

JAWAHARLAL NEHRU HOMOEOPATHIC MEDICAL COLLEGE

VISIT TO WATER PURIFICATION PLANT, NIMETA.

GENERAL DETAILS:

Course/Department: Community medicine department

Year: 4th year bhms

Date of visit: 03/09/16

No. of students: 85

Time: 10.00 am to 2.00 pm

Name of accompanying teacher: dr. zankhana desai

Name & address of company: Water purification plant, Nimeta, Ajwa road,
Vadodara-390019

Operated by: Vadodara Municipal Corporation, Khanderao market, Vadodara-
390001.

The approximate population of the city is 14, 00,000. The city is supplied on an average 53.2 million gallon (240 million Ltrs) of water per day. Accordingly the present water supply is 38 gallon (190 Ltrs) per person per day. Generally this supply can be termed satisfactory.

Water Treatment

A.

Water received from the French well of the river Mahi needs no special treatment as it comes through the natural layers of sand, which purifies it. The quality of such water is considered very well.

B.

Water received from Ajwa Sarovar is treated and filtered at Nimeta Water Purification Plant. The capacity of the Nimeta treatment plant is 10 million gallon per day. The plant can also be run at a 20% additional capacity.

C.

Chlorination

Post chlorination is practiced at various water distribution centers (water tanks) with a view to providing high quality potable water to the consumers. This facilitates to provide necessary residual chlorine to the consumers.

Distribution System

Water is supplied in the city by 16 high rise water tanks and one busting station. This satisfies the need of the citizens easily.



Fourth BHMS students with Dr Zankhana Desai and officials of Water Purification plant

GENERAL OUTLINE OF WATER PURIFICATION PLANT:

- The main sources of water for Vadodara city are Sayaji Sarovar (Ajwa) on northeast & Mahi river on northeast of city. On an average VMC draws 45-50 mld from Sayaji sarovar.
- The present raw water delivery system is capable of transmitting 45-50 mld of discharge by gravity to Nimeta wtp.
- The average per capita water supply is around 183 lpd (litres per day per capita) with daily supply for 45 min twice a day.
- Two water treatment plants are located at nimeta.
- The capacities of each of plants 45 mld & 50 mld.

PROCESS FLOW CHART OF WTP:

THE FOLLOWING PROCESSES ARE DONE IN AJWA WATER TREATMENT PLANT:

- 1) COAGULATION
- 2) RAPID MIXING
- 3) FLOCCULATION
- 4) SEDIMENTATION
- 5) DISINFECTION

- 1) **STORAGE :** Water is drawn out form source & impounded in natural or artificial reservoirs
- 2) **CONGULATION:** The raw water is 1st treated with alum the dose of with varies according to turbidity of water.
- 3) **RAPID MIXING:** Treated water is subjected to violent agitation in a “mixing chamber” for a few minutes. This allows quick & thorough dissemination of alum throughout bulk of water.
- 4) **FLOCCULATION:** Slow & gentle stirring of treated water in a “flocculation chamber” for 30 minutes. it consists of no. of paddles which rotate at 2-4 rpm.
- 5) **SEDIMENTATION:** The coagulated water is now leaded into sedimentation tank. Here it is detained for periods varying for 2-6 hrs. Here flocculent precipitates together with impurities & bacteria and settle down in tank.
- 6) **FILTRATION:** Partly clarified water is now subjected to rapid sand filtration. Filter beds: 6
The rate of filtration is 5-15 m³ / m² /hr.
- 7) **DISINFECTION:** This is the process of killing pathogenic bacteria from water & making it safe to use chlorine is used as disinfectant in water works as it is cheap, reliable, easy to handle, easy measurable & capable of producing disinfecting effects for long periods. It has only disadvantage is that when used in greater amounts, it imparts bitter & bad taste to water.
Generally most waters are satisfactorily disinfected if free available residual chlorine is about 0.2 mg/lit at end of 60 min. contact period.

DISTRIBUTION OF WATER TO AREAS OF VADODARA:

- Treated water from Ajwa Pratappura reservoir supply to VMSS which is in turn supplied as drinking water to population of Vadodara.
- The total requirement of water for Vadodara is 240 million litres.

ROLE OF TECHNICIANS ENGINEERS IN INDUSTRY:

1. Carry out various tests on sample water.
2. Look for physical, chemical, biological impurities.
3. Decide chlorine, content i.e. ‘chlorine demand’
4. TDS value
5. Check treated water
6. Supervision & scheduled maintenance & cleaning of various parts & filter.
7. Design of various components of wtp
8. Adjusts quantity of treated water as per demand.
9. Decide type of treatment given to water on basis of sample received.