The BIOWAT at Primary Health Center
Nartiang
BIOWAT- short for Biomedical Waste Water Treatment

- A low cost improvised facility for the treatment & disposal of Biomedical waste water generated at Primary Health Center, Nartiang.
- At PHC Nartiang, Biomedical waste water or liquid waste consists mainly of disinfecting fluid, housekeeping fluid, laundry waste water, laboratory(basic)
- Initial capacity is roughly 1000 liters per 24 hours
- Embraces simple technologies into low cost intervention
- Engaging stakeholders viz., Health Engineering wing, State Pollution Control Board, Rogi Kalyan Samiti towards the development of the facility
Quantum of Biomedical waste water (560 L)

- Disinfecting fluid (15 L)
- Housekeeping fluid (100 L)
- Laundry water (230 L)
- Laboratory (200 L)
Disposal Facility for Biomedical waste

Solid waste

Disinfecting fluid
Technologies/Solutions

At BIOWAT, liquid waste undergoes four stages of treatment before disposal viz.,
1. Intermittent/Demand operated Slow sand filtration
2. Chlorine Disinfection
3. Carbon Adsorption
4. De-chlorination with Vitamin-C(ascorbic acid)
Demand operated slow sand filtration

- At BIOWAT, demand operated SSF is the first stage of treatment of biomedical waste water
- Addresses color, turbidity issues
- Backwash mechanism
- Pause depth of 5cm
Chlorine Disinfection

- Second stage of treatment of biomedical waste water
- Determination of the chlorine demand of a batch of biomedical waste water
- Free residual chlorine determined by Orlab DPD tests
- Dosing of biomedical waste water with bleaching powder and contact time of 30 minutes
Carbon adsorption

- At BIOWAT carbon adsorption is the 3rd stage of treatment of biomedical waste water
- Addresses color, odor, chemical detergents, and other pollutants issues
- Serial & Parallel configuration
De-chlorination with Vitamin-C & Disposal

- At BIOWAT, neutralization of free chlorine residual with vitamin-c is the final stage of treatment of biomedical waste water
- Therefore chlorine removal is one essential feature of the BIOWAT
- Discharge provided pH is 6.5-9
- Discharge provided Free Residual chlorine is 0
- Discharge provided local fish survives in the treated biomedical waste water > 96hrs
- Recycled for gardening
Comparison & Benefits

- Simple to operate - team of lab tech, pharmacist, HA
- Simple equipment - manual flow meter, DPD colorimetric tests & PH
- It meets the discharge standards as prescribed by State Pollution control Board (see water test result in the next slide)
- Can be replicated in other PHCs/CHCs of our District because of low cost and simple operation
### WATER QUALITY TEST REPORT

**Issue Date:** 2018-08-22

**Name of the Project:** Waste Water Quality

**Sample matrix:** Water

**Date of sample collection:** 01-08-2017

**Date of sample receipt:** 01-08-2017

**Sample collected by:** MSPCB

**Date of sample analysis:** 21st-22nd August 2017

**Sample Registration No:** G/150/13/1

**Sample plan/Reference:** Engineering Branch

**Operation:** Waste & Effluent

**Method of sampling:** Wet 2025 Part 3

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<table>
<thead>
<tr>
<th>Parameters</th>
<th>Test method Method: APHA 21st Ed. No.</th>
<th>Limits</th>
<th>Sample code/Sampling location</th>
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</table>
| pH                                | 4500-46                               | Standards for discharge of liquid waste as per the Biomedical Waste Rules 2016
|                                   |                                      | Notification No. 1204.34(T) dated 29th March 2016                     | G/150/13/1 ETP, PHC, Nartiang |
| Total Suspended Solids (mg/l)     | 7504 mg/l                              | 100.0                                                                 | 8.8                           |
| Biochemical Oxygen Demand (mg/l)  | 50 mg/l                                | 100.0                                                                 | 8.8                           |
| Chemical Oxygen Demand (mg/l)     | 200 mg/l                               | 200.0                                                                 | 20.0                          |

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**Statement:**

1. The results are reported based on the materials received.
2. Sample will be destroyed after one month from the date of issue of the report.
3. The report shall not be reproduced except in full, without the written approval of the laboratory.

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**Scientist:**

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**Report No. WQ/2017/471**