

## RDG Guidance Note: Provision of Drinking Water for On-Train Use

RDG-OPS-GN-021  
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## About this document

### Explanatory Note

The Rail Delivery Group is not a regulatory body and compliance with Guidance Notes or Approved Codes of Practice is not mandatory; they reflect good practice and are advisory only. Users are recommended to evaluate the guidance against their own arrangements in a structured and systematic way, noting that parts of the guidance may not be appropriate to their operations. It is recommended that this process of evaluation and any subsequent decision to adopt (or not adopt) elements of the guidance should be documented. Compliance with any or all of the contents herein, is entirely at an organisation's own discretion.

Other Guidance Notes or Approved Codes of Practice are available on the [Rail Delivery Group \(RDG\) website](#).

### Executive Summary:

This Guidance Note provides advice on the management of wholesome water i.e. drinking water supply, storage, use and chlorination at depots, stations and on-train, to consistently maintain the quality of drinking water to be fit for human consumption.

### Issue Record

Issues 1 to 2 of this document were published as: RDG-GN021.

Issue	Date	Comments
1	April 2014	Replaces ATOC/GPG008
2	July 2016	Following periodic review
3	October 2019	Periodic review with updates including definitions and advice from Public Water Supplies in Railway Premises and put in the RDG format.

This document is reviewed on a regular 3-year cycle.

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# 1 Purpose and Introduction

## 1.1 Purpose

The purpose of this document is to assist railway undertakings to control the risks associated with the provision of wholesome water i.e. water of a standard for drinking for on-train use. It suggests measures and procedures which may be applied for supply, storage and chlorination to consistently maintain the quality of water so as to be fit for human consumption. Application of this guidance note does not absolve the operator from carrying out suitable risk assessments for the provision of on-board wholesome water.

It does NOT address:

- i. The provision of bottled water.
- ii. The provision of water on catering trolleys.
- iii. The water quality of on-train toilet tanks which supply water for hand washing and for toilet flushing.

In respect of the latter, reference should be made to RDG Guidance Note RDG-OPS-GN-013 - Control of Risk Posed by the Presence of Legionella Bacteria in On-train water Systems.

## 1.2 Introduction

The following guidelines constitute a summary of identified good practice to consider as risk controls following risk assessment for the provision of drinking water, when dealing with, or being responsible for, drinking water supplies to rail vehicles, in order to comply with current legislation.

The guidelines refer to all water provided on railway vehicles for human consumption and catering activities, including food preparation and washing-up. They also detail precautions and actions that should be taken to safeguard the quality of wholesome water supplied from a mains distribution system to its delivery at the outlet on a railway vehicle.

## 1.3 Definitions

Term	Definition in the context of this document
<b>Back siphonage</b>	Where liquid is siphoned back against the direction of normal flow or pressure.
<b>Bowser</b>	A mobile means of transporting water from a mains distribution system to the site for loading water onto a vehicle.
<b>Hyperchlorinated water</b>	Water used as a sterilising medium as part of a cleaning and equipment storage regime and having a residual chlorine concentration in excess of the mains supply. The minimum residual chlorine concentration of hyperchlorinated water should be 50mg/l.
<b>Mains distribution system</b>	A water company's network of mains, pipes, pumping stations and service reservoirs through which water is conveyed to consumers.
<b>Source (or outlet):</b>	Where the water emerges from mains distribution system provided by a Water Supplier, a tank, bowser or container, or item of equipment (e.g. tap or coffee machine on a railway vehicle).
<b>Wholesome water</b>	Means water which meets the national standards for drinking water quality and is suitable for drinking, cooking and other domestic purposes; it is the quality of water supplied by the Water Supplier as defined in legislation.

## 2 Equipment

### 2.1 Use of bowzers

Where bowzers are used, they should be dedicated to the supply of wholesome water and not used for any other purpose. When not in use, bowzers should be protected from interference and parked securely away from public areas.

Bowzers should be constructed of materials that have proven suitability for use in water and food processes. They should be non-toxic, have non-tainting properties and not be liable to rust.

When the bowser is level it should be possible to completely empty the water system, leaving no trapped liquid that may cause tainting and contamination of wholesome water after flushing and refilling.

