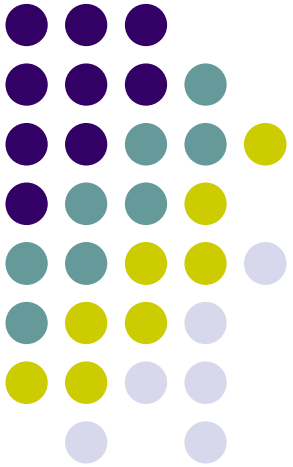
Meteau

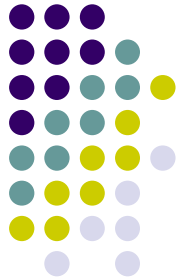
COST Action 637 Research Plans

Research Seminar
29th April 2008, Brussels

Dr Colin Hayes
Swansea University, UK
Chair, COST Action 637

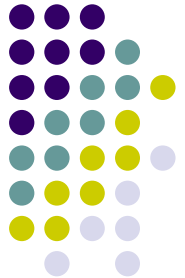


Content



- Activities of COST Action 637
- Development of a Strategic Research Agenda (June 2007) and its subsequent rationalisation (January 2008)
- Emerging data on metals and related substances
- Research implementation plans

COST Action 637



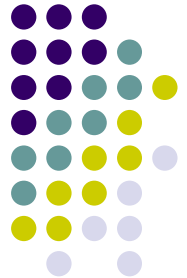
- The Action is aiming to create a research community in the area of metals and related substances in drinking water
- We are tackling both new and old issues with a focus on As & Ni (new) and Cu & Pb (old)

Our brief history

- December 2006 Kick-off MC meeting
- February 2007 Core Group
- April 2007 Meetings with EC, US-EPA & AWWARF
- May 2007 WG & MC meetings
  - ► Strategic Research Agenda (June 2007)
- October 2007 1st International Conference, Antalya & MC
  - ► Emergence of data on As, Cu, Ni & Pb
- January 2008 Core Group
- April 2008 WG & MC meetings
  - ► Research implementation plans
  - ► Publications, STSMs, Training

  Research Seminar
  - ► Inform & influence FP7 and national governments?
  - ► Develop working links to WHO

Strategic Research Agenda

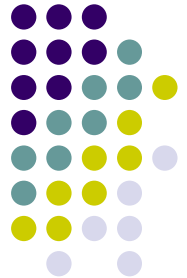


- The WGs identified 14 projects, 8 of which required funding
- These were rationalised in January 2008 to 5 projects (with 1 further project subject to discussion):

1. European tap survey (to determine extent of problems)	} WG1/4(2/3)
2. Environmental impact of phosphate dosing	} ..
3. Influence of membrane treatment on corrosion	} WG2
4. Influence of organics on cuprosolvency	} ..
5. Arsenic: extent of problem, treatment and waste disposal	WG3
6. Small water supply systems (?)	

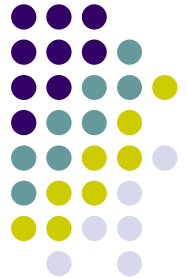
- In March 2008, an initial project commenced to collate Cu, Ni & Pb data

Emerging data on Arsenic



- The extent of As problems is not yet catalogued, but it appears that many groundwaters in volcanic areas are affected
- Problems are known in several regions of Italy
- 2% of groundwater in Poland exceeds the As standard
- Several As removal plants have been installed in the mid-part of England

