

Version 4
new: questions B-9, B-10, C-10 and C-11

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Frequently asked questions

Testing and certification practice for products in contact with drinking water: implementation of the evaluation criteria and the recommendation for attestation of conformity

The following list of frequently asked questions reflects some of the questions received by the German Environment Agency (UBA) about their drinking water hygiene regulation documents that followed on from the work done by testing and certification bodies and from comments of interested parties.

In order to better orientate oneself about question subjects a categorisation into three main subject areas has been made:

- A – General; legal relationships
- B – Implementation of UBA regulations in certification processes
- C – Material- and product-specific questions

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Subject area A

General; legal relationships

Question A-1:

What is the significance of UBA Evaluation Criteria and Guidelines and of the UBA Recommendation for Attestation of Conformity?

Answer:

Guidelines and recommendations hitherto issued by UBA reflect current scientific and technical knowledge concerning required properties and assessment of materials and products in contact with drinking water. They have or had been in the status of recommendatory documents, but nevertheless come along as code of practice that is commonly consulted by other regulatory parties (like, e.g., DIN, DVGW, or VDI) and testing institutions when performing evaluation of concrete products.

By virtue of the 2012 amendment of the German Drinking Water Ordinance (TrinkwV), according to Section 17(3) UBA was mandated to determine mandatory evaluation criteria to define requirements and testing criteria for products in contact with drinking water. Former guidelines and recommendations have been or, as e.g. the elastomer guideline, will be transferred into evaluation criteria. These become legally binding from the date two years after they have been published for the use of materials regulated in these documents and products made thereof in constructions, installations and networks for drinking water distribution.

In contrast to hitherto applied guidelines, mandatory evaluation criteria do not cover specifications on conformity attestation (granting of certification reports or certificates). To provide a suitable way for manufacturers to obtain certificates on drinking water suitability of their products, UBA issued its *Recommendation for Attestation of Conformity of Product Hygiene Suitability for Drinking Water*, which is not legally binding. The recommendation, by applying the risk-based approach as defined in evaluation criteria, for products of the highest risk group implements system 1+ for certification procedures as has been defined by the European Commission by way of decision 2002/359/EC for construction products in contact with drinking water. System 1+ requires to commission the certification procedure to an accredited, independent party (certification body) and thus provides the best approach for a traceable and reliable attestation of product suitability.

Question A-2:

Is it possible that the transitional period for the changeover from guidelines and recommendations to evaluation criteria will be extended or that the legally binding nature will be suspended?

Answer:

The duration of the transitional period of 2 years from the date of stipulation until the legally binding nature of the notified and published evaluation criteria is set out in Section 17(3) of the Drinking Water Ordinance (TrinkwV), which is a federal law. It will not be possible to change, extend or suspend this period before the date when the KTW evaluation criteria will become legally binding.

Question A-3:

Is certification compulsory for products in contact with drinking water in Germany?

Answer:

The requirements of the UBA evaluation criteria only apply to products that are newly installed as part of a new installation or the maintenance of water supply systems.

According to the Drinking Water Ordinance (TrinkwV), there is no obligation for the products to be certified. In order to use products, however, in any case a declaration of conformity to the requirements of the UBA evaluation criteria is required by the manufacturers. They should refer to a valid attestation of conformity by an external certification body. If this is not the case, in case of doubt the manufacturer must present the results of the relevant compliance tests with the requirements of the UBA evaluation criteria.

Question A-4:

What is the difference between an approval and a certification?

Answer:

An approval is issued by a government body, while a certification is carried out by an organisation under private law.

In connection with materials in contact with drinking water, the German Environment Agency issues approvals for metallic materials and source materials for enamels, ceramic materials and organic materials, which are then included in the relevant positive lists of the evaluation criteria.

Products are not envisaged to be approved by a government body. However, the conformity of products with the requirements of the UBA evaluation criteria can be proved by a certificate issued by a certifier accredited in this field.

Question A-5:

Are European certificates such as WRAS or ACS equivalent to certificates as per the German evaluation criteria?

