the validation of modified or new analytical methods.

Packaging/Storage:

The CRM is available as a powder with particle sizes below 63 µm and is supplied in 100 ml brown glass bottles containing (43 ± 1) g.

Fields of Application

List Subjects:

Field of Application	2nd Field of Application	3rd Field of Application
Inorganics	Rocks, Soils	

Material Form/Type

Form of Material:

powder

Type of Material:

Matrix:

soils

2nd Field of Matrix:

Detailed information of the CRM (2)

Search for As, Cd, Hg and Cr in soil: BAM-U111

Elements/Molecules

List of Elements:

Element	Relation	Content	Unit	Status	Equivalent	Level
	=	43.2	mg/kg	certified	total content	-
	=	4.84	mg/kg	certified	total content	-
	=	17.2	mg/kg	certified	total content	-
	=	216	mg/kg	certified	total content	-
	=	81.2	mg/kg	certified	total content	-
	=	6.32	mg/kg	certified	total content	-
	=	84	mg/kg	certified	total content	-
	=	220	mg/kg	certified	total content	-
	=	40.1	mg/kg	certified	total content	-
	=	566	mg/kg	certified	total content	-

Element-/Molecule Groups:

Files

Data File:

Certificate:

[c2303818.pdf](#)

Report:

[r2303818.pdf](#)

Literature Citation:

Quality:

CRM

Registry_No.:

Status:

available

Back



Certified Reference Material

BAM-U111

Contaminated Soil

Certified Values

Aqua regia extractable mass fractions:
(extraction according to ISO 11466)

Element	Mass fraction in mg/kg*	Uncertainty <i>U</i> in mg/kg*
As	43.2	1.6
Cd	4.84	0.19
Co	17.2	1.0
Cr	216	9
Cu	81.2	2.3
Hg	6.32	0.22
Ni	84	4
Pb	220	7
V	40.1	1.9
Zn	566	21

* corrected for dry matter content of the soil sample at 105 °C determined according to ISO 11465

U is the expanded uncertainty (coverage factor $k = 2$), which gives a level of confidence of approximately 95 %. It was calculated according to GUM following the equation:

$$U = k \times u_{\text{bet}} = 2 \times \sqrt{u_{\text{bet}}^2 + u_{\text{hom}}^2}$$

Detailed information of the CRM (2)

Search for As, Cd, Hg and Cr in soil

Elements/Molecules

List of Elements:

Element	Relation	Content	Unit	Status	Equivalent	Level
As	=	43.2	mg/kg	certified	total content	-
Cd	=	4.84	mg/kg	certified	total content	-
Co	=	17.2	mg/kg	certified	total content	-
Cr	=	216	mg/kg	certified	total content	-
Cu	=	81.2	mg/kg	certified	total content	-
Hg	=	6.32	mg/kg	certified	total content	-
Ni	=	84	mg/kg	certified	total content	-
Pb	=	220	mg/kg	certified	total content	-
V	=	40.1	mg/kg	certified	total content	-
Zn	=	566	mg/kg	certified	total content	-

Element-/Molecule Groups:

Data Files

Data File:

Certificate:

[c2303818.pdf](#)

Report:

[r2303818.pdf](#)

Literature Citation:

Quality:

