

What kind of materials should we accept in contact with drinking water?

Working method at a Swedish water department

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Göteborgs Stad
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Characteristics of Gothenburg

Sweden's second largest city

540 000 inhabitants

Scandinavia's largest port

Car and truck industry

**Chalmers University of
Technology**



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Characteristics of drinking water in Gothenburg

2 Water treatment plants

1 750 km Drinking water pipes

13 Reservoirs

68 Drinking water pumping stations

62 Mm³ Drinking water delivered to households each year



Swedish drinking water regulation

5 §.....Drinking water may not contain any substances from installations used in treatment or distribution of drinking water or substances related to such materials in higher concentration than necessary for the purpose of their use.



Guidelines to drinking water regulation 5 § Materials

Unsuitable materials could cause **contamination** of the drinking water, **taste and odour**, **corrosion** and stimulate **microbiological growth**.

The **supplier of drinking water** is **responsible** for using **suitable materials**, based on **information from the suppliers** of materials and equipment and **experiences** from operation of the drinking water system.



Guidelines to drinking water regulation 5 § Materials

In Sweden there is **no official system for approval** of materials in contact with drinking water.

Voluntary approvals of building materials and **other countries official approval systems** could be considered in decisions concerning materials in contact with drinking water.



How it could be

Friday afternoon

Hello!

I have a contractor that should make a seal between a pipe and concrete . It is a small amount the pipe has a diameter of xx mm.

I have had a suggestion to use a material (XXXX 303) but I can not reach the supplier for a table of contents. Since it should be done on Tuesday I wonder if you could say if it will be ok to use the sealant.

NN

Project manager



19 06 2006

Certificate that should show that we could use
XXXX 303 in contact with drinking water

Validity of 2 years

Blatt 3 zum Dokument vom

19.05.2006

ISEGA Forschungs- und Untersuchungs-Gesellschaft mbH Aschaffenburg

23007 U 06

This certificate of conformity has a validity of 2 years. It consists of 4 pages.

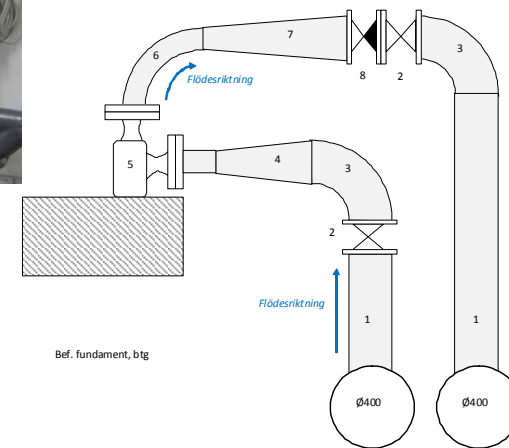
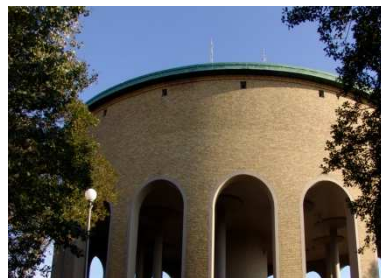
Thus, the sealant [REDACTED] according to the sample material submitted may be used safely in the foodstuffs-related sector for example for the grouting of wall and floor areas in companies which are preparing and processing foodstuffs. However, a direct contact with the foodstuffs is not intended.

However a direct contact with the foodstuff is not intended



How we do it now

How we work in Gothenburg today when we decide what kind materials we can accept in contact with drinking water.



How we do it now

- 💧 **Distinct allocation of responsibilities and tasks.**
- 💧 **Agreed requirements for basis for decisions to accept new materials.**
- 💧 **Documentation of evaluations and decisions**



How we do it now

Allocation of responsibilities and tasks.

The **operational manager** of the concerned part of the organisation takes the **decision** to accept **new materials**. Plant managers of the water works or the manager of the distribution system could take a decision to accept a new material, decisions are coordinated within that group.



How we do it now

Allocation of responsibilities and tasks.

The **project managers** for investments and renovations are responsible for the **basis for decisions** and **responsible for the documentation** of evaluations and decisions to accept new material.



How we do it now

Basis for decisions to accept new materials.

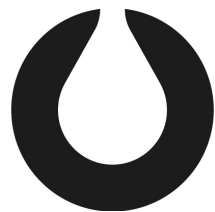
Certificates of approval to use in contact with drinking water. Preferably approvals according to 4MS, German, Danish or Dutch standards or ANSI NSF, Standard 61



How we do it now

Choose if possible materials that:

- Are on the positiv lists from 4MS
- Are certified according to DVGW: W270, W347, KTW
- Are certified according to ANSI NSF standard 61
- Have the Danish mark Godkendt til drikkevand
- Have the Kiwa Watermark



GODKENDT
TIL DRIKKEVAND

kiwa



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How we do it now

Basis for decisions to accept new materials.

Table of contents, or verification that the material do not contains any substances that are:

- Listed in annex XVII to REACH or on the candidate list of substances of very high concern
- Listed as phase-out substance or priority risk-reduction substances by the Swedish Chemicals Agency.



How we do it now

Basis for decisions to accept new materials.

- **Description off the use, finished drinking water, water under treatment or raw water, direct contact with water or risk for contact, ratio surface/volume, detention time, possibility to replace.**
- **Experiences from previous use in contact with water and/or foodstuff**
- **In case of uncertainty concerning a material and if there are a lack of alternatives the laboratory at the water works could perform studies including leaching and chemical analysis as metals and gas chromatography.**



How we do it now

Documentation of new materials.

- Evaluated materials are listed in a Excel document.
- The basis for the evaluation is saved in a folder with the same name as the material.
- In projects with a steering Committee the project manager should report to the steering Committee which materials that has been evaluated and which that has been accepted for use in contact with drinking water.



How we do it now

Documentation of new materials.

- Name of the material
- Supplier/Manufacturer
- Use
- Approvals/Certifications
- If the material is approved in BASTA
- Project and project manager
- Operational manager that has decided to accept the material
- Date of decision
- Comments



How we do it now

New use of accepted materials

- A decision to accept a material in contact with finished drinking water should lead to that the material also is accepted in contact with water under treatment and raw water if the conditions for use are corresponding. If the conditions for use differs significantly a new evaluation should be done.
- The opposite does not apply. Materials accepted in contact with raw water is not by that accepted in contact with finished drinking water or water under treatment.



Experiences of our working method

- **It takes time to evaluate new materials.**
- **It is important to specify the requirements for materials at procurement.**
- **We need to explain our requirements for the contractors.**
- **The working method works for a large organisation but could be difficult to apply in a small municipality.**



In the future

Be ready to reconsider decisions

- **Follow science and research and take in new knowledge.**
- **We don't know a lot about the unknown poisons of tomorrow.**



Thank you for your attention!



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