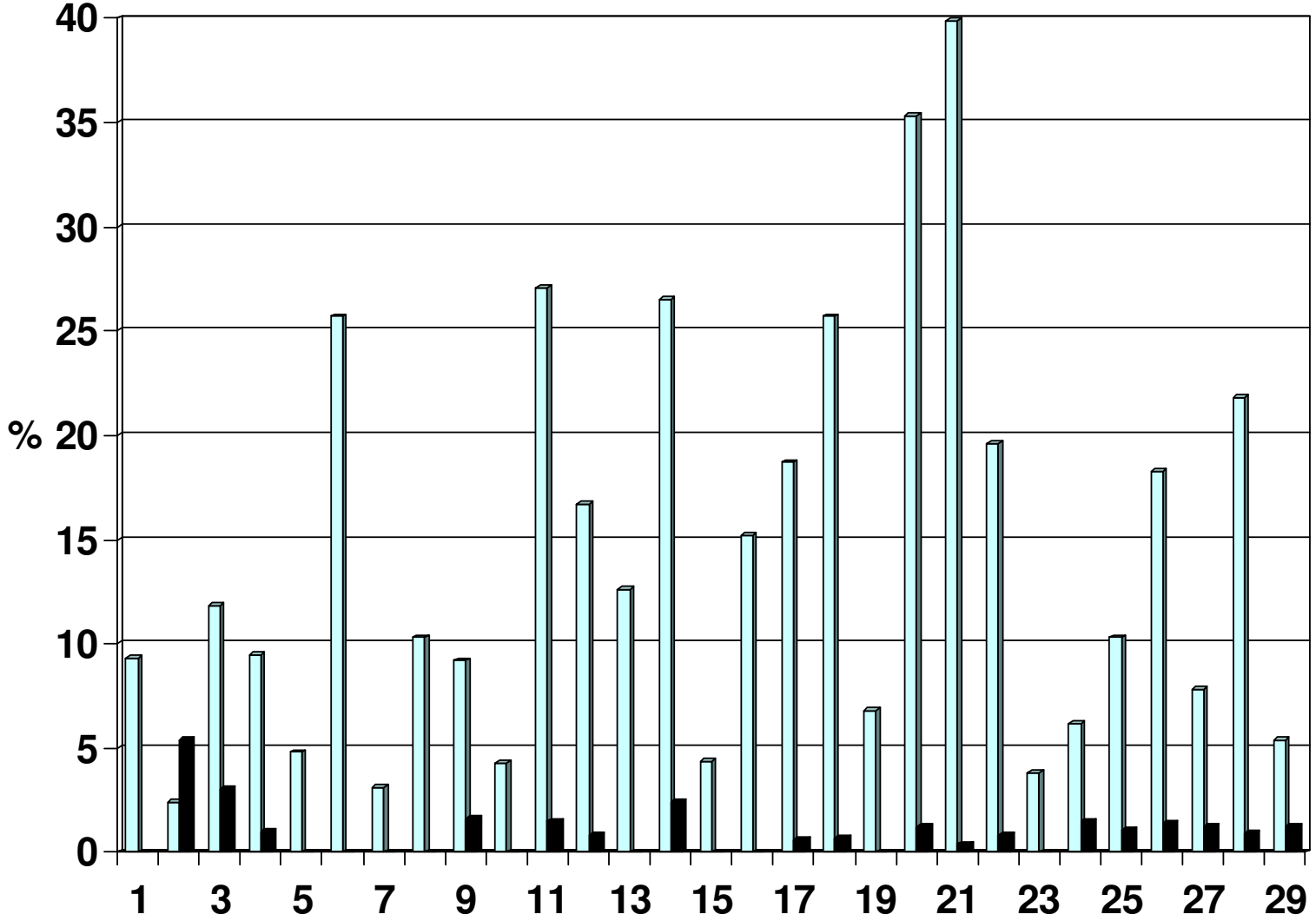
Emerging data on Lead



• North Rhine Westfalia	RDT: 6.1-10.3% > 25 µg/l
Lower Saxony	RDT: 10.0% > 25 µg/l
Bavaria	RDT: 4.3% > 25 µg/l
• Italy	RDT?: 2.0% > 10 µg/l
• Netherlands	RDT: 2.4% > 10 µg/l (est)
The Hague	RDT: 23% > 10 µg/l
• Vienna	FD: 25% > 10 µg/l
• Poland	10 µg/l exceeded in many parts
• England & Wales	RDT: 0.15-0.38% > 25 µg/l
(95% +PO_4)	based on 74,736 samples (04-06)
Wales	RDT: < 1% > 10 µg/l

(RDT is random spatially (mostly) within normal office hours)

% RDT samples > 10 µg/l Pb before and after PO4 dosing at 29 schemes in Wales



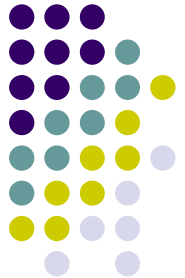
Summary of plumbosolvency test results at 25°C for samples without corrosion inhibitor