CRM

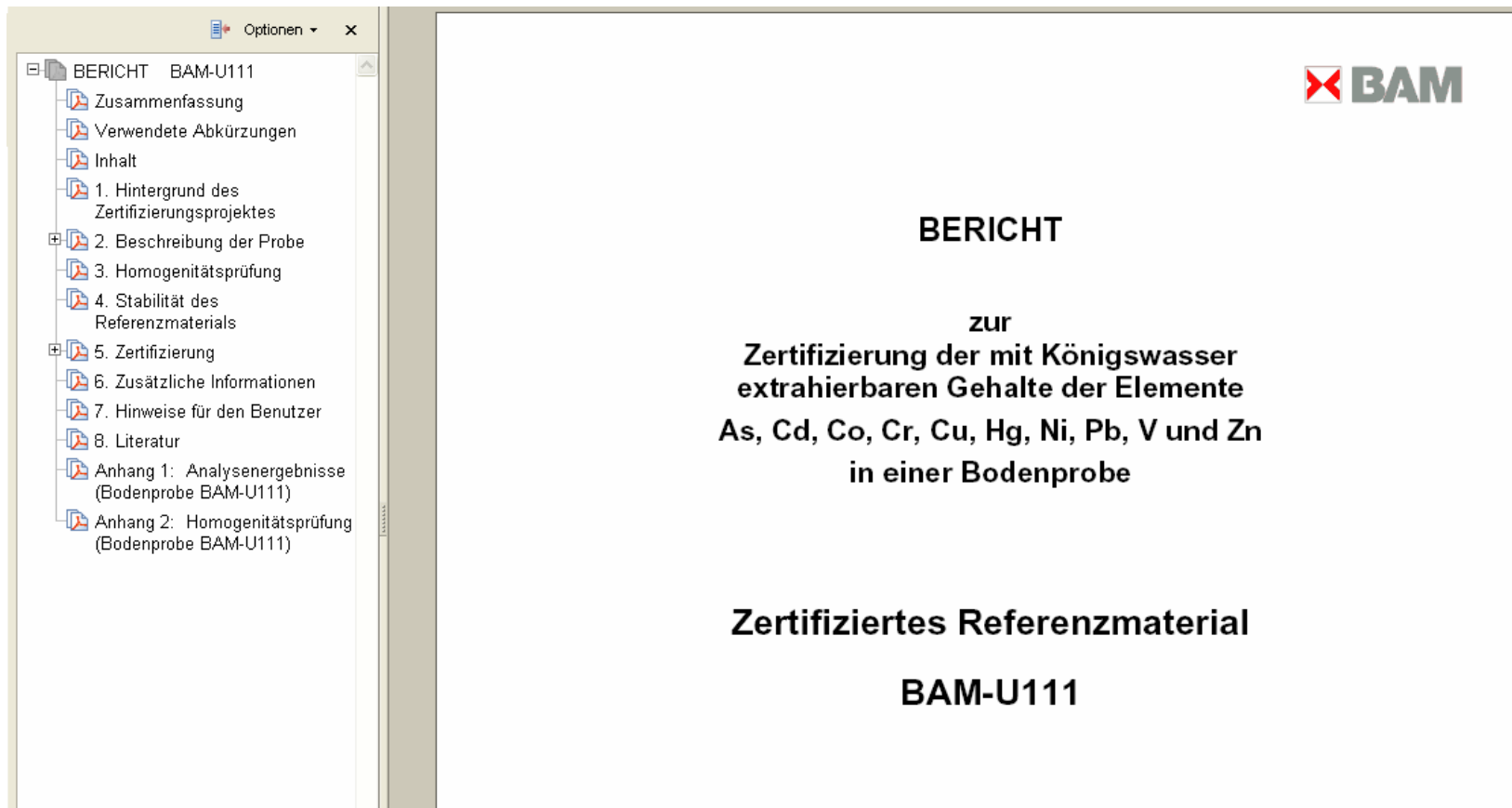
Registry_No.:

Status:

available

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Search for As, Cd, Hg and Cr in soil: BAM-U111



The image shows a screenshot of a report viewer application. On the left, there is a table of contents for a report titled 'BERICHT BAM-U111'. The contents include sections for 'Zusammenfassung', 'Verwendete Abkürzungen', 'Inhalt', and numbered sections from 1 to 8, plus two appendices. On the right, the main content area displays the title page of the report, featuring the BAM logo in the top right corner and the following text:

BERICHT

zur

**Zertifizierung der mit Königswasser
extrahierbaren Gehalte der Elemente
As, Cd, Co, Cr, Cu, Hg, Ni, Pb, V und Zn
in einer Bodenprobe**