Answer:

No. Test conditions and requirements for obtaining an NSF, WRAS or ACS certificate are different to the relevant requirements of the UBA evaluation criteria. For this reason, equivalence cannot be accepted for these certificates across the board.

Germany, France, Netherlands, the United Kingdom and Denmark have agreed to harmonise tests and requirements for materials within the framework of the 4MS Initiative (4MSI). For this purpose, suitable regulation proposals (4MSI Common Approaches) have been developed, which have been fully implemented in the evaluation criteria by Germany. If these proposed regulations are also implemented in other countries, a general equivalence of the relevant certificates can be declared.

Question A-6:

May products be sold when their test certificates are invalid or have expired or their declarations are unclear?

Answer:

The Drinking Water Ordinance (TrinkwV) regulates the use of materials in contact with drinking water. From the date of the evaluation criteria's legally binding nature (2 years after publication), only products that comply with the evaluation criteria may be used for new installation or maintenance of water supply systems.

The TrinkwV thus does not regulate the sale of products.

Question A-7:

Do requirements defined in UBA evaluation criteria also apply to existing installations?

Answer:

No, requirements in evaluation criteria only apply to the construction and maintenance (servicing, repair) of drinking water installations.

However, if quality parameters are exceeded, the causes of the exceedance can be ordered to be eliminated as part of a hygiene check, if necessary, by renovation or replacement of unsuitable components in drinking water installations. If consumers of drinking water of inferior quality suffer health impairments that can be traced back to hygienically improper installation components, the owner or operator of the drinking water installation is also subject to liability issues.

Question A-8:

Is it allowed to use products with invalid or expired test certificates or conformity attestations, or otherwise improper declaration, in drinking water installations?

Answer:

Section 17(2) Drinking Water Ordinance (TrinkwV) prohibits the use of products in drinking water installations (and also in the field of drinking water abstraction and -supply) that do not meet the drinking water hygiene requirements set out by the relevant regulatory documents. Relevant certificates based on testing and evaluation by a certification body in accordance with the evaluation criteria, can prove the suitability of a product for drinking water hygiene.

However, certification is not mandatory (see Question A-3). If products lacking a conformity attestation are to be used, it is necessary to at least make a statement on the product's hygienic suitability by a self-declaration referring to valid test certificates. Responsibility for established hygienic suitability then is the sole business of the manufacturer or provider. Should it come to an exceedance of drinking water quality parameters caused by usage of such products, same considerations become relevant as in Qu. A-7 above concerning issues of liability and to replace unsuitable products if necessary.

Question A-9:

Is it allowed to mount replacement parts without recent attestations according to applicable evaluation criteria into installations?

Answer:

Yes, replacement parts for which no attestations according to applicable evaluation criteria exist may be used for maintenance, if a compulsory replacement of a complete apparatus or major parts of an existing installation would represent an unreasonable hardship and thus be disproportionate. Main prerequisite to act this way is that drinking water quality parameters are met, which can be proven by appropriate water sampling and parameter testing. If past operation of the drinking water installation does not give clues on possible water quality impairment, use of the corresponding replacement part is possible.

Question A-10:

Is there a centralised data base for existing certificates on products in contact with drinking water, or is such a data base in preparation?

Answer:

Neither the German Environment Agency nor other federal institutions keep or host a list or data base of certified products. Anyway, accredited certifiers are obliged to provide basic information (product identity, manufacturer/provider and applicable standards or regulations) concerning products certified by them in adequate form (online, data medium or printout; upon request if applicable). These specifications are defined in standard EN 17065.

Accredited bodies in the field of drinking water contact materials in turn are registered at the commissioned German institution for accreditation, *Deutsche Akkreditierungsstelle (DAkkS)*, and can be found by distinct internet keyword search or by aid from consulting agencies.

To the knowledge of UBA those accredited bodies acting in the field of drinking water contact materials have implemented online navigation functionalities to search and download respective information on certificates issued by them.

Question A-11:

How can an attestation based on the extended transitional regulation with respect to COVID-19 pandemic be issued?