Bowzers for wholesome water supplies should only be filled from watering points maintained specifically for this purpose. The filling point should be located above ground level and if hoses are attached, these should be of such a length that they cannot reach the ground. The bowser should be sterilised every 4 weeks or more frequently according to local factors and the requirement to maintain water quality. It should then be drained, flushed with clean water, drained again and filled for use. If the bowser has not been used for 3 days or more, it should be sterilised before being put back into use. The date of the most recent sterilisation should be displayed on the outside of the bowser. Bowzers should be fitted with a booster pump and fitted with a fluid category five backflow prevention device. Detail can be seen in The Use of Public Water Supplies in Railway Premises – Information and Guidance Note No9.

### 2.2 Use of standpipes

Standpipes and stopcocks should be constructed of materials that have proven suitability for use in water and food processes. They should not be liable to rust, should be non-toxic and have non-tainting properties.

Standpipes should be maintained in good working order and the surrounding area kept free of standing and recycled water, food debris, animal faeces, fuel and lubricants, and litter. Faulty appliances should be reported immediately as specified by company procedures.

Standpipes should be correctly installed with a plumbing system that protects against backflow and is well maintained. Information and Guidance in Part 10 of the document (The Use of Public Water Supplies in Railway Premises – Information and Guidance note No9-06-03 June 2006 – published by the Water Regulations Advisory Scheme)

### 2.3 Hoses

Hoses should be permanently attached to the standpipe where possible. The delivery end of the hose should be prevented from contact with the ground by a suitable means - this may be by the use of collars, etc. When not permanently attached, the hose ends should be protected by covers when not in use. The standpipe tap and hose end should both be sterilised before connecting them together for use.

When not in use, the delivery end of the hose should be stored in a sterilising medium. There should be a process in place to ensure that the sterilising medium does not become contaminated, diluted or ineffective. If an adapter is used, this and the hose end should be sterilised prior to assembly and use.

Worn or damaged hoses should be replaced immediately. Hoses used for wholesome water should be readily identifiable and made of non-toxic, impervious, durable and non-tainting materials that have proven suitability for use in water and food processes.

## 3 Water Systems

### 3.1 Transfer to vehicles

Wholesome water should only be taken from a mains distribution system. Where possible, the supply point should be above ground level, protected from contamination and back siphonage. Use of a bowser or standpipe is preferred to prevent contamination.

Before transferring water to a vehicle, it should be ensured that the water-filling inlet on the vehicle and the delivery end of the hose are suitably cleaned and sterilised. The hose should be flushed out with wholesome water from a proven source immediately prior to being coupled to the vehicle.

### 3.2 Vehicle water systems

Systems used to supply wholesome water should be constructed of materials, equipment and fittings that have proven suitability for use in water and food processes. They should not be liable to rust, should be non-toxic and have non-tainting properties.

When the vehicle is level, it should be possible to completely empty the water system, leaving no trapped liquid that may cause tainting and contamination of water after flushing and refilling. Any discharge during draining or normal use should be directed away from the vehicle and entered onto vehicle maintenance records.

Measures should be taken to avoid contamination of a wholesome water system by dirt, solids or substances from other water or fluid systems. Water filling inlets and outlets should be labelled. All wholesome water passing from tanks in a vehicle should pass through sterilising equipment.

Wholesome water systems should be sterilised every 6-8 weeks. The system should then be drained, flushed with clean water, drained again and then filled for use. If the water system has not been used for 3 days or more, it should be sterilised. With this in mind, particular attention is required following maintenance/overhaul of a railway vehicle or a shutdown period, e.g. Christmas, etc. The date of the most recent sterilisation should be displayed inside the vehicle.

## 4 Sterilisation

### 4.1 Means of sterilisation

Any suitable means of sterilising the vehicle water system, bowser, equipment or connections may be used. After the appropriate sterilisation period, the water tanks, pipes and service cocks should be thoroughly drained, rinsed through with clean water, and drained again before being filled for use.

If hyper-chlorinated water is used, it should be freshly prepared daily. The solution should contain a minimum of 50-mg/l residual chlorine. Precautions should be taken to ensure that the solution does not become diluted. Unless instructed otherwise, the minimum sterilisation contact period is one hour if using hyper-chlorinated water.