Zertifiziertes Referenzmaterial

BAM-U111

Screen composition

Search for HCH (Hexachlorocyclohexane)

mark box

COMAR Startpage CRM Name/ Description Physical Property Conventional Property Fields of Application CRM Form Composition

Number of CRMs found: **11113**

ent [v] [+]

Molecule / CAS_No. ← **2. enter "HCH"** [v] [+]

Main Application

N	O	Description	[+]
---	---	-------------	-----

rm

Country

Producer

3. click button

Screen composition

Search for HCH (Hexachlorocyclohexane)

**repeat procedure for all
HCH molecules of interest**

COMAR Startpage CRM Name/ Description Physical Property Conventional Property Fields of Application CRM Form **Composition**

Number of CRMs found: 11113

ent

Molecule / CAS_No.

Main Application

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roducer

3. click [+] and add to query

2. select

**get only relevant part of
catalogue of molecule
names**

1. open

Screen composition

Search for HCH (Hexachlorocyclohexane)

COMAR Startpage CRM Name/ Description Physical Property Conventional Property Fields of Application CRM Form **Composition**

Number of CRMs found: **12**

result

	Molecule / CAS_No.	Unit	min	max
<input type="radio"/>	319-84-6 ⓘ	% ▾		
<input type="radio"/>	319-85-7 ⓘ	% ▾		
<input type="radio"/>	58-89-9 ⓘ	% ▾		

CAS numbers of molecules

Application

	Description
--	-------------

Country Producer

Apply Filter

Show Results

Clear Search

Screen composition

Search for HCH (Hexachlorocyclohexane)

COMAR Startpage CRM Name/ Description Physical Property Conventional Property Fields of Application CRM Form Composition

Number of CRMs found: 12

t

Molecule / CAS_No.

touch info point with mouse pointer

	Molecule / CAS_No.	Unit	min	max
<input type="radio"/>	319-84-6 ⓘ	% <input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="radio"/>	319-85-7 ⓘ	% <input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="radio"/>	58-89-9 ⓘ	% <input type="text"/>	<input type="text"/>	<input type="text"/>

Application

	Description
--	-------------

Country
Producer

Screen composition




Search for HCH (Hexachlorocyclohexane)

COMAR Startpage CRM Name/ Description Physical Property Conventional Property Fields of Application CRM Form **Composition**

Number of CRMs found: **12**

ent

Molecule / CAS_No. **mouse pointer touching infopoint**

	Molecule / CAS_No.	Unit	min	max
<input type="radio"/>	319-84-6 	% <input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="radio"/>	319-85-7 	% <input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="radio"/>	58-89-9 	% <input type="text"/>	<input type="text"/>	<input type="text"/>

different names:

- alpha-Benzenehexachloride
- alpha-Benzohexachloride
- alpha-BHC
- (±)-alpha-HCH
- alpha-HCH
- alpha-Hexachloran
- alpha-Hexachlorane
- alpha-Hexachlorocyclohexane
- (±)-alpha-Hexachlorocyclohexane
- alpha-Hexachlorocyclohexane
- alpha-Lindane
- alpha-1,2,3,4,5,6-Hexachlorocyclohexane
- alpha-666
- Cyclohexane, 1,2,3,4,5,6-hexachloro-, alpha- (8CI)
- Cyclohexane, 1,2,3,4,5,6-hexachloro-, (1a,2a,3b,4a,5b,6b)- (9CI)

all assigned names are displayed

ain Application

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Clear Search

Screen composition

Search for HCH (Hexachlorocyclohexane)

COMAR Startpage CRM Name/ Description Physical Property Conventional Property Fields of Application CRM Form Composition

Number of CRMs found: 12

Unit

Molecule / CAS_No.