Answer:

An attestation based on the extended transitional regulation shall be issued by an accredited certification body. This certificate at least must state that for the respective components or products test reports exist which so far confirm product compliance of hygienic suitability according to the corresponding UBA guideline and that these test reports date back not earlier than ten years. The certification body must have available the current formulation and it must commit to inform the customer in due time on what testing and/or inspections still have to be done until 21 March 2023.

Subject area B

Implementation of UBA regulations in certification processes

Question B-1:

How are conversion factors F_c and thus risk groups assigned to the products?

Answer:

F_c for pipes and hoses are determined based on the inner diameter. If products with different diameters are grouped together for certification, the smallest inner diameter shall be used for testing and evaluation.

With the exception of pure gaskets for pipes, all other products fall into the category of ancillaries. These are subdivided according to the inner diameter of the pipes to which the products are connected.

Smaller F_c apply for various components of fittings depending on the proportion of surface area in contact with water.

Separate conversion factors F_c apply for containers and tanks. A differentiation is made according to whether the tank is used inside or outside of the drinking water installation.

Question B-2:

How must components made of the same materials be combined to determine the risk group?

Answer:

The proportions of surface area of components that come into contact with water and made of the **same base polymer** or the same metallic material must be added together to determine the risk group.

Example: A fitting contains several components made of the polymer POM, which are manufactured from different precursors. The surface area proportion of each individual component is less than ten percent, the total surface area proportion of all POM components is greater than ten percent. As a consequence, the polymer is to be assigned to risk group P1 and an attestation of conformity according to System 1+ is required for each of the components made of this polymer. However, components from the same precursor can be combined for an attestation of conformity (see Question B-3).

Question B-3:

When can the attestation of conformity for different components made of organic materials be combined?

Answer:

Components of the same material can be combined for a common attestation of conformity if they are made from the **same precursor (specific granulate** from one manufacturer). **In addition**, it must be ensured **that processing conditions specified** by the precursor's manufacturer **are complied with**.

An attestation of conformity of the precursor is sufficient for components of risk group P2.

For components of risk group P1 an attestation of conformity for the respective manufacturer of the component is necessary.

The common attestation of conformity for components (generally combining products or components) can also extend to different purchasers or end-product manufacturers and, if all relevant requirements are fulfilled, even to different colour hues of the precursor (see Question C-2/Colourants).

Question B-4:

Can an attestation of conformity for a precursor or component also be obtained by the end-product manufacturer who processes or installs it?

Answer:

If the component manufacturer is not identical to the end-product manufacturer, the attestation of conformity should preferably be arranged by the component manufacturer.

In principle, however, the next processor or end-product manufacturer can also have such components or precursors certified. For this purpose, however, the necessary information on the composition of the materials used must be submitted to the certification body. In addition, the end-product manufacturer must precisely specify the production process to the supplier. The supplier must provide the end-product manufacturer with the processing parameters for each batch delivered and used to manufacture the components. This is the only way to ensure third-party monitoring for the components in product group P1 on the premises of the end-product manufacturer. The factory production control is monitored based on the documented processing parameters and the incoming goods inspection at the end-product manufacturer.

Question B-5:

How can a component or a precursor from a supplier be certified if its certificates are not yet available?

Answer:

It requires close cooperation between supplier and buyer. In this context, it is possible for the buyer, being aware of the supplier's ongoing certification efforts, to submit a self-declaration for the supplier's products first. The buyer can also start their own certification efforts for their own products in which the parts supplied are to be used, even before the supplier's attestation of conformity procedure has been completed.

Question B-6:

Can an attestation of conformity also be issued for a component assembly?

Answer:

A component assembly comprises various pre-assembled components that are used in end products (e.g. a cartridge in an outlet fitting). Component assemblies can be obtained from upstream suppliers.

