

Training module # WQ -05

*How to measure
colour, odour & temperature*

New Delhi, May 1999

CSMRS Building, 4th Floor, Olof Palme Marg, Hauz Khas,
New Delhi – 11 00 16 India
Tel: 68 61 681 / 84 Fax: (+ 91 11) 68 61 685
E-Mail: dhvdelft@del2.vsnl.net.in

DHV Consultants BV & DELFT HYDRAULICS

with
HALCROW, TAHAL, CES, ORG & JPS

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1. Module context

This module describes a laboratory exercise for measurement of physical parameters, colour, odour and temperature. Modules in which prior training is required to complete this module successfully and other available, related modules in this category are listed in the table below.

While designing a training course, the relationship between this module and the others, would be maintained by keeping them close together in the syllabus and place them in a logical sequence. The actual selection of the topics and the depth of training would, of course, depend on the training needs of the participants, i.e. their knowledge level and skills performance upon the start of the course.

No.	Module title	Code	Objectives
1	<i>Basic water quality concepts</i>	WQ -01	<ul style="list-style-type: none">• Discuss the common water quality parameters• List important water quality issues
2	<i>The need for good laboratory practice</i>	WQ -03	<ul style="list-style-type: none">• Apply the adopted standard practices in laboratory operations
3	<i>How to prepare standard solutions</i>	WQ -04	<ul style="list-style-type: none">• Select different types of glassware• Use an analytical balance and maintain it.• Prepare standard solutions.

2. Module profile

Title	:	How to measure colour, odour and temperature
Target group	:	As per training need
Duration	:	One session of 90 min
Objectives	:	After the training the participants will be able to: <ul style="list-style-type: none">• Measure natural colours in water samples• Distinguish different types of odours
Key concepts	:	<ul style="list-style-type: none">• Colour standards• Types of odour
Training methods	:	Discussion and laboratory exercises
Training tools required	:	<ul style="list-style-type: none">• Required glassware and chemicals• Support of a basic chemical laboratory
Handouts	:	As provided in this module
Further reading and references	:	<ul style="list-style-type: none">• Standard Methods: for the Examination of Water and Wastewater, APHA, AWWA, WEF/1995. APHA Publication• Chemistry for Environmental Engineering, C.N. Sawyer, P.L. McCarty and C.F. Parkin. McGraw-Hill, 1994

3. Session plan

No	Activities	Time	Tools
1	<p>Preparations</p> <ul style="list-style-type: none"> • Use your standard ToT checklist • Prepare colour stock standard solution as described in the SAP for colour measurement. • Prepare 3 samples for colour measurement by mixing tea with tap water in different proportions. One of the samples should have a colour of more than 70 units. • Prepare 3 samples for odour measurement by dissolving burnt sugar, acetic acid and alcohol in tap water. Do not disclose the source of odour to the participants. 		
2	<p>Introduction</p> <ul style="list-style-type: none"> • Introduce the exercise by briefly describing the activities. • Divide the class in working group of two persons each. 	15 min	
3	<p>Colour</p> <ul style="list-style-type: none"> • Ask the participants to read the SAP for colour measurement. • Ask each group to prepare 5 dilutions of the colour stock solution according to the SAP in beakers. Assign the dilutions to different groups such that the range of dilutions given in the SAP is covered with some overlap. • Ask the class to determine the colour of the samples. • Tabulate the results on board and discuss any discrepancies. 	45 min	
4	<p>Odour</p> <ul style="list-style-type: none"> • Ask the participants to read the SAP for odour measurement. • Ask the groups to identify the odour of the samples. 	15 min	
5	<p>Temperature</p> <ul style="list-style-type: none"> • Ask the participants to read the SAP for temperature measurement. • Ask the groups to determine the temperature of the tap water. 	15 min	

4. Overhead/flipchart master

OHS format guidelines

Type of text	Style	Setting
Headings:	OHS-Title	Arial 30-36, Bold with bottom border line (not: underline)
Text:	OHS-lev1 OHS-lev2	Arial 26, Arial 24, with indent maximum two levels only
Case:		Sentence case. Avoid full text in UPPERCASE.
Italics:		Use occasionally and in a consistent way
Listings:	OHS-lev1 OHS-lev1-Numbered	Big bullets. Numbers for definite series of steps. Avoid roman numbers and letters.
Colours:		None, as these get lost in photocopying and some colours do not reproduce at all.
Formulas/ Equations	OHS-Equation	Use of a table will ease alignment over more lines (rows and columns) Use equation editor for advanced formatting only

5. Evaluation sheets

6. Handout

Add copy of Main text in chapter 8, for all participants.

7. Additional handout

These handouts are distributed during delivery and contain test questions, answers to questions, special worksheets, optional information, and other matters you would not like to be seen in the regular handouts.

It is a good practice to pre-punch these additional handouts, so the participants can easily insert them in the main handout folder.

8. *Main text*

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How to measure colour, odour and temperature

1. Aim

To determine physical parameters colour, odour and temperature

2. Method

a. Colour

- Waters containing natural colours are yellow brownish in colour. Solutions of chloroplatinate tinted with small amounts of cobalt chloride yield colours much like the natural colours.
- Study the SAP for colour measurement.
- Proceed with measurement of colour of samples. Dilute samples if necessary.

b. Odour

- It is a qualitative measurement. It should be carried out at site immediately after collecting the sample.
- Study the SAP for odour measurement.
- Record the odour of the samples provided in the laboratory.

c. Temperature

- Whenever possible the temperature should be measured by directly dipping the thermometer in the natural body of water being studied. In case it is not possible, collect about 500 mL sample in a plastic or glass container and measure temperature as described in the SAP.

3. Observations & calculations

Record your observations for the three determinations for the samples provided.

