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NI DWI Information Letter 06/10

To: Board Level Contact of Northern Ireland Water Ltd, Asset Management Directorate

The Water Supply (Water Quality) Regulations (Northern Ireland) 2007 (as amended 2009 & 2010) - Regulation 26 Disinfection and other treatment arrangements.

Dear George

1. Purpose

This letter is to provide interim guidance to NI Water and stakeholders on Regulation 26 of the Water Supply (Water Quality) Regulations (Northern Ireland) 2007 (as amended 2009 & 2010). This regulation relates to the design, operation, maintenance and verification of performance of the disinfection process.

2. Background

- 2.1 In NI DWI Information Letter 05/10 issued on the 11 May 2010 we advised you of the changes to The Water Supply (Water Quality) Regulations (Northern Ireland) 2007 as detailed in the Water Supply (Water Quality) (Amendment) Regulations (Northern Ireland) 2010.
- 2.2 This information letter [06/10] is to provide interim guidance in relation to the specific amendment, Regulation 26, pending the issuing of comprehensive and consolidated guidance on The Water Supply (Water Quality) Regulations (Northern Ireland) 2007 as amended later this year.
- 2.3 Regulation 26 requires NI Water to ensure that any disinfection process carried out at any site is effective and there is documented evidence to demonstrate verification of the performance of the disinfection process. The regulation also requires NI Water to ensure disinfection by-products (DBPs) are kept as low as possible without compromising disinfection.

3. Interim Guidance on Regulation 26

- 3.1** Regulation 26 requires all water supplied for regulation 4(1) purposes to be disinfected. Where necessary the water also has to be subject to sufficient preliminary treatment. The point at which water is considered to be supplied for regulation 4(1) purposes is when it leaves the treatment works (regulation 26(5)(c)).
- 3.2** The choice of treatment and disinfection processes is not specified in the regulation; this means that NI Water are free to decide on the most appropriate technology to apply at each treatment works. However the Inspectorate expects NI Water to have in place a water treatment policy and a disinfection policy covering all of the requirements of regulation 26. Both design and operation must be covered by this policy which should be kept under regular review and be informed by appropriate studies and technical performance data. The Inspectorate also expects there to be documentation and procedures in place which ensure that at every treatment works it is unambiguous how regulation 26 is being met both in principle and in practice.
- 3.3** Regulation 26(5)(b) defines the preliminary treatment that NI Water must have in place to prepare water for disinfection. This means that NI Water must treat the water to modify its quality in respect of any properties (e.g. pH) and substances (e.g. ammonia) known to adversely affect the performance of the disinfection process (or processes). Where no preliminary treatment takes place the Inspectorate expects NI Water to be able to demonstrate from robust data why no preliminary treatment is required.
- 3.4** The regulation makes it clear that the preliminary treatment must secure that turbidity in the raw water is reduced to below 1 NTU before water enters the disinfection stages of treatment. The Inspectorate considers that this requirement means that as a minimum, NI Water should have a turbidity monitor installed at a point before water enters any inactivation process such as UV or chlorine. Where this is not the case (e.g. simple ground water source where turbidity in the source water is always reliably well below 1 NTU) then the Inspectorate will interpret the readings from the final water turbidity monitor as if this was measuring the turbidity before it entered the disinfection process. It is for NI Water to decide whether they are content to rely just on the measurements of a single final water turbidity monitor to demonstrate compliance with regulation 26. Regardless of the location of the designated turbidity monitor(s), NI Water are expected to have alarms in place so that appropriate corrective action can be taken well before the measured value reaches 1 NTU.

4. Interim Guidance on Regulation 26(1A)(a) – Minimisation of disinfection by-products

- 4.1** The Water Supply (Water Quality) (Amendment) Regulations (Northern Ireland) 2010 update regulation 26 and require NI Water to ensure that disinfection by-products are kept as low as possible without compromising the effectiveness of the disinfection process.
- 4.2** NI Water should focus its activities to minimise the formation of disinfection by-products on identifying and removing DBP precursors and avoiding conditions that encourage the formation of DBPs (whilst ensuring disinfection itself is not compromised).
- 4.3** The regulations set a parametric value of 100 µg/l for trihalomethanes (i.e. a group of four disinfection by-products, namely chloroform, bromoform, dibromochloromethane and bromodichloromethane) and 10 µg/l for bromate. Furthermore, regulation 4(2) states that for water to be considered wholesome it must not contain any substance which alone or in conjunction with any other substance constitutes a potential danger to human health. Thus, while there may not be specific parametric values for DBPs other than THMs or bromate, these must not be present in concentrations that constitute a potential danger to human health.

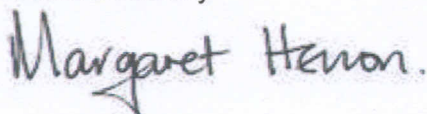
5. Interim Guidance on Regulation 26(1A)(b) – Verification of disinfection

- 5.1** The Water Supply (Water Quality) (Amendment) Regulations (Northern Ireland) 2010 update regulation 26(1) and require NI Water to verify the effectiveness of disinfection. The Inspectorate expects NI Water to be doing this as part of existing operational practices and procedures. NI Water is reminded that the absence of indicator bacteria is insufficient on its own to show water has been disinfected. NI Water 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 these design criteria – i.e. NI Water's disinfection procedures must identify all the critical control points. NI Water must ensure that there is current and archived validation data for each critical control for disinfection in order to provide verification of the disinfection process.

6. Enquiries

- 6.1** Any enquiries relating to this letter should be addressed to Margaret Herron (Tel: 028 9056 9294) or David O'Neill (Tel: 028 9056 9243).
- 6.2** Copies of this letter are being sent to the Director of Water Policy Division, DRD; the Director, Planning and Natural Resources Division, DoE; the Director of Environmental Protection (Northern Ireland Environment Agency); the Director of Public Health; Consultants in Health Protection; the Chief Environmental Health Officer (DHSSPS); Chief Environmental Health Officers of district councils; and the Director of Water Regulation, NIAUR.
- 6.3** Please acknowledge receipt of this letter, by e-mail to dwi@doeni.gov.uk

Yours sincerely

A handwritten signature in black ink that reads "Margaret Herron." The signature is written in a cursive style with a large initial 'M'.

Margaret Herron
Chief Inspector of Drinking Water
Drinking Water Inspectorate