The proportion of surface area in contact with water in the end product that is installed by an installation company decides the component's risk group. Nevertheless, an attestation of conformity can also be issued for component assemblies. However, the attestation must show the requirements to be met or the restrictions on use (in particular the maximum proportion of surface area) in the end product. The materials used and their surface area proportions in the supplied product must always be communicated to the end-product manufacturer.

Question B-7:

How can the quality-assured sampling of test specimens be ensured if test specimens can be taken by manufacturers and sent to the inspection body within the simplified conformity procedure (otherwise a task of the certification body or inspection body)?

Answer:

The simplified conformity attestation procedure can be applied to components in risk groups P2 to P4. The Recommendation for Attestation of Conformity does not currently provide for any third-party monitoring at the manufacturers' premises for these components and leaves the responsibility for sampling the test samples with the manufacturers.

The production of specially manufactured test samples however is of crucial importance for the attestation of conformity of precursors (plastic granulates). For this reason, the production of test samples should be monitored within the scope of an inspection.

Question B-8:

Which risk groups apply to on-site products and under which circumstances is it possible to apply a simplified conformity attestation procedure?

Answer:

According to the UBA Recommendation for Attestation of Conformity, attestations for products intended for installation site application (on-site products) are limited to the general suitability of the products. They only cover fabrication of the final product under optimised conditions. It would be advisable to establish conformity attestations that also cover on-site application in practice for the product, but this cannot be regulated by an UBA recommendation since it would be necessary to implement technical requirements of application.

Due to the ambiguous nature of on-site product application (large-scale application or confined to a maximum of 10 % surface area of the structure – risk group P1 or P2) it is not useful to differentiate certificates in this respect. Therefore, UBA's recommendation handles certification for these on-site products uniformly as risk group P1 under the scheme of the 1+-system. External inspection thus required will in this case be relevant for the manufacturing of the intermediate product intended for on-site application and sampling of a representative test specimen obtained under conditions of use as recommended by the manufacturer.

In contrast, for on-site products intended for small-area application like repair systems in domestic installations it is possible to differentiate cases of practical use. From the envisaged minor wetted surface area in drinking water contact (< 1 %) a corresponding conversion factor and risk group P3 result, allowing the simplified conformity attestation procedure. Products must be labelled with explicit notes that their use is restricted to cases of small-area application.

Question B-9:

Which surface/volume ratios are to be applied on product testing of ancillaries for containers?

Answer:

According to the UBA KTW evaluation criteria, for evaluation of additional and substance-specific requirements migration testing has to be done according to parts 1 or 2 of standard DIN EN 12873¹ by applying a surface/volume ratio of 5 dm⁻¹. Preparation of migration waters for the odour parameter has to be done following standard DIN EN 1420¹. Regulatory coverage of both these standards is however currently restricted to products for pipe (network) systems, which means that ancillaries for containers are not within the scope of the standard. For determination of threshold odour numbers (TON) of containers, existing standard DIN EN 14395-1 is applicable which also defines surface/volume ratios for

¹ dated versions of the standard as specified in evaluation criteria must be referred to

preparation of migration waters for ancillaries for containers. This standard however is not referred to in evaluation criteria.

It is intended to amend standard DIN EN 1420 and to combine it with DIN EN 14395-1. Until this has been accomplished and reference is made in evaluation criteria to the amended standard, ancillaries for containers can be tested according to DIN EN 1420¹. A surface/volume ratio of 1.5 dm⁻¹ shall be adjusted for preparation of migration waters serving to determine colouring, turbidity, foaming and TON parameters. This has been specified in the 2nd amendment of KTW evaluation criteria (table 4).

Question B-10:

How to perform testing and evaluation of possible risks for substance transfer from layered material combinations if these products are not regarded as typical multilayer products with permanently attached layers?

Answer:

In multilayer products, the different material layers generally are inseparable. Testing of such products follows specifications given in KTW evaluation criteria chapter 5.7, the purpose of which is to adequately reflect potential substance transfer from all layers into the drinking water. Due to diffusion, substance transfer may occur from layers other than the one being in direct contact with drinking water.

