



WATER POLLUTION (BATHING WATER STANDARDS AND OBJECTIVES) SCHEME 2021

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Statutory Document No. 2021/0086



Water Pollution Act 1993

WATER POLLUTION (BATHING WATER STANDARDS AND OBJECTIVES) SCHEME 2021

Approved by Tynwald:

Coming into Operation:

26 April 2021

The Department of Environment, Food and Agriculture makes the following Scheme under section 2 of the Water Pollution Act 1993, having complied with the requirements of section 2(4) of that Act.

1 Title

This Scheme is the Water Pollution (Bathing Water Standards and Objectives) Scheme 2021.

2 Commencement

If approved by Tynwald¹, this Scheme comes into operation on 26 April 2021.

3 Interpretation

In this Scheme —

“**abnormal situation**” means an event or combination of events impacting on bathing water quality which the Department would not expect to occur, on average, more than once every 4 years;

“**assessed quality element**” means an estimated representative value of a quality element under paragraph 5 (assessment of bathing water);

“**bathing season**” means the period beginning on 1 May and ending on 18 September in each year;

“**bathing territorial waters**” means the waters of relevant territorial waters which extend seaward for 50 metres from the baselines from which the breadth of the territorial sea adjacent to the Island is measured;

“**bathing water**” means any area of —

¹ Section 2(5) of the Water Pollution Act 1993 specifies that a scheme under section 2 shall not have effect unless it is approved by Tynwald.

- (a) coastal waters; and
- (b) bathing territorial waters,

listed or marked as an area of bathing water in any document or on any map published by the Department or its successor in title;

“the Department” means the Department of Environment, Food and Agriculture;

“monitoring calendar” means a series of dates on which bathing water sampling is proposed to occur;

“monitoring point” means a location in an area of bathing water where samples are taken for the purpose of monitoring bathing water quality;

“quality element” means a quality of water tabulated in Schedule 2;

“quality standard” means the concentration of a quality element in Schedule 2 that should not be exceeded in order to protect human health and the environment; and

“set of bathing water quality data” means values obtained from the analysis of samples taken at an area of bathing water in accordance with Schedule 1.

4 Monitoring of bathing water

Monitoring of bathing water is carried out in accordance with Schedule 1.

5 Assessment of bathing water

At the end of every bathing season, for every area of bathing water —

- (a) a set of bathing water quality data for that season is compiled; and
- (b) an assessment of bathing water quality is carried out by the Department using the set of bathing water quality data compiled in relation to that season and up to 3 immediately preceding bathing seasons.

6 Classification of bathing water

On the basis of each assessment made under paragraph 5 (assessment of bathing water), the quality of every area of bathing water is classified by the Department in accordance with Schedule 2.

7 Bathing water quality objective

The water quality objective in relation to bathing water is the aim that every area of bathing water classified under paragraph 6 (classification of bathing water) has a classification of “good” or “excellent” by 18 September 2021.

MADE 30 MARCH 2021



GEOFFREY BOOT

Minister for Environment, Food and Agriculture

SCHEDULE 1

[Paragraph 4]

MONITORING PROGRAMME FOR BATHING WATER

PART 1 – INTESTINAL ENTEROCOCCI AND *ESCHERICHIA COLI*

1 Location of monitoring point

- (1) The Department must, before the start of every bathing season, determine a monitoring point in relation to each area of bathing water, on the basis that the monitoring point should be the location in that area of bathing water where there are expected to be the highest number of bathers.
- (2) Samples at each monitoring point are to be taken by an officer of the Department for this purpose.
- (3) Subject to paragraph 7 (general provisions in relation to rules or reference methods of analysis) of this Schedule, where possible samples from each monitoring point are to be taken 30 centimetres below the water's surface and in water at least one metre deep.

2 Monitoring calendar

- (1) The Department must establish a monitoring calendar for every bathing water before the start of every bathing season.
- (2) Samples must be taken at every area of bathing water no later than 4 days after the date specified in the monitoring calendar for the relevant area of bathing water.
- (3) In relation to any abnormal situation occurring in an area of bathing water —
 - (a) the monitoring calendar for that area of bathing water may be suspended by the Department for the duration of the situation; and
 - (b) as soon as possible after the end of the situation, sufficient additional samples must be taken to replace those missing due to the suspension and to ensure that the minimum number of samples required for the area of bathing water for the bathing season are taken.
- (4) For the purposes of subparagraph (3) the minimum number of samples required for an area of bathing water for a bathing season is 4.

3 Frequency of monitoring

- (1) The first sample for every bathing season must be taken from the monitoring point for each area of bathing water and analysed shortly before the start of that season.
- (2) Samples must be taken and analysed at intervals not exceeding one month, from the monitoring point for every area of bathing water throughout the bathing season.

4 Sampling equipment

- (1) Subject to paragraph 7 (general provisions in relation to rules or reference methods of analysis) of this Schedule, samples may only be taken using sample bottles which —
 - (a) have been —
 - (i) sterilised in an autoclave for at least 15 minutes at 121 degrees Celsius;
 - (ii) dry sterilised at no lower than 160 degrees Celsius and no higher than 170 degrees Celsius for at least one hour; or
 - (iii) irradiated by their manufacturer and not used previously;
 - (b) are of a size which allows sufficient water to be taken and analysed for the presence of intestinal enterococci and *Escherichia coli*; and
 - (c) are made of a material that has no bactericidal effect.
- (2) Aseptic techniques to maintain the sterility of the sample bottles must be used.
- (3) Every sample taken must be clearly identified by marking in indelible ink the sample bottle and associated paperwork.