Procedures for the regular cleaning and maintenance of equipment should be carried out to ensure compliance with current legislation.

## 5 Monitoring of Water Quality

### 5.1 Overview of requirements

The owners/operators of rail vehicles are responsible for water quality. Sampling of water sources

such as station and depot watering points should be carried out at a frequency commensurate with the risk (for example where there is historical evidence of previous cases of poor water quality). For normal purposes, twice per year is considered sufficiently frequent. The report should clearly indicate whether the results are satisfactory or unsatisfactory, so they can be easily understood.

In addition to the above, similar checks for water quality should be carried out on all rail vehicles that have drinking water facilities, again at a greater frequency where previous history of contamination has been identified.

## 5.2 Responding to problems

If a problem is detected, immediate action should be taken to determine and rectify the cause.

If contamination is due to the water supply chain, all other companies whose vehicles or trolleys may also have become contaminated should be alerted immediately. All vehicles that may have been contaminated should be cleaned and sterilised before being put back into use.

# 6 Rail Vehicle Maintenance

## 6.1 Ultra-violet sterilisers

Ultra-violet sterilisers, where fitted, should be cleaned and sterilised at least every 6-8 weeks. The equipment should be drained, flushed with clean water, drained again and refilled for use. Maintenance of ultra-violet sterilisers should ensure that their operational efficiency is maintained. The ultra-violet lamp should be changed every 12 months and the date of fitting clearly marked on the end cap.

The germicidal lamp should not be switched on when it is not sealed inside the container, as this can be dangerous to skin and eyes. Where ultra-violet sterilisers are fitted, the following notices should be displayed:

- i. Location of the switch controlling the electrical supply to the steriliser.
- ii. The fuses that must be removed before undertaking repairs to or maintenance of the steriliser.
- iii. Any time interval that sterilisers must be switched on before water supply is used.

# 7 Staff Training

## 7.1 Requirements

All staff involved in the transfer of wholesome water should have suitable training to ensure water quality is maintained. The training should be documented and should include:

- i. Sterilisation of equipment.
- ii. Safe transfer of water between mains or bowsers and rail vehicles.
- iii. Awareness of health hygiene issues concerning wholesome water.
- iv. Awareness of reporting procedures for faults and contamination.

Staff training should be refreshed at regular intervals, ideally at least once every 12 months. Refresher training should also be given when errors in meeting procedural requirements are identified.

## 8 Record Keeping

### 8.1 Requirements

Auditable records should also be maintained for:

- i. The sterilising regime of water systems and bowsers.
- ii. Staff training.
- iii. The servicing and repair of sterilising equipment in water systems and bowsers.
- iv. Results of sampling at water sources and on-vehicle water quality checks (as described in Section 5).

## 9 Useful Information and Contacts

### 9.1 Legislation

Legislation changed in 2018 when the EU Water Quality Directive was transposed into UK legislation as [The Water Supply Regulations 2018](#). These also refer to and are based upon [WHO guidelines](#).

### 9.2 Information on Water Supplies in Railway Premises

[The Use of Public Water Supplies in Railway Premises](#) – Information and Guidance note No9-06-03 June 2006 – published by the Water Regulations Advisory Scheme

### 9.3 Contacts for advice

The latest legislation and further advice can be obtained from the following organisations:

Drinking Water Inspectorate  
Area 5b, 9 Millbank, c/o Nobel House, 17 Smith Square, London SW1P 3JR  
Tel: 0300 068 6400  
Website: [www.dwi.gov.uk](http://www.dwi.gov.uk)  
E-mail: [dwi.enquiries@defra.gov.uk](mailto:dwi.enquiries@defra.gov.uk)

Water Regulations Advisory Scheme  
WRAS Ltd, Unit 13, Willow Road, Pen-y-Fan Industrial Estate, Oakdale, Gwent, NP11 4EG  
Tel: 0333 207 9030  
Fax: 01495 248540  
Website: [www.wras.co.uk](http://www.wras.co.uk)  
E-mail: [info@wras.co.uk](mailto:info@wras.co.uk)

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