O	Molecule / CAS_No.	Unit	min	max
<input type="radio"/>	319-84-6	% <input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="radio"/>	319-85-7	% <input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="radio"/>	58-89-9	% <input type="text"/>	<input type="text"/>	<input type="text"/>

In Application

N O Description

Country

Producer

Boolean operators

A = and

N = not

O = or

All Boolean operators = A (and)

Result: 12 HCH CRMs found

Screen composition

Search for HCH (Hexachlorocyclohexane)

[COMAR Startpage](#)
[CRM Name/ Description](#)
[Physical Property](#)
[Conventional Property](#)
[Fields of Application](#)
[CRM Form](#)
[Composition](#)

Number of CRMs found: 32

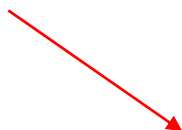
	Molecule / CAS_No.	Unit	min	max
<input type="radio"/>	319-84-6	% <input type="text"/>	<input type="text"/>	<input type="text"/>
<input checked="" type="radio"/>	319-85-7	% <input type="text"/>	<input type="text"/>	<input type="text"/>
<input checked="" type="radio"/>	58-89-9	% <input type="text"/>	<input type="text"/>	<input type="text"/>

Boolean operators set "or"

Result changed: 32 HCH CRMs found

Screen Conventional Properties Search for BET (specific surface area – gas adsorption method)

Switch to "Conventional Property"



COMAR Startpage CRM Name/ Description Physical Property **Conventional Property** Fields of Application CRM Form Composition

Number of CRMs found: 364

Conventional Property

Country
 Producer

1. open list of conventional properties



Screen Conventional Properties

Search for BET (specific surface area – gas adsorption method)

COMAR Startpage CRM Name/ Description Physical Property Conventional Property Fields of Application CRM Form Composition

3. click [+] and add to query

Number of CRMs found: 364

Conventional Property

Country
 Producer

Abrasion resistance · AFNOR NF T-46012
 Abrasion resistance · DIN 53 516
 Abrasion resistance · DIN 53 516 G 62001
 Abrasion resistance · ISO 4649-2002
 Acid phosphatase catalytic conc. · METH. FOR EC 3.1.3.2
 Acid potential · AP = 16
 Acid potential · AP = 39
 Acid potential · AP = 70
 Alanine aminotransferase conc. · IFCC METHOD at 37 C
 Ambient temp. tensile 0.2% Proof · EN10002-1
 Ambient temp. tensile 0.5% Proof · EN10002-1
 Annealing point · ASTM C 162-56
 Annealing point · ASTM C 336-64T
 Annealing point · ASTM C 336-71
 Ash content · ISO 2171 (1980, M 03/1)
 Ash · -
 Assay, acidimetric · -
 Assay, alkalimetric · -
 Assay, argentometric · -
 Assay, complexometric · -
 Assay, oxidimetric · -
 Assay, reductometric · -
 Atrazine · OECD testguideline 106
 Averaged molecular weight by MALDI-TOF-MS · -
BET method · DIN 66131
 Brabender Extensograph Energy · ICC 114/1 (M 08/1)
 Brabender Extensograph Extens. · ICC 114/1 (M 08/1)
 Brabender Extensograph Max resist. · ICC 114/1 (M 08/1)
 Brabender Extensograph Resist. at 50mm · ICC 114/1 (M 08/1)

1. open list of conventional properties

2. select

Screen Conventional Properties

Search for BET (specific surface area –gas adsorption method)

[COMAR Startpage](#)
[CRM Name/ Description](#)
[Physical Property](#)
[Conventional Property](#)
[Fields of Application](#)
[CRM Form](#)
[Composition](#)

Number of CRMs found: 5 ← result

Conventional Property		Unit	min	max
<input type="radio"/>	BET method · DIN 66131	m2/kg		

