Support to the implementation and further development of the Drinking Water Directive (98/83/EC): study on materials in contact with drinking water

3rd Symposium on Materials and Products in contact with Drinking Water

INŠTITUT ZA VODE REPUBLIKE SLOVENIJE | Institute for Water of the Republic of Slovenia

KWR

WRc

ENVIRONMENT AGENCY AUSTRIA umweltbundesamt

Office International de l'Eau

Outline

- Background and objectives of the study
- Results
- Options for Action
- User Guide

Background of the Study

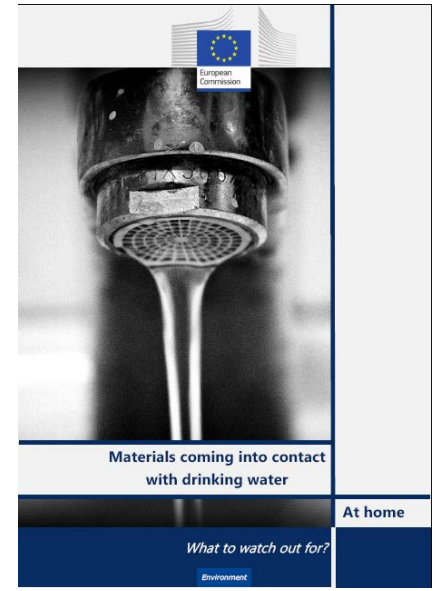
- Drinking Water Directive (98/83/EC)
  - Art. 10 DWD obliges member states to take all measures to ensure that substances or materials for new installations […] do not, either directly or indirectly, reduce the protection of human health provided for in this directive.
  - Implementation of Art. 10, however, has to be done by the Member States
  - Art. 10 does not stipulate how this is to be achieved
- Materials in contact with drinking water
  - Should be inert
  - Should not be dangerous
  - Should not modify the chemical, microbiological, physical or organoleptic properties of drinking water
  - However, some inappropriate materials are being used

Objectives

"Support to the Implementation and further Development of the Drinking Water Directive (98/83/EC): Study on Materials in contact with Drinking Water"

- Objectives of the study
  - Assessment of the problem of materials and products (task 1)
  - Summarize consolidated information on appropriate materials/products and test methods in a Guidance for Users (task 2)
  - Support the preparation of a draft Inception Impact Assessment with policy recommendations (task 3)

- Framework Service Contract with DG ENV – Umweltbundesamt
- **WRc** (The Water Bureau), **KWR**, **OIEau**
- Start: Oct. 2015; End: Oct. 2016 (March 2017)



Task 1

- **Assessment of legislation, standards, delineation of scope**
  - Examination of EU and national legislation, available test methods and standards
  - Definition of the scope of materials and products
  - Focus on MS: DE, FR, NL, UK, PT, DK
- **Market, Use, mutual recognition**
  - Identification of industry players, competent bodies
  - Provision of market figures, annual sales and trends, barriers to trade
  - Application of mutual recognition
- **Contamination**
  - Leaching and microbial growth
- **Appropriate materials and test methods**
  - Positive lists (?)
  - Overview of test methods and costs

Task 1

- **Overview legislation, standards, scope of materials and products**
  - Drinking Water Directive (98/83/EC)
    - Art. 10 requires member states to ensure that materials in contact with drinking water do not reduce the protection of human health
  - Construction Products Regulation (EC 305/2011)
    - Safety of construction products
      - does not specify technical requirements for compliance demonstration
    - linked to Art. 10 DWD
      - Release of dangerous substances from construction products has to be prevented
    - Refers exclusively to construction products
      - Does not cover the full scope of products (new installations)
  - Food legislation and food safety (EC 178/2002)
  - Other relevant regulations
    - REACH
    - Biocidal Products Regulation
    - CLP
    - …

