



guardians of drinking water quality

DRINKING WATER INSPECTORATE

Room M08, 55 Whitehall
London SW1A 2EY

Direct Line: 020 7270 3163
Enquiries: 020 7270 3370
Facsimile: 020 7270 3177

Internet E-mail: marcus.rink@defra.gsi.gov.uk
DWI Website: <http://www.dwi.gov.uk>

18 November 2009

Information Letter 05/2009

To: Board Level and Day to Day contacts of Water and Sewerage Companies and Water Companies in England and Wales

Dear Sir/Madam

GUIDANCE ON THE REPORTING AND INVESTIGATION OF TASTE AND ODOUR DETECTIONS

1. The purpose of this guidance is to clarify the reporting of taste and odour data for 2009 and updates requirements originally specified in Information Letter 09/2007.

Following a review of taste and odour data from 2008, the Inspectorate has noted inconsistencies across the companies in reporting and investigation as summarised below:

- 6 companies reported data with qualifiers (< values).
 - 3 companies submitted data as non whole integers.
 - 4 companies reported a positive detection when <60% of the panellists reported a taste or odour.
 - 5 companies deemed positive detections as non reportable because the value was <3.
 - 2 companies reported a chlorine taste (method requires the sample to be de-chlorinated before assessment).
 - Data submitted by companies was a mixture of flagged and un-flagged results.
2. Since 1 January 2008, the previous numerical standard for odour (parameter code A003) and taste (parameter code A004) ceased to apply. However use of the Standing Committee of Analyst's dilution number methods continues to be recommended as part of the investigation to characterise the intensity of any taste/odour detected. Accordingly the sentence in Method A2.8.2 and B2.9.2, *the sample is tested to evaluate whether the TON (TTN) is less than 3 at 25°C*, no longer applies. A

change request is being submitted to The Standing Committee of Analysts to update the method document to reflect the change in The Water Supply (Water Quality) Regulations 2000 as amended on 22 December 2007.

3. To determine whether or not a sample exhibits a taste or odour, a valid panel should be set up (minimum of three panellists). Companies should then follow the guidance for the proportion of panellists required to determine that a sample is taste/odour free i.e. 60% of the panellists must note "no taste / odour". (Table 2 "The Determination of Taste and Odour in Potable Waters 1994" states..... *the number of panellists with valid results and number of panellists who should identify a given sample as being taste / odour free, so enabling the sample to be assigned a TTN/TON = 1, which equates to dilution number of zero. If fewer than 60% of those panellists with valid results identify the test sample as being taste / odour free, then dilutions should be carried out*).
4. To determine the threshold taste number (TTN) companies should refer to B2.2 "The Determination of Taste and Odour in Potable Waters 1994" which states..... *The threshold taste number (TTN) of a sample is that dilution of the sample (with taste-free water) whose taste is no longer detectable when compared with taste-free water itself see section B2.5.1). If no taste is detectable in a sample without dilution then the TTN is one, if a one to one dilution is required for the taste to be no longer discernable, then the TTN is two, (i.e. combined volume of sample and blank, divided by volume of sample). Expressed mathematically:*

$$TTN = (A+B) / A$$

Where A = volume of sample, and
 B = volume of taste-free water used to dilute the sample

The TTN of each panellist used in the test procedure is used to calculate a geometric mean TTN. This mean TTN is converted to a dilution number (DN), the unit of measurement used in The Regulations, by subtracting one.

5. To calculate the overall TTN for the sample companies should refer to B2.9.3.12 "The Determination of Taste and Odour in Potable Waters 1994" which states that*TTN is calculated as the geometric mean of the individual panellist's results.*

*Because the TTN is a geometric mean, the results are **rounded to the nearest whole number** (Table 6 The Determination of Taste and Odour in Potable Waters 1994).*

A similar procedure to determine threshold odour number (TON) can be followed in section A2.