Among products displaying no permanent combination of layers involved, testing and evaluation of outer layers is not envisaged. Nevertheless, experience shows that even such layered material combinations exert noticeable substance release into contact waters originating from rear layers, depending on ease of diffusive transfer as controlled by factors like layer gap distance and contact area allowing diffusion.

Currently UBA does not have sufficient information on substance release behaviour of separable, not permanently attached layered material combinations. It is therefore not yet possible to define distinct testing requirements for such material combinations. To be able to do so, certifiers are asked to acknowledge UBA should they receive requests for assessment of non-permanent material combinations.

In UBA's view it is not required in these cases to assess material formulations of outer layers. There should however be performed an extended (31 days) warm water migration testing and migration waters be analysed by GC/MS screening according to standard DIN EN 15768. It is advantageous to investigate in parallel solely the direct water contact layer the same way to elucidate to what extent outer layers contribute to migration.

UBA would like to ask to be provided with respective testing results in order to be able to adapt provisions formulated in its evaluation criteria documents.

Subject area C

Material- and product-specific questions

Question C-1:

Are connecting hoses of outlet fittings to be assessed as part of the fitting or separately?

Answer:

Connecting hoses are to be considered as part of the fittings for calculating the proportion of surface area.

Irrespective of this, connecting hoses must always be tested and evaluated individually, equivalent to pipes. A conversion factor $F_c = 20 \text{ d/dm}$ applies to them.

Question C-2:

How to deal with checking the requirements for colourants with regard to different colour hues?

Answer:

If the use of different colourants does not make it necessary to check additional restrictions concerning migration, product tests of colour variants can be limited to checking the colour hue in migration waters.

KTW BWGL (Evaluation criteria for plastics and other organic materials in contact with drinking water) requires the EN ISO 7887:2012-04 / Method C (410 nm) to be used for checking the colouring parameter. It is the certification body's responsibility to decide if other methods of determining the release of colouring substances can be used. In this case, the certification body must be able to provide evidence that the method is equivalent to the determination according to KTW BWGL.

Evaluating the colourants formulation by the certification authorities is of great importance since the masterbatch can vary considerably, even if the colour is the same. The additional requirements for colourants according to the KTW evaluation criterium 5.4.2 must be observed.

Question C-3:

Why does UBA recommend chrome-plated fittings should only be certified if nickel release has been tested and evaluated?

Answer:

Pre-coating with nickel, which is necessary for chromium-plating the fittings with regard to galvanisation, can lead to nickel scattering on the inner surfaces of the fitting in contact with drinking water. As a consequence, stagnant water in such fittings can in some cases

considerably exceed the nickel limiting value of 20 µg/l of the drinking water ordinance in the outflowing first approx. 0.2 litres. To ensure that chrome-plated fittings comply with the limiting value for nickel in drinking water, they must be subjected to a lengthy and costly long-term test. It has not yet been possible to develop an equivalent short-term test to assess nickel release.

This means that a European standardised complex test method for determining nickel release from fittings (DIN EN 16058) exists but is currently an unsatisfactory situation since it cannot be used to test all fittings because of the high costs involved. For this reason, UBA has published test criteria (see below) but has not included them as part of the binding evaluation criteria for metallic materials in contact with drinking water.

One possibility to reduce nickel release is the so-called "plugging". In this method, all openings in the fitting are closed by hand in order to minimise nickel scattering on the inner surfaces. The compliance with the nickel limiting value can be confirmed in a certification procedure for products of manufacturers who plug their fittings. For this purpose, a sample fitting must be selected and tested according to DIN EN 16058 and the production process must also be monitored.

Other technical options for reducing nickel scattering are also conceivable, that is why "plugging" cannot be made mandatory for certification.

Even though the UBA evaluation criteria for metallic materials do not regulate nickel release from chrome-plated fittings in a mandatory way, the limiting value for nickel in the Drinking Water Ordinance still applies. For this reason, UBA advocates that chrome-plated fittings should not be certified if they have not been tested and evaluated for nickel release.