Task 1

- **Contamination**
  - Examination of the extent of chemical and microbiological contamination linked to inappropriate materials
  - Organoleptic contamination of drinking water
    - Taste, odour and appearance of drinking water – indicator parameters
    - Mostly not harmful, but most likely impact on water quality to be noticed by consumers (frequent complaints)
      - Affect perception of wholesomeness and cleanness
    - Traceable to substances and materials
  - Chemical Leaching: phthalates, vinyl chloride, metals (from metals/alloys, cementitious materials)
  - Microbiological contamination
    - Microbial growth encouraged by release of substances or nutrients
    - Biofilm formation on materials or parts of products depending on their surface properties (roughness…)
    - Special relevance of small surfaces (bearings, O-rings etc.)
- **Non-goal of the study**
  - Assessment of substances, products of materials

Task 1

- **Market, Use**
  - EUROSTAT, PRODCOM: different data aggregation
    - Subsumes not only drinking water relevant data
    - Generally difficult to receive concise data
    - Methodological approach: direct contact with stakeholders
  - 5,000 companies engaged in field of drinking water contact materials
  - EU28: approx. 2,500 companies hold the main approvals
    - In one or more member states
    - approx. 2/3 of which have only one or two approvals per country
  - some 100,000 staff employed in this field/EU
    - 200-300 staff in laboratory + 100 for certification
  - Turn over of approx. EUR 40 billion/year

Task 1

Installations

- Public network/supply
  - 27 billion m^3 drinking water served per day in EU
  - Provided through 5 million km public supply netv
- Private network
  - Some 2 mio. km service pipes (connect building
  - Estimated 25 mio. km hot and cold water netwo
  - Estimated 1.2 billion taps
  - Some 406 mio. showers

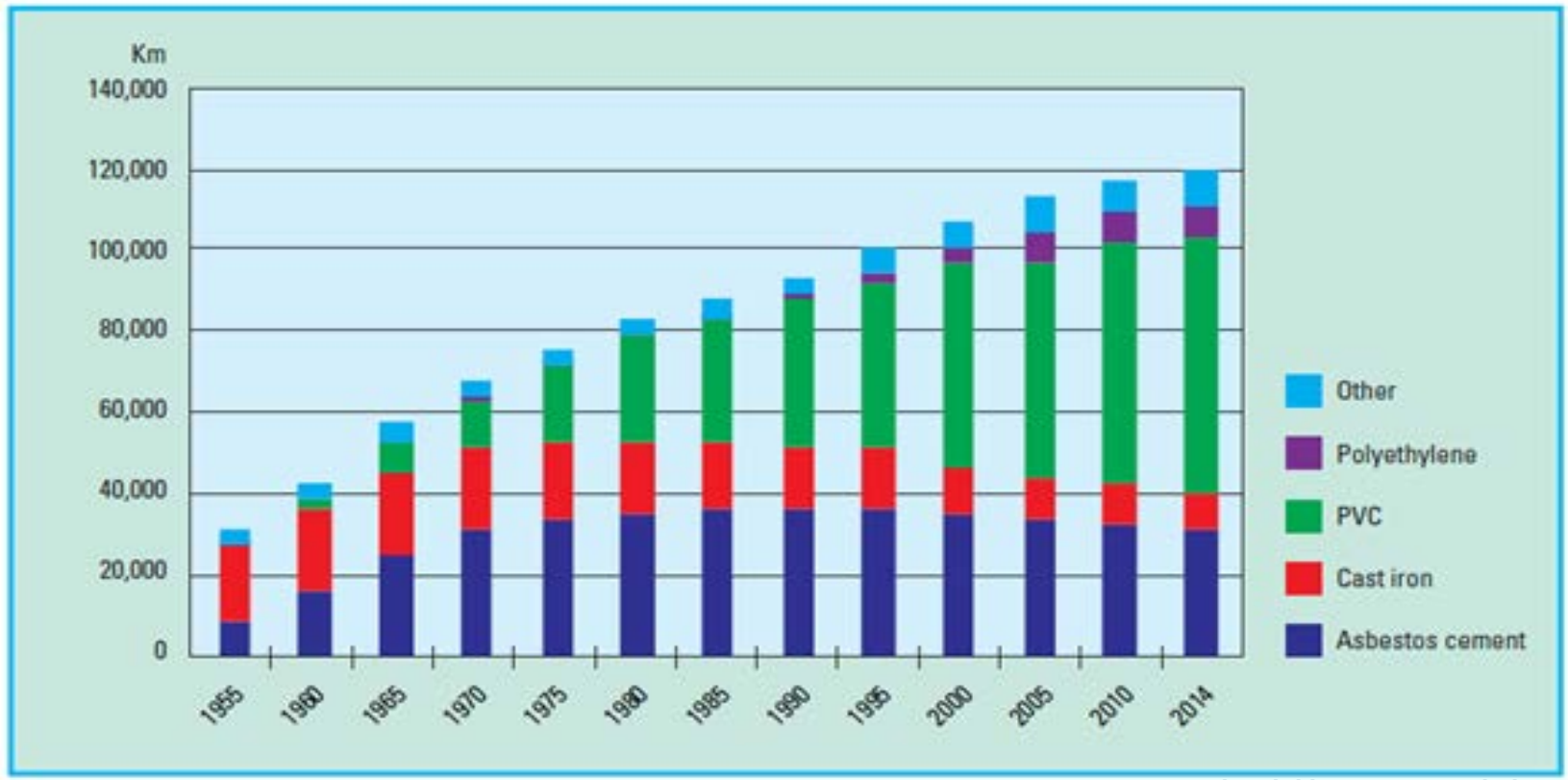
Figure 1: Public and private part of the drinking water network