6. Any positive detection of taste or odour in the neat sample, (as determined by paragraph 3 above), will then require a descriptor to be reported. A list of these can be found in the Microbiology of Drinking Water 2004 Part 11 Taste Odour and Related Aesthetic Problems. This list is attached to this Information Letter for ease of reference. Companies are required under Regulation 17 to carry out an investigation as to the source of that taste or odour. The descriptor should guide the water company as to the most probable cause and thus the nature of the investigation e.g. a pencil taste is characteristic of the use of pipes made from a material that is not approved under Regulation 31 or WRAS (Water Fittings Regulations 1999). For the purposes of the regulations, a positive detection by panellists should be treated by companies as a breach of the qualitative standard for taste and odour (abnormal and unacceptable to consumers) and act accordingly. Like all other breaches of a standard, the Inspectorate will assess whether any breach is likely to recur in light of the action taken by the company as part of its investigation. Where the cause is due to customers' pipes or fittings then companies should notify the occupiers and the local authority in writing.
7. Companies should submit all results to the Drinking Water Inspectorate. All positive detections by a valid number of panellists, (see paragraph 3), **should now** be associated with a failure flag in the **Data Table, together with the descriptor. There should be no qualifiers (< or >), or non-whole numbers.**
8. For the purposes of preparing the annual report on drinking water quality the Inspectorate will treat taste and odour data in the following way:
 - a) Taste and odour data will continue to be used in the calculation of the overall Mean Zonal Compliance (MZC%) and the "Building Water Systems" Index for a company, a region and for England and Wales as a whole.
 - b) Where investigations have established that a taste or odour detection was associated with conditions within a property boundary, these causes will be identified in the text of the annual report in a similar manner to that adopted for reporting investigations of breaches of other standards.
9. Copies of this letter are being sent to Pamela Taylor, Chief Executive, Water UK; Richard Wood, Water Supply and Regulation Division, Department for Environment, Food and Rural Affairs; Olwen Minney, Water Management Team, Welsh Assembly Government; Colin McLaren, Drinking Water Quality Regulator for Scotland; Randal Scott, Drinking Water Inspectorate for Northern Ireland; Tony Smith and Chairs of the Regional Consumer Council for Water; Kevin Ridout, for Office of Water Services; Tony Warn, Environment Agency; Nigel Harrison, Food Standards Agency; and Frances Pollitt at the Health Protection Agency.

10. This letter is being sent electronically to Board Level and day to day contacts. Please acknowledge receipt by email to dwi.enquiries@defra.gsi.gov.uk. Hard copies are not being sent but the letter may be freely copied. Any enquiries about the letter should be addressed directly to Keith Smith.

Yours faithfully

A handwritten signature in black ink, appearing to read 'Marcus Rink', written in a cursive style.

Marcus Rink
Deputy Chief Inspector (Operations)

ANNEX 1

Sources of the principal tastes and odours encountered in drinking water

Taste and/or odour description	Source	Compound(s)
earthy	actinomycetes, cyanobacteria, micro-fungi	geosmin
musty	actinomycetes, cyanobacteria, micro-fungi	2-methylisoborneol
mouldy, musty	actinomycetes	2-isopropyl-3-methoxypyrazine
woody, earthy	actinomycetes	cadin-4-ene-1-ol
mouldy, musty,	“TCP” methylation of chlorophenols by actinomycetes and micro-fungi	chloroanisoles, especially 2,4,6-trichloroanisole
grassy	green algae	cis-3-hexen1-ol
geranium-like	diatoms	diphenyl ether, trichloramine
cucumber	green algae	trans-2 and cis-6-nonadien
fruity, fragrant	ozonation	aldehydes (C7 and above)
petroleum-like or solvent-like	Permeation of petrol, diesel and similar products through plastic pipes	hydrocarbons; 1,3-pentadiene
fishy	green algae, diatoms	n-hexanal; n-heptanal
cod liver oil	green algae	decadienal
fishy	<i>Dinobryon</i> (algae)	hepta- and deca-dienals
malodourous sulphur	decomposing cyanobacteria	mercaptans
swampy, fishy	<i>Pseudomonas</i> species	dimethyl polysulphides, especially dimethyl trisulphide
rotten eggs	sulphate-reducing bacteria, clostridia	hydrogen sulphide
swampy, swimming pool	chlorination of amino acids	aldehydes (low molecular weight)
medicinal,	“TCP” chlorination of phenol	chlorophenols
medicinal	chloramination	iodinated trihalomethanes
plastic, burnt plastic	polyethylene pipes	phenolic anti-oxidants
chlorinous	disinfection of water	chlorine (free, monochloramine)
ozonous	disinfection of water	ozone (in solution)
swimming pool	disinfection of water	dichloramine