Type	Alkalinity	N	Ave pH	pH range	Ave median 30MC Pb (µg/l)	Range in median 30MC Pb (µg/l)	Ave 16hr stagnation Pb (µg/l)	Range in 16hr stagnation Pb (µg/l)
Ground	High	47	7.8	7.2 - 8.3	66	23 - 167	254	65 - 860
Surface	High	10	7.7	7.3 - 8.3	97	62 - 151	442	222 - 750
Surface	Low	101	7.8	6.7 - 8.8	172	42 - 694	855	109 - 3350

 # results x 0.5 equate to average ambient water temperature

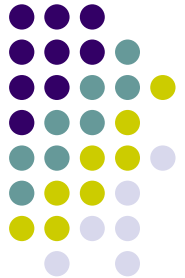
This means that **ALL** treated drinking waters are sufficiently plumbosolvent to exceed both 10 and 25 µg/l if lead pipes are present

Emerging data on Copper



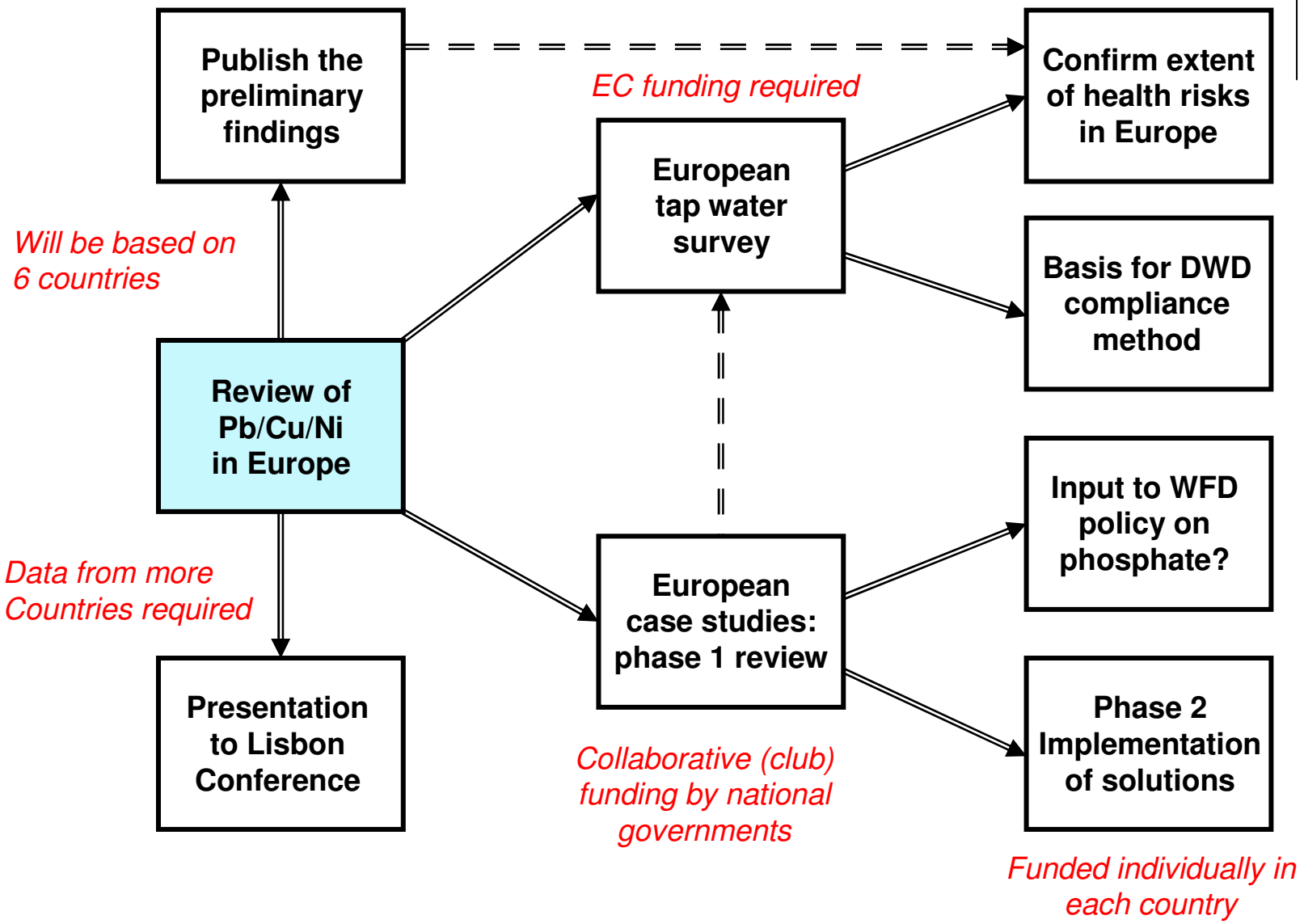
• North Rhine Westfalia	RDT: 0-0.2% > 2 mg/l
Lower Saxony	RDT: 0.5% > 2 mg/l
Bavaria	RDT: 0% > 2 mg/l
• Italy	RDT: 0.1% > 1 mg/l
• Netherlands	RDT: 0.5% > 2 mg/l (est)
• England & Wales	RDT: 0.015% > 2 mg/l
(95% +PO_4)	based on 40,038 samples (04-06)