source: Materials coming into contact with drinking water - User Guide

New installations

- As referred to in Art. 10 DWD.
- New pipes, extensions, exchange of existing pipes
  - Some 45,000 to 75,000 km renewed pipes
- 10 – 12 billion EUR annual investments in new installations in EU28
- 1.3 billion EUR in materials (without service supply)
- Yields in 0.5-1.2% replacement rate per annum/ public network pipes
- Life expectancy
  - Pipes: 50 up to 100 years
  - Installations with mechanical components: 10-15 years

Task 1



source: Dutch Drinking Water Statistics 2015, Vewin.

- Trends material use:
  - Exchange of cast iron, cement and asbestos cement by plastics
    - PVC, PE
- Trends towards use of products with lower quality

Task 1

- **Imports and Exports**
  - EUROSTAT, production, Import/Export EU28, approvals, FIGAWA study
  - Limitation: data is not aggregated on sectors (e.g. pipes for drinking water)
  - EUROSTAT: 3,839 categories, some 150 relevant for drinking water
- **Trade is dominated by larger member states**
  - Export: IT, DE, PL, ES, UK (dominated by intra EU28 exports)
  - Import: DE, FR, UK, PL (dominated by intra EU imports)
- **But: trend towards cheaper production by extra-EU manufacturers. China has a significant role**
  - Some 6-50% import from countries outside EU28 (depending on product)

Task 1

- **Appropriate materials**
  - „appropriate“ materials and substances fulfill all hygienic criteria for materials in contact with drinking water
  - Organic, metallic and cementitious materials
  - The is NO EU wide list of appropriate materials or substances available, which are approved by any member state
  - However: national authorities or mandated bodies often have positive lists in their countries
    - Harmonisation and publication of positive lists
- **Test methods**
  - CEN (European Committee for Standardisation)
    - Issued since 20 years relevant test standards
    - Often transferred into national standards
  - Standards for organic, metallic and cementitious materials → partly harmonised and issued as EN
    - But: often **no harmonisation of assessment or acceptance criteria** for individual parameters (TON, TFN)
  - Costs for testing and approval : up to 120,000 EUR?