If nickel release has not been tested and evaluated according to DIN EN 16058, it is the manufacturer's responsibility to confirm compliance with the nickel limiting value and the other requirements in the form of a self-declaration (manufacturer's declaration). However, this cannot result in a relevant product certification.

The criteria for assessment of nickel release referring to test results determined as per DIN EN 16058 and further explanations on this problem can be found in the UBA information leaflet 'Release of nickel by chrome-plated drinking water taps and other components' on the German Environment Agency's website under the topic of 'Distribution of Drinking Water':

<https://www.umweltbundesamt.de/en/topics/water/drinking-water/distributing-drinking-water>

placed in the blue navigation area "Documents".

Question C-4:

Which drinking water hygiene requirements apply to sealing materials?

Answer:

Tapes from polytetrafluoroethylene (PTFE) for metallic threaded joints in drinking water installations are small-area products for ancillaries. Normally it can be assumed that wetted surface area will remain below 1 % with respect to the ancillary. For such components in drinking water installations a conversion factor of 0.02 d/dm applies, corresponding to risk group P3 for these products.

Non-hardening pasty sealing compounds for hemp exert a negligible effect on drinking water quality. Normally it can be assumed that wetted surface area will remain below 0.1 % with respect to the ancillary. The conversion factor for products with negligible effect on drinking water quality for pipes with inner diameter < 80 mm is 0.002 d/dm. Thus, the applicable risk group for these products is P4.

This assignment requires that the installation company adheres to proper workmanship when using the sealing materials.

It is inherent that sealing materials will continue to remain permanently in the installation. Therefore, application instructions for such materials should emphasise the relevance of clean working practice to ensure that wetted surface proportions correspond to dedicated product categories.

Requirements on sealing materials and respective testing hitherto have been regulated in the German standard DIN 30660:1999-12 which however will be withdrawn in the near future. Hygienic requirements defined therein pertain to appearance (visual, odour, flavor), total organic carbon (TOC) and chlorine demand. The latter parameter is not determined to be tested anymore in recent KTW-BWGL.

Question C-5:

Which requirements apply to filter membranes and what are current testing procedures for them?

Answer:

Filter membranes installed as terminal filters or for the purpose of centralised or non-centralised water treatment are formulated as plastics and thus fall under the scope of the evaluation criteria for plastics and other organic materials in contact with drinking water (KTW-BWGL). Due to their large surface area being in contact with drinking water, these are assigned to the group of ancillaries and thus bear risk group P1. To evaluate other components of a filter module and to define the relevant risk group, the wetted surface of the filter membrane itself has to be omitted. Otherwise, from the large membrane surface these other components would fall into an inadequately low risk group.

For filter membranes, KTW-BWGL currently stipulates product testing according to part 1 of DIN EN 12873 in order to assess conformity with migration-based requirements. By doing so, the inner surface of the membrane is neglected and only the outer surface is considered to calculate expected concentrations at the tap, c_{tap} .

For the testing of filter membranes, the specific testing standard DIN EN 12873 part 4 is available. UBA however has not been in the position yet to define requirements that would allow evaluation of testing results generated within the frame of this standard. To do so, it would be necessary to establish a procedure to convert measured concentrations into expected concentrations C_{exp} . Systematic comparative testing employing both parts 1 and 4 of DIN EN 12873 would be helpful in this respect. While to our knowledge ACS approvals based on testing in accord with DIN EN 12873-4 are provided by France, UBA however does not have sufficient information on parameters to be included and their evaluation. Further, there are no harmonised concepts yet within the European 4MSI collaboration how to deal with the evaluation of filter membranes.

If testing results according to DIN EN 12873-4, which for example have been obtained to receive an ACS approval, were to be accepted, complete test reports for membranes or respective components (filter modules) would be necessary. Test reports would require to document the way the formulation assessment has been done and, depending on formulation, which test parameters have been defined and measured. In this context it is also required to specify designated purposes of the products.

Question C-6:

Is it allowed to use frost protection wires as internal heating element in drinking water lines?