Emerging data on Nickel

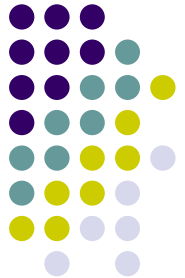


- North Rhine Westfalia RDT: 0.9-8.1% > 20 µg/l
  Lower Saxony RDT: 2.8% > 20 µg/l
  Bavaria RDT: 3.1% > 20 µg/l
- Italy RDT: 4.5% > 20 µg/l
- Netherlands RDT: 1.3% > 20 µg/l (est)
- England & Wales RDT: 0.16-0.39% > 20 µg/l
  (95% +PO_4) based on 38,987 samples (04-06)

WG1&4 Research Strategy

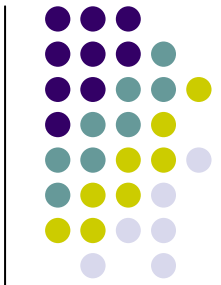


Review of Pb, Cu & Ni in Europe



- Data collection on-going with inputs from Austria, Germany, Italy, Netherlands, Poland and UK
  - sampling methods differ widely (first-draw, fully flushed, 4-hr stagnation, sampling before domestic pipe-work, random daytime)
  - the available RDT data provides an early indication of the extent of problems
- We would like to extend data collection to all Countries who are participating in COST Action 637, over the next two months – we will e-mail you soon

Proposed European Case Studies: Phase 1 Review

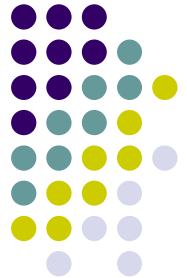


- Require a minimum of 5 Countries to collaborate, each providing funding of € 60K to achieve a project budget of € 300K over an assumed 2 year period
- Project Leaders ……
- Work Packages

  WP1 Project coordination - €20K
  WP2-6 Local data collection (1 per study area) - each €40K = €200K total
  WP7 Corrosion testing & modelling - €50K
  WP8 Report and Seminar - €30K
  Additional case studies can be accommodated @ €60K