Intermediate recapitulation

- **Art. 10 DWD obliges MS to guarantee that materials in contact with drinking water do not impact the quality of drinking water and pose a risk to human health**
  - Implementation is left to the member states, there is no harmonisation on the EU level
  - There are concerns that citizens in the member states are being exposed to potential harm as a result of use of inappropriate materials in products
- **Some 5,000 companies are present in the field of products in contact with drinking water**
  - There is definitely no single market within the EU for these products
- **If the problem is not addressed on the EU level then the fragmentation of the market will continue**
  - Impact on business competitiveness in the EU

Options for Action

Options for action for the European Commission

- Draft Inception Impact Assessment to provide options for a single market of products and materials in contact with drinking water whilst ensuring use of appropriate products only
- Baseline scenario
  - no change of existing non-harmonised system
  - MS continue to develop own regulations, voluntary initiatives may result some mutual recognition
  - Further fragmentation of market
  - Disadvantages for industry and consumers

Options for Action

- **Suggest four policy options against the existing situation**
  - Option A: Introduction of an EU regulation (e.g. CPR) with either third-party verification, consent by an agreed authority or self-certification
  - Option B: Development of performance standards under the CPR addressing products covered by a harmonised European product standard.
    - Development of specific performance classes
  - Option C: Promotion of an EU-wide process to harmonise certification criteria
    - Ensure that MS accept certification granted in other MS
  - Option D: Guidance (non legislative) for MS on how testing of materials is best performed
    - In order to meet article 10 objectives

Options for Action

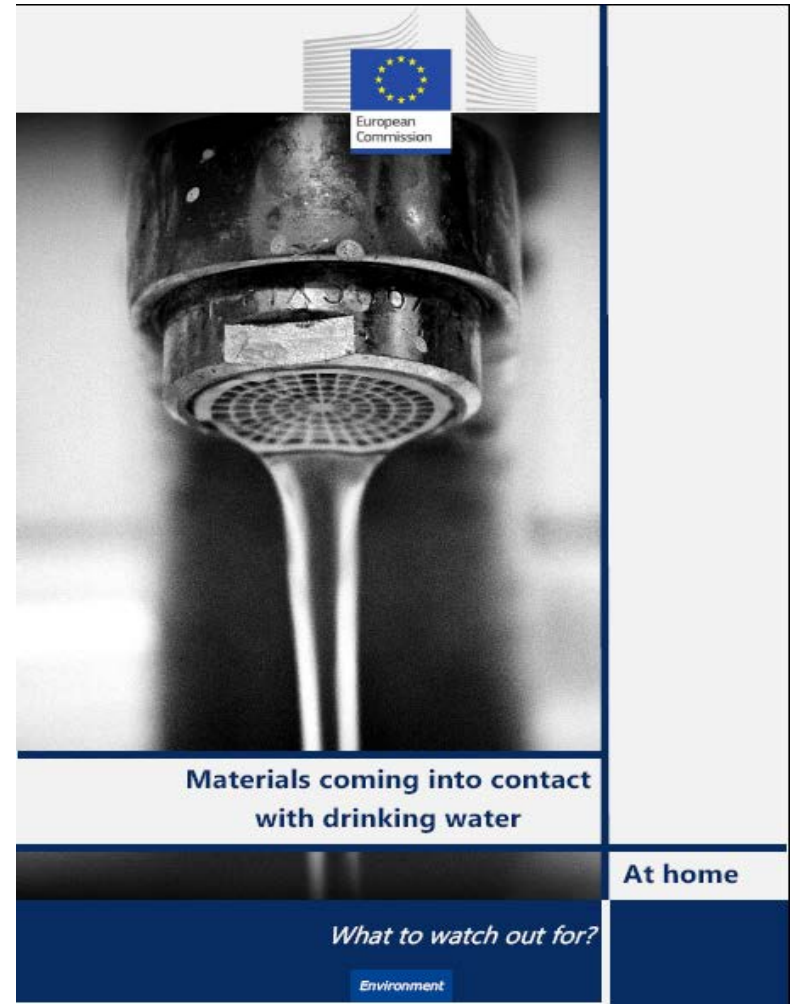
- **Economic Impact of options**
  - Reduction of direct and indirect costs for producers
  - Positive economic impact
  - Reduction of number of approvals (options A and B); might be off-set by increased number of products entering the market
  - Reduced delay to launch products on the market
    - One approval
    - Increased economies of scale
  - Lower production costs and increased innovation boost EU competitiveness
    - Limit further increase of non-EU imports