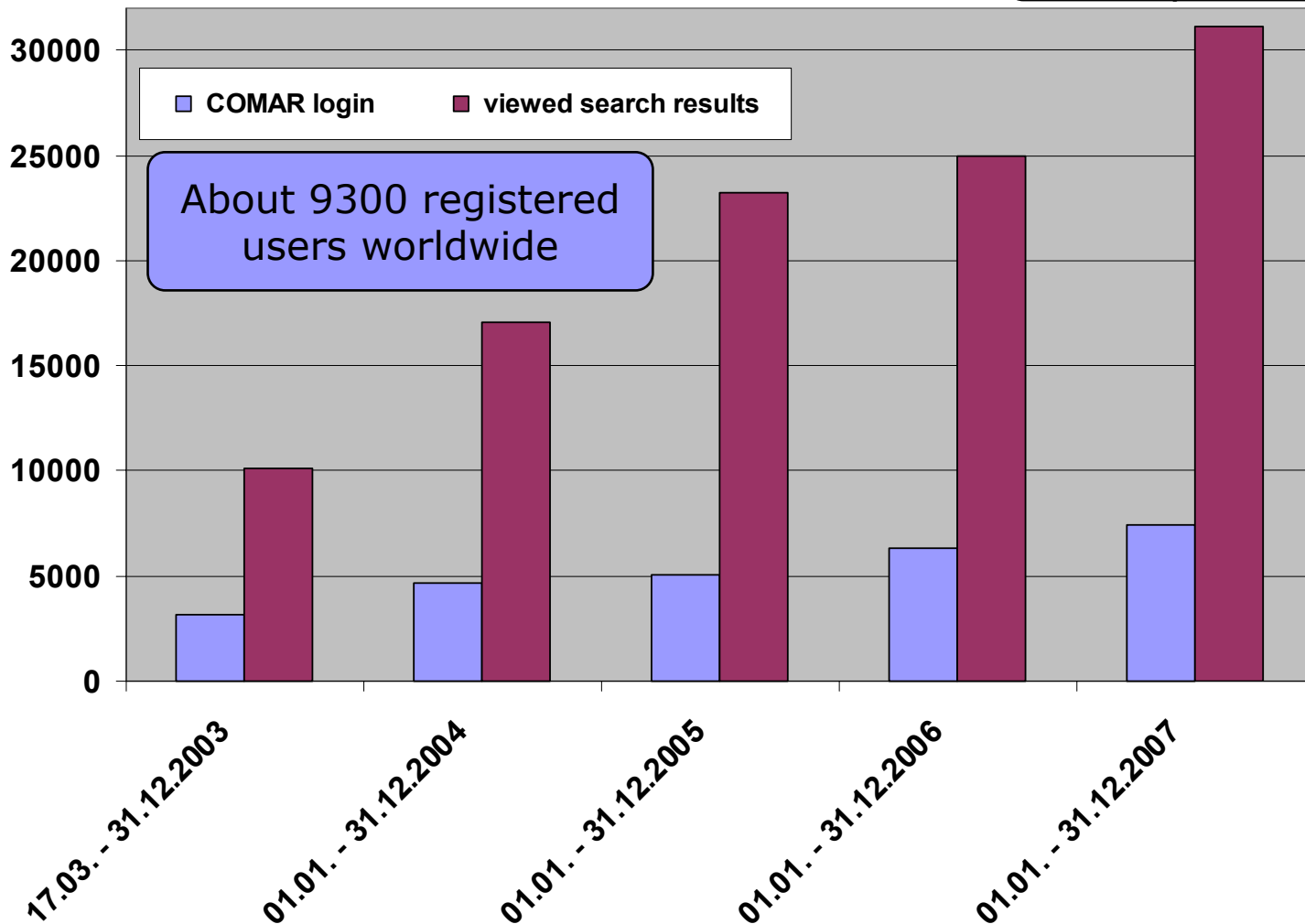
Country
Producer

Searching in COMAR

- Searching in COMAR needs some consideration
- Use only COMAR navigation tools
- ✓ COMAR search tools allow directed or targeted queries
- ✓ COMAR provides tailored output
- ✓ Comprehensive user guide available from COMAR website
- ✓ Using COMAR is worth a try!

