

# Information note on Regulation 5 (Wales)



## **Regulation 5 (Use of products or substances in private water supplies and disinfection arrangements)**

Regulation 5 specifies the use of products or substances that will not have a detrimental effect on the safety or quality of drinking water. There are many of these used in private water supply systems, for example, borehole pumps, collection chambers storage tanks, transmission pipes, treatment chemicals or filter media. Also point of use devices and water fittings, for example, meters, pumps, valves and taps.

Any new usage of a product or substance is covered by regulation 5(1) for example, many existing spring chambers and reservoirs are not constructed of material which would comply with this regulation now, but it is not expected that these need replacing unless there is evidence to confirm that they are making the water unwholesome.

However, during remedial works for example, if a tank, reservoir or spring chamber needs new pipework or a repair to a crack in the walls, any material used must now comply with this regulation. These types of products are frequently used by water undertakers and widely available. If necessary you can seek further advice from your local water company, the Water Regulations Advisory Service (WRAS), or the Drinking Water Inspectorate (DWI).

Local authorities must specify compliance with regulation 5 in new notices they serve specifying repairs or replacement of any products/substances used for improvements to private water supplies.

## **How do local authorities check if a product or substance complies with regulation 5(1)?**

Products or substances meeting one (or more) of the following criteria comply with regulation 5(1):

1. Listed in the Secretary of State's list of approved products for use in Public Water Supply in the United Kingdom (current version is available on the Drinking Water Inspectorate website);
2. Listed in the Water Regulations Advisory Service (WRAS) Water Fittings and Materials Directory (available on the WRAS website: <https://www.wras.co.uk/>) as suitable for use in plumbing systems within buildings;
3. To be included by the Drinking Water Inspectorate on a list of products permitted under regulation 5, the supplier, operator or local authority will need to provide evidence of usage in at least three different private supplies in the previous 12 months. This transitional list will be maintained on the Drinking Water Inspectorate website as part of the regulation 5 list. **In such circumstances the Drinking Water Inspectorate should be consulted for further guidance on**

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## **the process of gaining approval and the current list of transitional products.**

Local authorities should be satisfied that any product or substance in use in a private supply is documented as part of a risk assessment, any investigation and/or any improvement works.

## **What action should a local authority take if it finds that a product or substance may be affecting the quality or safety of the water supply?**

If a local authority suspects that a product has been used which does not satisfy the requirements of regulation 5(1), they should consider if this poses a potential danger to human health. A **regulation 18 notice must** be served on the relevant person if so (see guidance note on regulation 18).

If the water is not considered a potential danger to health, but in is breach of regulation 5, it is unwholesome. If this is the case, a section 80 notice may be served.

## **Parameters which do not require analysis but are controlled by the use of approved products**

These products below are used in municipal water treatment and it would be unusual to find them in typical private water supplies. Where the products in the table below are used, there is no requirement to monitor for them if the products are on the approved list (see above):

<b>Parameter</b>	<b>Circumstances in which likely to be present</b>	<b>Criteria for exclusion from audit monitoring</b>
Acrylamide	Use of polyacrylamides as coagulant aids. Use of polyacrylamide grouts for borehole/well linings.	Approved products should be used.
Epichlorohydrin	Use of polyamines as coagulant aids. Use of epoxy resins (for example to line pipes and tanks). Use to make some ion exchange resins.	Approved products should be used.
Vinyl chloride	Used for making PVC. Leaching from unplasticised PVC pipes used in distribution or domestic plumbing.	Approved products should be used.

## **Regulation 5(2)**

Regulation 5(2) requires that where disinfection forms part of the preparation or distribution of water; the relevant person must design, operate and maintain the disinfection process to keep disinfection by-products (DPB) as low as possible, without compromising the effectiveness of the disinfection.

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DBPs are formed by the reaction of disinfectants with precursor substances present in the water. Natural organic matter (colour /total organic carbon) and inorganic matter (bromide) are the most significant DBP precursors. While a wide range of DBPs may be formed, the most encountered are trihalomethanes, after the action of chlorine with naturally occurring organic matter.

The Regulations set a parametric value of 100µg/l for trihalomethanes (ie a group of four DBPs, namely chloroform, bromoform, dibromochloromethane and bromodichloromethane) and 10µg/l for bromate.

All commonly used chemical disinfectants (for example chlorine, chlorine dioxide, chloramines and ozone) react with organic matter and/or bromide to varying degrees to form different DBPs<sup>1</sup>.

However, the concentration of bromate where ozone is used and chlorite/chlorate where chlorine dioxide or sodium hypochlorite are used as a disinfectants, should be assessed for DBP monitoring requirements as a part of the risk assessment.

The factors which influence DBP formation include:

- type and concentration of disinfectant used;
- concentrations of organic matter and other DBP precursors present in water presented for chemical disinfection;
- temperature; pH; contact time;
- length of a distribution network.

Further operational considerations in the risk assessment include:

- a lack of, or poorly operated or maintained, treatment processes capable of removing organic matter (such as coagulation or filtration);
- operation of treatment processes outside their design criteria, for example excessive filter run times or disinfectant dosing;
- accumulation of sediments in tanks/chambers or the distribution network;
- ingress into tanks/chambers or distribution network;
- saline intrusion into the source waters.

Local authorities should encourage relevant persons to focus their activities to minimise the formation of DBPs by removal of precursors as far as is reasonably practicable but without compromising microbial disinfection.

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<sup>1</sup> Other types of DBPs which may form include haloacetic acids, haloaldehydes, haloketones, chloral hydrate, haloacetonitriles, halogenated hydroxyfuranone derivatives, nitrosamines, chlorite, chlorate and bromate.

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Excessive disinfectant dosing should be avoided.

A suggested list of actions is presented below, that the relevant persons should consider minimising the formation of DBPs. Many of these will also have beneficial impacts for ensuring wholesomeness of the water supply:

- review of raw water intake management as a part of the risk assessment;
- ensure the pre disinfection treatment processes remove organic material effectively;
- optimisation of any pre-treatment stage including filtration (if present);
- optimisation the disinfection contact process to ensure the disinfectant dose is as operating as designed;
- assess the appropriateness of the disinfection processes used;
- flushing and cleaning of distribution mains;
- Implementation of a regular programme of cleaning out of any clear water tanks and storage reservoirs.

Relevant persons must be able to demonstrate that the disinfection process is not only designed for the challenge present in the raw water, but also that it is operating within the design criteria of the treatment.

Regulation 5(2)(b) requires that the effectiveness of the disinfection process must be maintained and verified. This means that any disinfection process should be fit for purpose, and that the effectiveness of the process is able to be measured and evaluated, as required by regulation 5(2)(c). This may be through the use of online monitoring, regular sampling or other means and (d) that records are available to the local authority for inspection for a period of five years.