Options for Action

- **Social Impact of options**
  - Greater harmonisation should increase EU competitiveness
    - Increase in employment (lowest impact by option D)
  - Increased choice of compliant products
    - Better performance, lower cost → fewer incompatible products on the market (esp. in MS with no testing)
- **Environmental Impact**
  - Reduced leaching of chemical = reduced risk of pollution of the environment, reduced impact on species
  - Reduced impact upon end-of-life of products (waste management)
  - Less unit-energy use in production through larger scale manufacturing in an increased market
  - Decreased use of bottled water through less taste and odour incidents (perception of health risk of tap water)

User Guide

- **User Guide**
  - Target group: plumbers, house owners
  - Guide on materials in contact with drinking water
- **Advices to install, use and maintain the own drinking water systems**
  - „good practice“
  - Simple descriptions, simple charts
- **How to avoid incompatible products**
  - Avoid poor practices
- **Where to find further information?**
  - Links
- **Input**
  - UBA DE, MoH FR, NIoH IT, EurEau, plumbers assoc. GCP Europe



User Guide

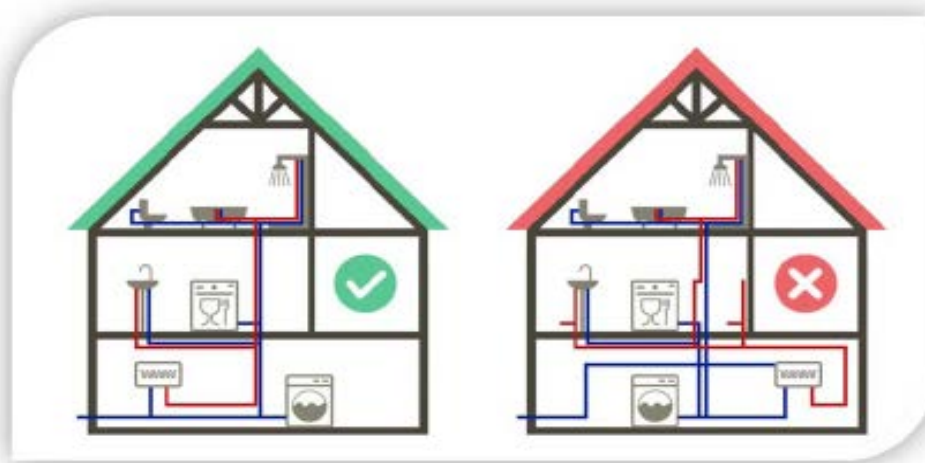


Figure 4: A good installation (left side) may limit the length of pipes

TIP!

AWAY FROM HOME? DON'T FORGET YOUR WATER SYSTEM!

When you leave home for a long duration you probably close your private water connection, to protect it from a possible leakage. But when you are back home after a long duration, you may also check your water network: run the taps for a few minutes to purge the volume of water that may have stagnated in the pipes and reduce its possible stale taste.

Study

https://bookshop.europa.eu/en/support-to-the-implementation-of-the-dw-directive-pbKH0417370/

User Guide

https://bookshop.europa.eu/en/materials-coming-into-contact-with-drinking-water-pbKH0417388/

- **Technical preparation of the study:**
  - Water Research Centre (WRc, UK)
  - KWR (NL)
  - OIEau (FR)
- **coordination: UBA (AT)**

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Thank you for your attention!