Access and search

About 650 user logins and 2600 displayed search results monthly



- **Instituto de Pesquisas Tecnológicas - IPT
(Institute for Technological Research)**
 Centro de Metrologia em Química/Laboratório de
 Referências Metrológicas
 Contact: Ricardo Zucchini

- **101 CRMs**
 - Metals (steel, cast iron, brass, bronze) 53
 - Kinematic and dynamic viscosity (oils) 20
 - Sulfur in oil 16
 - Rocks and soils (chemical composition) 15

You are kindly invited to visit and use COMAR !
<http://www.comar.bam.de>

COMAR branch at Berlin
Mölkowhof, where the
analytical chemistry
department and the
COMAR secretariat
are located.



Fields of application - 1

Biological and Clinical	Bacteriology and Mycology
	Clinical Chemistry
	General Medicine
	Haematology and Cytology
	Immunohaematology, Transfusion, Transplant
	Immunology
	other Biological and Clinical RM
	Parasitology
	Pathology and Histology
	Virology
Ferrous	By-Products
	Cast Iron
	High Alloy Steels
	Low Alloy Steels
	other Metallurgical RM for Steel Industry
	Pure Metal RM for Steel Industry Analyses
	Raw Materials
	Special Alloys
	Unalloyed Steels

Fields of application - 2

Industries	Building, Public Works
	Electricity, Electronics, Computer Industry
	Fuels
	Measurement and Test Techniques, Instrumentation
	Ores, Mineral Raw Materials
	other RM for Industry
	Raw Materials and Semi-Finished Products
	Transportation, Communications
Inorganics	Building Materials: Cements, Plasters
	Fertilizers
	General Interest Products and Reagents (Pure)
	Glasses, Refractories, Ceramics, Mineral Fibres
	Industrial Acids and Bases
	Inorganic Gases and Gas Mixtures
	other Inorganic RM
	Oxides, Salts
	Rocks, Soils

Fields of application - 3

Non Ferrous	Al, Mg, Si and Alloys
	Cu, Zn, Pb, Sn, Bi and Alloys
	Light (Li, Be), Alkali and Alkaline-Earth Metals
	Ni, Co, Cr and Refractory Metals
	other RM for Non-Ferrous Analyses
	Precious Metals and Alloys
	Pure Metal RM for Non-Ferrous Metallurgy Analyses
	Rare Earths, Th, U and Transuranic Elements
	Raw Materials and By-Products
	Ti, V and Alloys
Organics	Common Organics: Solvents, Gases, Gas Mixtures
	Cosmetics, Surfactants
	Fine Chemicals
	other Analytical Organic RM
	Paints and Varnishes, Dyes
	Pesticides and Phytocides
	Petroleum Products and Carbon Derivatives
	Plastics and Rubbers, Organic Fibres
	Pure Organic Analytical RM of General Interest
	Synthetic Base Products and Large Intermediates

Fields of application - 4

Physical Properties	other Physical and Technological Properties
	RM for Frequency
	RM for Physico-Chemical Properties
	RM for Radioactivity, Isotopic
	RM for Thermodynamics
	RM with Electrical and Magnetic Properties
	RM with Mechanical Properties
	RM with Optical Properties
Quality of Life	Agriculture (Soils, Plants)
	Consumer Products
	Environment
	Foodstuffs
	Legal Controls, Criminology
	Other RM for Quality of Life

Number of CRMs and producers by countries (Mai 2008)

Country	CRMs	Producer
UK	2266	13
Japan	1158	18
France	1056	17
China	1030	82
Poland	823	11
IRMM (EU)	741	1
Germany	722	9
USA	717	2
Russian Federation	672	15
Czech-Republic	338	7
Canada	317	8
Australia	212	2
Korea	177	3
other	884	29