

SCHEDULE 4

Sampling and Analysis

PART 1

General

Samples: general

1. The Department must ensure that each sample taken in accordance with a monitoring programme is—

- (a) representative of the water at the sampling point at the time of sampling;
- (b) not contaminated in the course of being taken;
- (c) for the chemical parameters copper, lead and nickel taken without prior flushing and is a random daytime sample of one litre volume;
- (d) for chemical parameters in the distribution network be undertaken in accordance with ISO 5667-5, other than where the sample is taken from a consumer's tap;
- (e) for microbiological parameters taken and handled according to EN ISO 19458, sampling purpose A and B;
- (f) kept at such temperature and in such conditions as will secure that there is no material alteration of a concentration, value or state of any parameter/measurement/observation for which the sample is to be analysed; and
- (g) analysed as soon as may be possible after it has been taken—
 - (i) by a person who is competent to perform that task; and
 - (ii) with the use of such equipment as is suitable for the purpose.

Analysing samples

2.—(1) The Department must ensure each sample is analysed in accordance with this paragraph and that analysis methods used are validated and documented in accordance with EN ISO/IEC 17025 or other equivalent standards accepted at an international level.

(2) For each parameter specified in the first column of Table A in Part 2 of this Schedule “Table A” the method of analysis is specified in the second column of that table.

(3) For each parameter specified in the first column of Table B in Part 2 of this Schedule “Table B” the method of analysis must be capable of measuring concentrations equal to the parametric value with a limit of quantification of 30% or less of the relevant parametric value set in Schedule 1 and an uncertainty of measurement as specified in Table B.

(4) The Department must not use the uncertainty of measurement in Table B as an additional tolerance to the parametric values set in Schedule 1.

(5) For hydrogen ion, a method of analysis which is capable at the time of use of measuring a value with a trueness of 0.2 pH unit and a precision of 0.2 pH unit.

(6) The result of analysis of parameters under this regulation must be expressed using at least the same number of significant figures as for the associated parametric values in Part 1 of Schedule 1.

(7) For these purposes—

“limit of quantification” is to be calculated using an appropriate standard or sample, and may be obtained from the lowest calibration point on the calibration curve, excluding the blank; and

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“measurement uncertainty” shall be estimated at the level of the parametric value, unless otherwise specified.

Authorisation of alternative methods of analysis

3.—(1) If the Department is satisfied that an alternative method of analysis is at least as reliable as a method of analysis prescribed by paragraph 2(2), it may authorise its use instead of the prescribed method.

(2) The Department shall provide the European Commission with relevant information concerning such methods authorised in paragraph 3(1) and their equivalence.

(3) Until 31 December 2019 the Department may use “trueness”, “precision” and “limit of detection” as specified in Table C in Part 2 of this Schedule (“Table C”) as alternative sets of performance characteristics to “limit of quantification” and “uncertainty of measurement” specified in paragraph 6 and Table B of this Schedule.

(4) For the purposes of this paragraph the method of analysis for each parameter specified in the first column of Table C must be capable of—

- (a) measuring concentrations and values with the trueness and precision specified in the second and third columns of that table; and
- (b) detecting the parameter at the limit of detection specified in the fourth column of that table.

(5) For hydrogen ion, a method of analysis must be capable at the time of use of measuring a value with a trueness of 0.2 pH unit and a precision of 0.2 pH unit.

(6) For these purposes—

“limit of detection” is to be calculated as—

- (a) three times the relative within-batch standard deviation of a natural sample containing a low concentration of the parameter; or
- (b) five times the relative within-batch standard deviation of a blank sample;

“precision” (the random error) is to be calculated as twice the standard deviation (within a batch and between batches) of the spread of results about the mean; and

“trueness” (the systematic error) is to be calculated as the difference between the mean value of the large number of repeated measurements and the true value.

(7) In the absence of an analytical method meeting the minimum performance criteria set out in sub-paragraph (3) and paragraph 2(3) the Department must ensure that monitoring is carried out using best available techniques not entailing excessive costs.

Laboratories

4. The Department must ensure that the laboratory at which samples are analysed has a system of analytical quality control in accordance with EN ISO/IEC 17025 or other equivalent standards accepted at an international level and is subjected from time to time to checking by a person who is—

- (a) not under the control of either the laboratory or the Department; and
- (b) approved by the Department for that purpose.

Interpretation

5. In this schedule—

“laboratory” includes any land at which samples are analysed for the purposes of these Regulations (including on-site analysis); and

“taking and analysing samples” includes taking, handling, transporting, storing and analysing samples.