

# Requirements for new coatings in drinking water applications

- a European view -  
based on  
German Requirements

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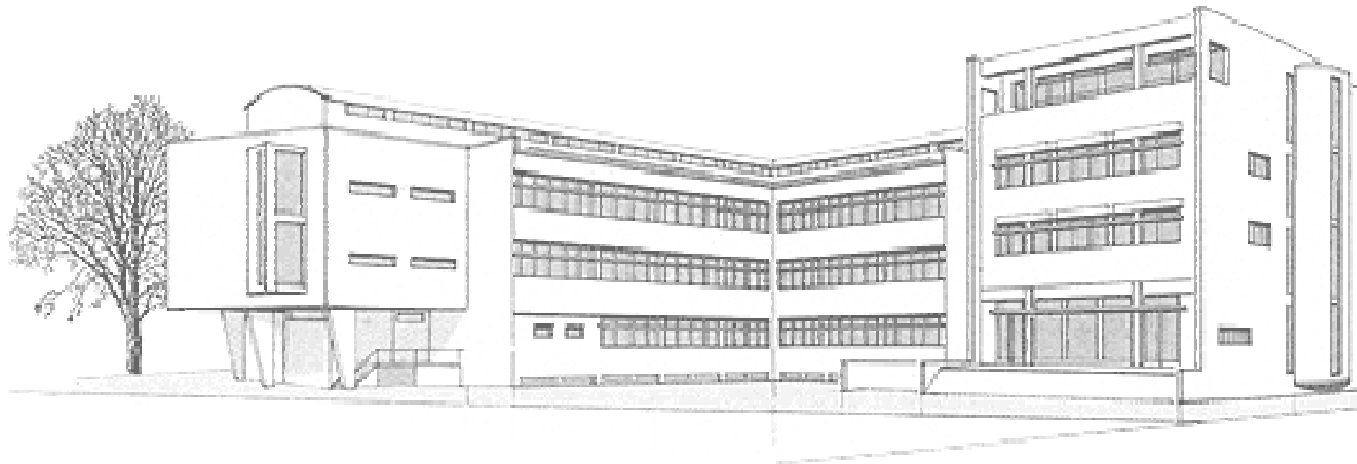
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- Who is TZW?
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**TZW**

# TZW Water Technology Center



- Independent, non-profit organisation
- Part of DVGW with own CEO in D-Karlsruhe
- Branches in Dresden and Hamburg



**TZW**

# TZW: Working fields



**TZW**

**Water Technology Center**

**Technology**

**Chemical Analysis**

**Groundwater & Soil**

**Microbiology**

**Environmental  
Biotechnology**

**Corrosion**

**Material Testing**

**H.- Sontheimer-Lab**

**Dresden Branch**

**Hamburg Branch**

**TZW**

# Drinking Water Directive



- 98/83/EC, Article 10

Requirements for materials in contact with drinking water are up to the member states

- Link to [Construction Product Directive 89/106/EEC](#)

- ➔ Each member state can fix stricter requirements in the national drinking water ordinance

# The German Approach



- Each substance used for the production of a material must be assessed toxicologically
- Composition check-up against positive lists (2002/72/EG, BfR, EFSA, SCF, national lists for coatings and lubricants)
- Leaching test in cold and additionally warm or hot water
- Limit values are depending on the range of use
- KTW certificate for products

# Coating Guideline



- Last update: 7. October 2008
- Composition of the positive list for organic coatings
- How to include new substances in the positive list
- Requirements for organic coatings
- Test Certificate

# Positive List – Part 1



- 1.1 Starting substances for resins and curing agents e.g. Isocyanates, Polyols, Alcohols, Oxirane and Glycide Compounds ...
- 1.2 Fillers and pigments  
Fillers: BfR Recommendation LII  
Colorants: BfR Recommendation IX
- 1.3 Modifying agents
- 1.4 Solvents
- 1.5 Additives and accessory agents

# Positive List – Part 2



## Intermediate Products

- ➔ The smallest components susceptible to migration have been included in the positive list according to their toxicological assessment
- Intermediate products with epoxy groups
- Intermediate products with amines
- Intermediate products with isocyanates
- Others

# Approval process



- ① Disclosure of the chemical composition against secrecy agreement at the test institute
- ② Assessment of the chemical composition by the test institute (e.g. TZW)
- ③ After positive composition check-up testing in cold water (23°C) 3 x 72 h
  - odour & flavour, TOC-migration
  - individual substances
- ④ Warm or hot water testing, if ordered
- ⑤ 5 year valid test certificate for the product



# European Idea – One system



- 1994:** CEN Seminar in Vienna
- 1998:** Feasibility study  
(National hygienic standards not lowered)
- 1999:** RG-CPDW
- 2001:** Mandate 136 to CEN under CPD, DWD
- 2002:** Commission Decision on procedure 1<sup>+</sup>
- 2003:** EU Research Programme
- 2005:** EAS on paper

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# EAS: The European Frustration



**2005:** RG CPDW → EG CPDW

**2006:** Revised mandate  
EG – CPDW was withdrawn

**2007:** 4 MS Group  
way out of the blockage

**2008:** Feasibility study by 4 MS

**2009:** Official letter about „no – EAS“ to CEN

**2010:** Revision of the mandate?  
EAS will be withdrawn?

# The European Chance



- **4 Member States (MS)**

(Germany, France, Netherlands, UK)

