



Water Use

Supporting Guidance (WAT-SG-84)

Using Disinfectants in Water Wells and Boreholes

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Update Summary

Version	Description
v1	First issue for Water Use reference using approved content from the following documents: <i>disinfecting borehole guidance 210610 after WPRSG, LW&SG coms.doc</i>
v2.0	Expired CMS links reviewed and updated.

Notes

References: Linked references to other documents have been disabled in this web version of the document. See the References section for details of all referenced documents.

Printing the Document: This document is uncontrolled if printed and is only intended to be viewed online.

If you do need to print the document, the best results are achieved using Booklet printing or else double-sided, Duplex (2-on-1) A4 printing (both four pages per A4 sheet).

Always refer to the online document for accurate and up-to-date information.

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1. Introduction

Many owners of wells and boreholes have their sources and equipment (such as pumps) cleaned and disinfected before being installed or brought into use to ensure that no harmful bacteria or viruses are introduced during construction or the installation of equipment, especially where the new borehole is located close to a public water supply. In some cases disinfection may also be undertaken in order to remediate a water supply borehole on finding that the borehole has become contaminated by pathogens. This action is not suitable where the groundwater itself is contaminated e.g. ongoing contamination from a septic tank.

However, care must be taken to ensure that the disinfectant does not in itself present a groundwater pollution risk.

This document summarises SEPA's advice regarding disinfection of borehole construction material, of equipment installed in the borehole and of the borehole itself in order to prevent groundwater pollution. It does not cover the cleaning of boreholes using 'airburst' techniques, which does not require authorisation by SEPA.

2. Regulatory Control

Activities liable to cause pollution of the water environment will require to be authorised under the Water Environment (Controlled Activities) (Scotland) Regulations 2005 (CAR).

2.1 Disinfection of the borehole or borehole equipment

Direct discharges of pollutants into groundwater are prohibited by the Water Framework Directive. However, there are some exemptions to this including one which has been transposed into CAR, namely General Binding Rule 16. This covers the direct discharge of pollutants into groundwater as a result of construction or maintenance works in or on the ground which come into contact with groundwater. The introduction of pollutants in connection with the disinfection of water wells or borehole materials is considered to fall under CAR General Binding Rule 16 (GBR 16). Providing the rules in GBR 16 are complied with, this activity is authorised and no separate application to SEPA for authorisation is required. These rules do not allow the entry to groundwater of any hazardous (CAR Schedule 2) substances and prohibit any pollution of the water environment from being caused.

2.2 Discharge of the dilute waste disinfectant pumped out of the borehole

In accordance with *WAT-RM-12: Regulation of Discharges from Water Treatment Works* and *WAT-SG-39: Point Source Regime Definitions and Scope* SEPA will not normally require authorisation for occasional discharges containing disinfectant from water treatment works and water supply systems which are undertaken in accordance with Scottish Water's *Treatment, Operation And Maintenance System Scientific Services Procedure Water Supply Hygiene Code Of Practice* and the Water (Scotland) Act 1980, as steps should have been taken to prevent pollution (e.g. removal of chlorine and silt).

However, where SEPA considers that the activity is liable to cause pollution then it will require a licence. Scottish Water will be expected to contact SEPA where they are considering undertaking an activity which may be liable to cause pollution. For further details see *WAT-RM-12* and *WAT-SG-39*.

A similar approach to pollution prevention and regulation should be taken for discharges containing disinfectant from other (non Scottish Water) water supplies. Section 4 provides further information.

3. Type and Use of Disinfectants

Commonly disinfection is carried out using sodium hypochlorite, which is often found in household bleach, or chlorine. Any use of these substances should be made sparingly and so that they do not cause groundwater pollution.

The *Guidelines on Water Well Construction* from the Institute of Geologists of Ireland contains some information on recommended procedure for disinfection. This includes details on the type, amount and concentration of disinfectant to use as well as details on how this should be put into and pumped out of the borehole.

Care should be taken to ensure that

- All the bleach is removed following borehole disinfection by subsequent flushing of the borehole.
- Any nearby abstractions are not likely to draw in disinfectant that enters the borehole as this could result in contamination of the natural groundwater or of the nearby abstraction. Where nearby abstractions are at risk it may be possible to disinfect by steam cleaning instead of using chemicals.
- No hazardous (CAR schedule 2) substances (with the exception of any drilling fluids used during the works, providing they do not cause pollution of the water environment) should be used to disinfect the boreholes or equipment as this would be in contravention of GBR 16.

4. The Discharge of the Waste Water

In general, disinfection of borehole materials should be carried out at the surface. Care should be taken to ensure that any left-over neat disinfectant is collected and safely disposed of. Left-over disinfectant should not be allowed to soak into the soil or run off since this can pose a risk of contamination to groundwater and surface waters.

Any waste diluted disinfectant or water flushed out of the borehole or used to rinse the equipment should be neutralised and, discharged using the following disposal hierarchy:

- Discharge to foul sewer with permission from Scottish Water
- Discharge to a slurry store. The subsequent discharge of this farm waste will not require a CAR authorisation
- Discharge to land. This will not require an application to SEPA for a CAR authorisation

There should be no discharge to wetlands (natural or artificial) or septic tanks. Any proposed discharge to surface waters should be discussed with SEPA. For Scottish Water discharges, refer to Scottish Water's *Treatment, Operation And Maintenance System Scientific Services Procedure Water Supply Hygiene Code Of Practice* and *WAT-RM-12: Regulation of Discharges from Water Treatment Works*.

References

Key References

WAT-RM-12: Regulation of Discharges from Water Treatment Works

WAT-SG-39: Point Source Regime Definitions and Scope

External References

Guidelines on Water Well Construction Institute of Geologists of Ireland
(www.igi.ie/publications/)

*Treatment, Operation And Maintenance System Scientific Services
Procedure Water Supply Hygiene Code Of Practice* Scottish Water

Water (Scotland) Act 1980 (not available online)

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