Answer:

In UBA's opinion and referring to Section 17(7) of the Drinking Water Ordinance (TrinkwV), it is not allowed to use internal frost protection wires in drinking water lines. The reason is that internal heating wires inserted into the drinking water medium constitute items that do not directly serve the purpose of drinking water supply. This can also be derived from the imperative to minimize quality impairment laid down in Section 5(4) and Section 6(3) TrinkwV stating that any additional contamination risk has to be avoided if alternative techniques of current best practice are available.

DIN EN 805:2000 in combination with DIN EN 806-2:2005 as part of current technical rules and standards define that for buried lines in public drinking water distribution precautions shall be taken to prevent freezing. As for drinking water installations, it is stipulated that outside line sections of premises have to be drained during winter seasons.

According to standard DIN EN 806-2:2005 chapter 14.1, installation of pipes in locations encountering risks of frost action shall be avoided. If this cannot be ruled out, the cited standard determines to thermally insulate the pipes according to ch. 14.1.6 and, according to ch. 14.1.7, determines to provide a room heating or a trace heating if necessary. A trace heating is to be understood as device that prevents pipe freezing by external heating.

By insertion of internal frost protection wires into drinking water lines extra risks arise for hygienic deterioration. On the occasion of insertion, foreign matter or contaminations may enter the inner parts of the pipes. Though hygienic suitability might be proven for these wires, substance release inevitably associated with them must be regarded as avoidable contamination. Moreover, the penetration points where the wire enters and leaves the pipe pose a permanent contamination risk.

UBA thus recommends not to issue hygiene certificates for frost protection wires to be inserted in drinking water lines, irrespective of positive evaluations eventually existing for materials constituting their parts in drinking water contact.

Question C-7:

What is the current and near-future mode of regulation to evaluate starting substances for the production of cementitious materials in contact with drinking water?

Answer:

DVGW standard W 347 currently regulates testing and evaluation of cementitious materials in contact with drinking water. The positive list as part of this standard will however not be pursued. According to Section 17(3) of the Drinking Water Ordinance (TrinkwV) UBA has been legitimated to define evaluation criteria for materials in contact with drinking water, which consequently also pertains to cementitious materials. As from the foreseeable revision of the European Drinking Water Directive 98/83/EC, European positive lists for materials in contact with drinking water will be defined in the future. For this reason, UBA will not make attempts to set up and publish national evaluation criteria for cementitious materials in advance of a European regulation.

Detailed information can be found at URL:

<https://www.umweltbundesamt.de/dokument/information-on-the-evaluation-of-starting>

Question C-8:

Which hygienic requirements apply to inlet hoses for washing machines, dishwashers and similar household appliances?

Answer:

Requirements for drinking water contact materials according to evaluation criteria must be fulfilled until the tapping point or the first safety device, as has been prescribed in the German Drinking Water Ordinance (TrinkwV). Due to fluid category 5 as is defined in standard DIN EN 1717:2011-08 and will be present in mentioned household appliances, a free outlet is required as safety device.

Those sections of the inlet hose which are situated upstream of the free outlet (safety device) come into contact with drinking water and, via the piping system, in principle are hydraulically connected to taps for withdrawal of water for human consumption.

If for the inlet hose its drinking water hygienic suitability cannot be proven, among other risks it must be expected that microbial contamination can occur and again a safety device sufficient for fluid category 5 (free outlet) is necessary. However, according to EN 1717 table 3 this is lowered to category 3 (e.g., HD type: pipe breathing unit for jointed hose fittings in combination with backflow preventer) for taps with jointed hose connections in domestic premises.

It follows that if a safety device of **sufficient** performance is installed between the inlet hose and other parts of the installation, hose or pipe material without specific drinking water hygienic suitability may be used.

Nevertheless, it has to be kept in mind that according to TrinkwV water for the purpose of dishwashing or laundry must have drinking water quality. For this reason, inlet hoses should provide adequate hygienic suitability.

Question C-9:

What type of confirmation is obtained with a certificate for organic coatings used in restoration of drinking water lines (pipe relining)?

