Planning
(Practical Exercise)

Session Objectives

- To provide a practical example of the process of planning water supply monitoring programmes which cover a wide range of conditions.

- To reinforce the need to develop monitoring programmes which are linked to decision-making and management needs.

Planning
(Practical Exercise)

Outline

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1. Divide the participants into at least two groups.

2. Provide the participants with the attached description and ask one or more groups to design a health-based drinking-water quality surveillance programme for the town and the remaining groups to design a quality control monitoring programme for a water supplier.

3. Ask the groups to make a presentation on the programmes designed and discuss these in plenary.

NB: This practical is best run over several days. Therefore, the groups should be given the background information at the start of the workshop and asked to present their findings on the last day.

Planning
(Practical Exercise)

Monitoring Programme Design

The town of Terebaka serves a total population of 105,000. The town is a regional centre of importance and has a busy market selling foodstuffs and a variety of hardware and clothes and an industrial area. The town is the centre for the surrounding district and the population is significantly increased on market days. The town is also an important rail and bus terminus and the short-term transient population is high.

The town has a centralised piped water supply which serves 85 per cent of the population with a mixture of in-house and yard level water supply service (roughly a 40-60 split). In addition, a number of public tapstands are located in the market and at the bus and rail stations. The piped water supply utilises two main sources: a reservoir situated 20 kilometres to the north of the town and connected to the water treatment plant; and a well field (series of boreholes) 10 kilometres to the west of the town which joins the distribution system at the major storage tank on the western extremity of the town.

The treatment plant utilises coagulation-flocculation-settling through two conventional settlers set in parallel. This is followed by rapid sand filtration and the plant has two filters per settler. The water is disinfected with hypochlorite does through a pulse doser into the final clear well. The water is then pumped to the main town storage tank which feeds the distribution systems which passes through 6 subsidiary tanks spread around the city.

The well field water is pumped to a central collector tank where it is chlorinated using a gas chlorinator and the water is then pumped to the major tank on the west of the city, form where the water is distributed through the main system.

The treatment plant has suffered a number of failures during the recent past and the coagulation-flocculation-settling in particular is known to be inefficient. Problems have arisen through the lack of coagulant and insufficient settling time. Some problems have also been encountered with the chlorination of water form both sources.

The distribution system is old and has a leakage rate of around 3- per cent. Several "hotspots" of pipe leakage are known and there are also several areas of known low pressure within the system.

The parts of the town not served by the main pipe system are on the periphery of the town and utilise hand-dug wells in most areas, although several private boreholes have been sunk.

Design a monitoring scheme for Terebaka, indicating the range of analysis, frequency of sampling, type of sampling points, location of sampling points and frequency of sanitary inspection. Indicate the objectives of your monitoring programme and highlight the actions you would take on the basis of the results received.