5 Storage and transport of samples before analysis

- (1) Subject to paragraph 7 (general provisions in relation to rules or reference methods of analysis) of this Schedule, every sample must be —
 - (a) at all times protected from exposure to light, and in particular, direct sunlight; and
 - (b) conserved at a temperature of around 4 degrees Celsius between sampling and laboratory analysis.
- (2) In relation to any sample, if the interval between sampling and laboratory analysis must be likely to exceed 4 hours, the sample is conserved in a refrigerator.
- (3) The time between sampling and laboratory analysis must not exceed 24 hours and the Department's best endeavours must be used to keep this time as short as possible.

6 Reference methods of analysis

Subject to paragraph 7 (general provisions in relation to rules or reference methods of analysis) of this Schedule, the following reference methods of analysis are used for the purposes of this Schedule –

- (a) for intestinal enterococci, one of the following standards of the International Organization for Standardization –
 - (i) ISO 7899-1:1998 (water quality, detection and enumeration of intestinal enterococci, Part 1, miniaturized method, most probable number, for surface and waste water) as amended by Cor 1:2000; or
 - (ii) ISO 7899-2:2000 (water quality, detection and enumeration of intestinal enterococci, Part 2, membrane filtration method); and
- (b) for *Escherichia coli*, one of the following standards of the International Organization for Standardization –
 - (i) ISO 9308-1:2014 (Enumeration of *Escherichia coli* and coliform bacteria – Part 1: Membrane filtration method for waters with low bacterial background flora) as amended by Amd 1:2016; or
 - (ii) ISO 9308-2:2014 (Water quality. Enumeration of *Escherichia coli* and coliform bacteria Part 2: most probable number method).

7 General provisions in relation to rules or reference methods of analysis

Other rules or reference methods of analysis that the Department considers are substantively equivalent to those specified in this Schedule may be used for the purposes of this Schedule.

PART 2 – WASTE

8 Visual inspection for waste

- (1) The Department must undertake a visual inspection for waste, including tarry residues, glass, plastic or rubber.
- (2) The visual inspection under subparagraph (1) is to be undertaken at every area of bathing water at the frequency necessary to allow adequate measures to be put into place in order to prevent, by means of public information, bathers' exposure to pollution.

SCHEDULE 2

[Paragraph 6]

CRITERIA FOR CLASSIFICATION OF BATHING WATER

1 Quality standards for bathing waters

<i>Quality element</i>	<i>“Sufficient”</i>	<i>“Good”</i>	<i>“Excellent”</i>
Intestinal enterococci ⁽¹⁾	185 ⁽²⁾	200 ⁽³⁾	100 ⁽³⁾
<i>Escherichia coli</i> ⁽¹⁾	500 ⁽²⁾	500 ⁽³⁾	250 ⁽³⁾

⁽¹⁾ Colony forming units per 100 millilitres (“cfu/100 ml”).

⁽²⁾ Based upon a 90-percentile evaluation-see paragraph 2 (methodology) of this Schedule.

⁽³⁾ Based upon a 95-percentile evaluation-see paragraph 2 (methodology) of this Schedule.

2 Methodology

- (1) In this Schedule, “percentile value” is based on a percentile evaluation of the log₁₀ normal probability density function of microbiological data used for the assessment under paragraph 5 (assessment of bathing water).
- (2) A percentile value is derived as follows –
 - (a) take the log₁₀ value of all bacterial concentrations in the data sequence to be evaluated or, if a zero value is obtained, take the log₁₀ value of the minimum detection limit of the analytical method used;
 - (b) calculate the arithmetic mean (“ μ ”) of the log₁₀ values taken under subparagraph (a);
 - (c) calculate the standard deviation (“ σ ”) of the log₁₀ values taken under subparagraph (a);
 - (d) derive the upper 90-percentile point of the data probability density function from the following equation: upper 90-percentile = antilog ($\mu + 1.282 \sigma$); and
 - (e) derive the upper 95-percentile point of the data probability density function from the following equation: upper 95-percentile = antilog ($\mu + 1.65 \sigma$).

3 Bathing water classification

- (1) At the end of every bathing season, an area of bathing water is classified as “poor” if, in the set of bathing water quality data for that area of bathing water, the percentile values for either or both of its assessed quality elements are higher than the “sufficient” quality standards set out in paragraph 1 (quality standards for bathing waters) of this Schedule.

- (2) At the end of every bathing season, an area of bathing water is classified as “sufficient” if –
 - (a) in the set of bathing water quality data for that area of bathing water, the percentile values for both its assessed quality elements are equal to or lower than the “sufficient” quality standards set out in paragraph 1 (quality standards for bathing waters) of this Schedule; and
 - (b) the bathing water is not classifiable as “good” or “excellent” under subparagraphs (3) or (4) respectively.
- (3) At the end of every bathing season, an area of bathing water is classified as “good” if –
 - (a) in the set of bathing water quality data for that area of bathing water, the percentile values for both its assessed quality elements are equal to or lower than the “good” quality standards set out in paragraph 1 (quality standards for bathing waters) of this Schedule; and
 - (b) the bathing water is not classifiable as “excellent” under subparagraph (4).
- (4) At the end of every bathing season, an area of bathing water is classified as “excellent” if, in the set of bathing water quality data for that area of bathing water, the percentile values for both its assessed quality elements are equal to or lower than the “excellent” quality standards set out in paragraph 1 (quality standards for bathing waters) of this Schedule.

EXPLANATORY NOTE

(This note is not part of the Order)

This Scheme prescribes a system for classifying the quality of bathing waters. It provides a monitoring programme for bathing waters (paragraph 4 and Schedule 1); a system for the assessment of the quality of bathing waters based upon the monitoring programme (paragraph 5); and a system for the classification of bathing waters (paragraph 6 and Schedule 2). In addition, the Scheme establishes a water quality objective for bathing waters (paragraph 7).