Answer:

In case of necessary restoration measures on drinking water lines, for the sake of cost and effort economy the option of *in situ* relining is considered. As from practical feasibility, organic coatings based e.g. on epoxy resins are convenient products offered for pipe relining. In general, applying such coating measures is associated with elevated risks for deterioration of drinking water quality under operation of installation sections restored this way, the impact of which is especially prominent due to large wetted surfaces involved.

Reactive components of coating resins are applied as late as on starting restoration work by introducing them into the installation lines and having them chemically reacted. This identifies them as typical products for on-site application (worksite products). Their drinking water hygiene suitability – different from what holds for factory-made products – strongly depends on properly adjusted processing conditions which also must recognize materials and geometries individually present in the installation system. Factory-made products, in contrast, are manufactured under constant, reproducible, machine-controlled conditions in their final state and representative test specimens can be withdrawn routinely for laboratory testing and evaluation.

Difficulties to safely provide traceable, reproducible and appropriate application of on-site products is a general weakness for the certification of such products from starting materials to the final result.

A certificate according to the *Recommendation for Attestation of Conformity of Product Hygiene Suitability for Drinking Water* in case of on-site applied coatings is limited to suitability in principle of the ready-for-use commercial product under optimized application conditions (see section 7.4.3 and annex 4 of the recommendation). Respective certificates should explicitly note that following these optimized application conditions is essential and that corresponding instructions for use should be provided with the product.

In addition, it is required to demonstrate objective evidence that the coating having been fabricated on-site does fulfill the requirements. This can be accomplished by testing the finished coating according to the KTW evaluation criteria or by additional certification of the application procedure. Such application procedure certification to a great extent must address technical aspects and is therefore not covered by the regulatory scope of the Drinking Water Ordinance or evaluation criteria and the recommendation for conformity attestation. To the

knowledge of UBA, currently no established certification program exists for *in-situ* coating of drinking water installations that would ensure hygiene suitability of fabricated coatings.

To resume, in evaluation of *in situ* coating for restoration of drinking water lines UBA is sceptical with regard to possible associated hygiene risks, while from legal considerations as per evaluation criteria it cannot rate this method as regulatory compliant or non-compliant. By way of published evaluation criteria, UBA defines requirements on the composition and properties of products, the compliance of which can be attested by independent bodies with a certificate. Such a certificate in this case however only confirms that the coating technique in principle allows to fabricate a hygienically suitable coating. It does not confirm that real fabricated coatings comply with mandatory KTW evaluation criteria requirements. If it cannot be demonstrated that suitability requirements for the individual case of a restored installation are fulfilled, operation of respective installation parts is not allowed any more since 21 March 2021.

Question C-10:

Is it allowed to further use products with bituminous coatings after entry into force of the KTW evaluation criteria on 21 March 2021?

Answer:

Until 21 March 2021, proof of drinking water hygienic suitability of bituminous coatings could be demonstrated according to DVGW standard W 348. This standard will be withdrawn at the datum mentioned, because it is the end of period after which the KTW evaluation criteria will become mandatory for organic materials in contact with drinking water.

Bituminous coatings fall within the scope of annex B of the KTW evaluation criteria. Necessary starting substances for fabrication of bituminous coatings are not listed in the respective positive list as a consequence of insufficient risk assessments. For this reason, bituminous coatings may exclusively be used for components of risk groups P3 and P4. Relative surface proportions therefore must remain below 1 % of the wetted surface of the ancillary (as for example a fitting). If this is not the case, products of that kind may not be installed since 21 March 2021.

Question C-11:

How to evaluate glass electrodes for pH measurement used in quality control in waterworks?

Answer:

Products and components made of glass have to be tested and evaluated according to the evaluation criteria for enamels and ceramic materials. By virtue of the 1st amendment of this document a risk-based approach will be integrated for evaluation which means that products and components will be assigned different risk groups. Glass electrodes to be used in waterworks belong to the lowest risk group P4. According to this regulation, no requirements related to composition will be defined for such products and migration testing will not be necessary either.