- Find a common proposal
- Defining the common approach
- Implementation in national schemes
- Mutual recognition could be possible

# The European Chance



STEP	France			Germany			The Netherlands			United Kingdom		
	Applicant	Competent Authority	Notified Body	Applicant	Competent Authority	Certification Body	Applicant	Competent Authority	Notified Body	Applicant	Competent Authority (DWI)	See Note 1
1. Application: full formulation, production process details	X	-	-	X	-	-	X	-	-	X – results of preliminary testing to BS 6920 also submitted	-	-
2. Check on details of application	-	-	X	-	-	X	-	-	X	-	X	-
3.1 – F, D, NL. Check on compliance with Regulations (eg. PL, CL, ACL)	-	-	X	-	-	Test lab	-	X	-	-	Not required – no PL etc.	-
3.1 – UK. Obtain expert toxicological advice on any ingredients of concern to health	-	-	-	-	-	-	-	-	-	-	X DWI and experts	-
3.2. Assessment protocol in case of non-compliance with regulations (eg PL, CL, ACL)	-	-	-	-	-	-	-	X	-	-	No requirement	-
4. Pre certificate auditing of factory products control system and sampling of initial type testing	-	-	-	-	-	X	-	-	X	-	No requirement – test samples submitted by applicant to designated test laboratory. Details of manufacturer's quality system required.	-
5. Laying down of test protocol	-	-	X	-	X – UBA guidelines	Product standards (DVGW – standards incl. UBA guidelines, DIN standards)	-	X	X	-	X General tests plus specific ingredients on basis of toxicological Review	-
6. Initial type testing	-	-	X	-	-	Test lab	-	-	X	-	X DWI designated test laboratories	-

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# The European Chance



Process	France	Germany	The Netherlands	UK	Common proposal
Pre-test sample treatment	1 h in flowing tap water, 24 h in chlorine free test water + 3 test water rinses (1 sample with disinfection treatment - 24 h in 50 mg Cl <sub>2</sub> /l)	As in EN 12873-1&2, except no pre-test disinfection treatment.	As in EN 12873-1& 2, except no pre-test disinfection treatment used.	As in EN 12873 series of standards, except no pre-test disinfection treatment used.	As in EN 12873-1 & 2 <b>Amend standards to remove pre-test disinfection option.</b>
Test Water	1. Chlorine free demineralised water 2. Chlorinated (1 mg/l)	Chlorine-free ultrapure water	Chlorine-free ultrapure water	1. Chlorine free ultrapure 2. Chlorinated (1 mg/l) ultrapure water	<b>Chlorinated and or chlorine-free dependent upon individual Member State – additional testing may be required <sup>(9)</sup> if only chlorine-free test water used</b>
Number of test samples tested	Single testing for each water type plus blank test	As in EN 12873-1&2 Duplicate + blank test	Duplicate	Duplicate – one for each water type – see comment below	<b>Duplicate testing for each water type except for GC-MS</b>
S/V test ratio	0.03 to 2.4 dm <sup>-1</sup> depending on final intended use	As in EN 12873-1&2 Pipes filling: min 5 dm <sup>3</sup> Fittings+Ancillaries: 5 dm <sup>3</sup> Sealings: 5 dm <sup>3</sup> Tanks: 5 dm <sup>3</sup>	Pipes: 5 – 40 dm <sup>3</sup> . Fittings: 2.5 dm <sup>3</sup> . Sealings: 1 volume of sealing material + 10 volumes of water Tanks: 5 – 40 dm <sup>3</sup> .	As in the BS EN 12873 standards	As in EN 12873-1 & 2
Leaching sequence	1 x 24 hours (20°C)	As in EN 12873-1&2 3 x 72 hours (23°C) plus, if required <sup>(9)</sup> , 3x24h, 1x72h, 3x24 h (60 or 85°C) <sup>(6)</sup>	3 x 72 hours (23°C) or <sup>(6)</sup> 3 x 24 hours (85°C)	As in EN 12873 – i.e. three sequential 72 hour contact periods – cold water only. The UK does not currently do hot water migration studies on products.	As in EN 12873-1 & 2 <sup>(9)</sup>
Leachates analysed	1 <sup>(5)</sup> for all determinands	As in EN 12873-1&2 All 3 leachates (23°C) Leachates 1, 6 & 7 (60 or 85°C) – also leachates 2 and 3 for TOC	All 3 leachates <sup>(6)</sup>	All 3 leachates	As in EN 12873-1 & 2 – further leachates (maximum 7 extra) tested, if required, for die-away studies. <b>See General Background Note 1 under Table 4 concerning hot water testing.</b>
See Table 5					



# The Actual Situation



- Hygienic requirements are still regulated by the member states
  - Positive lists have to be harmonised under 4MS
  - Testing has to be harmonised under 4 MS
  - Other MS may join
- ➔ ..... a long way .....

# Summary



- Germany has a well defined system
- New materials are bound to positive lists
- „Bureaucracy has killed the EAS”
- Voluntary 4 MS approach could be a way out
- National requirements are staying in force