A short justification and project outline will be prepared in May/June 2008

WG1/4 Other planned outputs



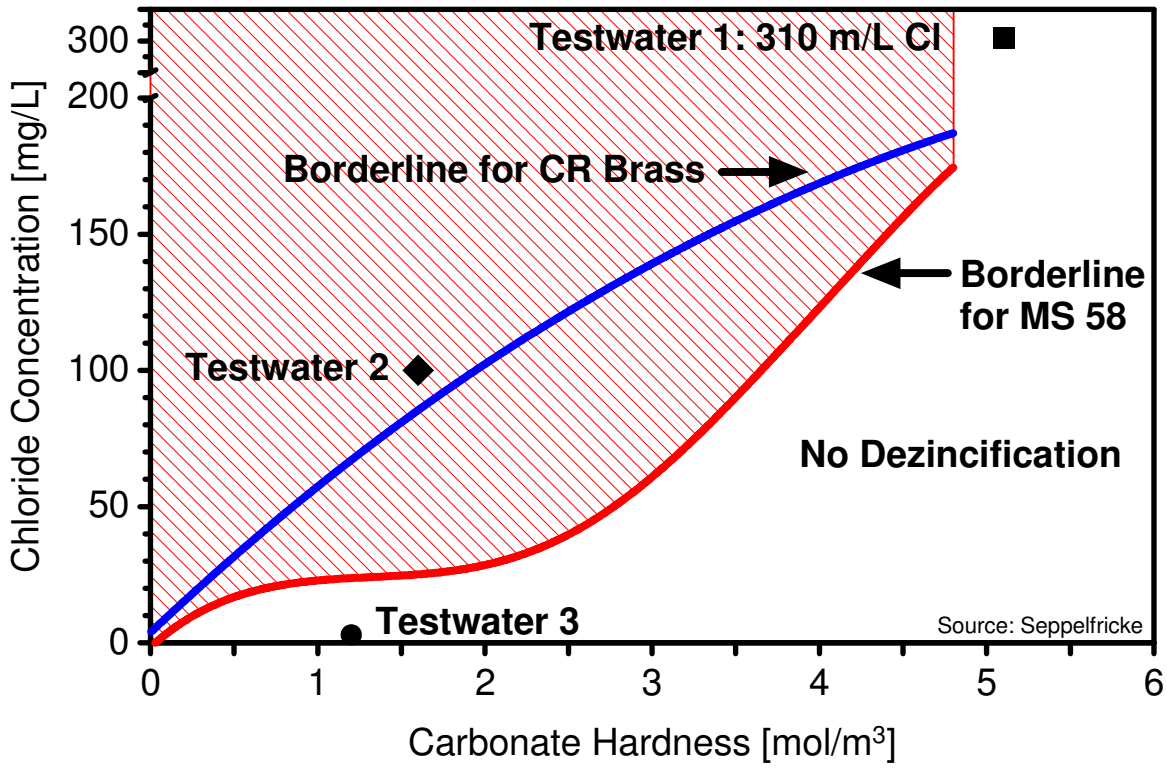
- Book on “Plumbosolvency control” will review the extent of the Pb problem, causes, health issues, sampling issues, Pb pipe replacement, corrosion inhibitors and their environmental impact, optimisation tools, control of materials used in water supply
- Training events on sampling for Pb (Cu, Ni) in drinking water (self-funding)
- STSM to explore linkage to WHO?

WG 2 Research activities

The role of NOM in drinking water quality - separation and identification of organic components in relation to corrosion (metal leaching)

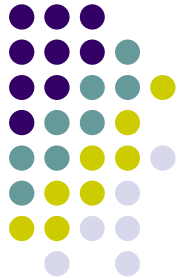
- Identification of TOC in European drinking water qualities in relation to geological background
- Development of a methodology for characterisation of NOM
- Application of the methodology to analyze and describe the NOM in different European countries
- Relationship of different types of NOM to metal leaching from metallic materials and correlation with field data

Assessment of the impact of membrane treatment system (including desalination in Mediterranean countries) on the corrosion characteristics of treated waters



Nickel release from chrome plated taps: see TC 164/AHG 5 research report for Action 14/2005 (10/2007)

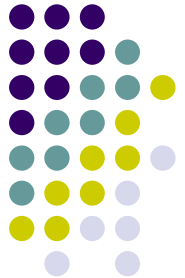
WG3 Research strategy



- Integrated 3-year project planned with possible funding from the Central Europe Programme and Interreg IVC "Evaluation of the arsenic in drinking water problem, mitigation options and scope for innovation"
- Project Leaders: Sabrina Sorlini (IT), Peter Holm (DK) and Talis Juhna (LV)
- Work packages:

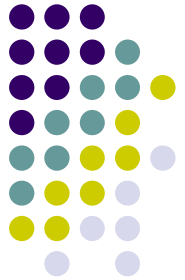
WP1 Determine extent of problem
WP2 Review regulatory approaches
WP3 Review treatment options
WP4 Review operational experiences
WP5 Develop optimisation tools
WP6 Waste disposal
WP7 Best practice guide
WP8 Project coordination

WG3 Other possible projects



- Uranium in drilled wells
- Aluminium associated with NOM
- Silver from cans and tap filters
- 1 STSM planned
- Develop training networks

Conclusions



- Confirmation of a problem in Europe with As, Ni and Pb in drinking water is emerging (and more to be reviewed)
- Cu is likely to be a problem with organically enriched waters and there is a need to reconcile assessment methods
- Research, surveys and case studies will help to resolve these issues
- Funding is required if solutions are to be identified
- COST Action 637 has the infra-structure to make a major contribution to resolving the problems of metals and related substances in drinking water