

# **THIRD WORLD WATER SUMMIT - CLEAN AND SAFE DRINKING WATER FOR ALL**

**Plenary Session - II**

## **Water & Sanitation for the Urban Development**

By

**Dr. Lalit Kumar**



**SULABH INTERNATIONAL SOCIAL SERVICE ORGANISATION**

At

Convention Centre - NDCC, New Delhi

21<sup>st</sup> August 2019

# SANITATION & SAFE DRINKING WATER

- Significant progress made in the implementation of SBM and consequently SDG-6 has settled the sanitation issue to a large extent
- NITI Aayog Report listed that Delhi along with other 21 cities would run out of water by 2020
- Now the focus of Government is to manage the water crisis through the newly set up nodal *Jal Shakti* Ministry
- Contributions made by Sulabh in SBM and providing clean water are presented, with a plea to adopt a multi-disciplinary, multi-sectoral approach to this inter-twined subject

## Story 1 POOP REVEAL WIDESPREAD WORM INFECTIONS

- 'Bronze age meals in the marshes - seasoned with parasitic worms' - The Guardian, 16/08/19

(Many reports appeared in Popular Archaeology, Parasitology ...)

- Human coprolites were found to be brimming with eggs from fish tapeworms\*, giant kidney worms, whipworms and other undesirable creatures at a 900 BC site discovered in UK
- These infections have seen a recent resurgence due to the popularity of Sushi, Smoked Salmon and Ceviche

\*grow up to 10 metres coiling around the twists & turns of intestine

## Story 2 **SULABH SAFE DRINKING WATER IN ARSENIC AFFECTED AREAS OF WEST BENGAL**

- The villagers of Mirzapur, West Midnapur were suddenly hit by acute diarrheal disease in June 2016
- More than 80% of the population, excepting two families using *Sulabh Jal*, were affected by this life-threatening disease
- Doctors were unable to control the disease spread and were desperately looking for safe drinking water
- Sulabh started supplying safe bottled drinking water free of cost to the affected people and within few days miracle happened and disease brought under control

# SANITATION & WATER RELATED DISEASES

S.No.	Disease/Condition/Syndrome	Infective/causative agent
1.	Acanthamoebic keratitis	Acanthamoeba
2.	Amoebiasis	Entamoeba histolytica
3.	Ascariasis	Ascaris lumbricoides
4.	Aseptic meningitis	Echovirus
5.	Balantidiasis	Balantidium coli
6.	Bancroftian filariasis	Wuchereria bancrofti
7.	Bladder cancer	Schistosoma
8.	Brain abscess	Citrobacter
9.	Cholera	Vibrio cholerae
10.	Clonorchiasis	Clonorchis sinensis
11.	Clostridium difficile infection	Clostridium difficile infection
12.	Conjunctivitis	Adenovirus
13.	Cryptosporiosis	Cryptosporidium

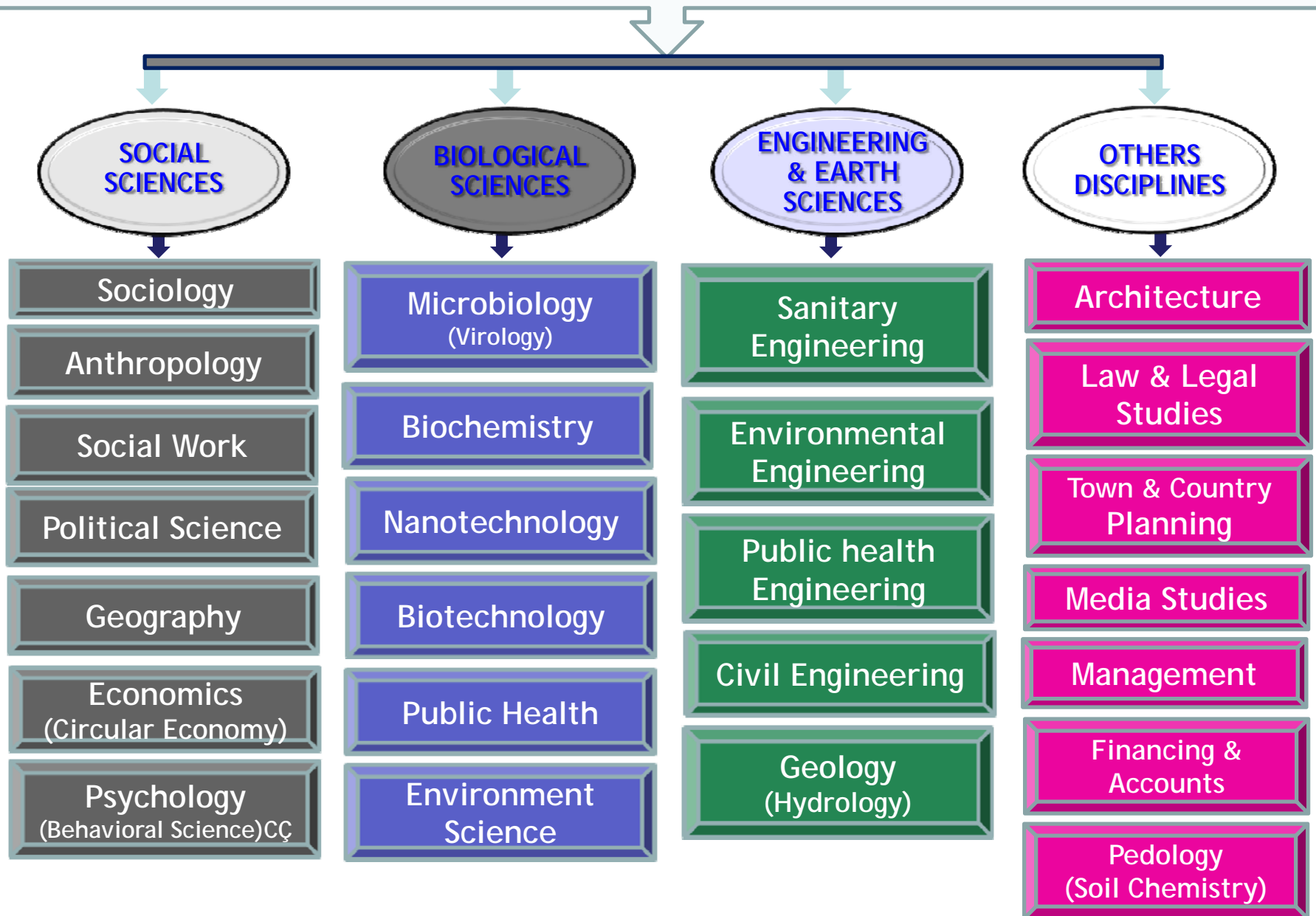
S. No.	Disease/Condition/Syndrome	Infective/causative agent
14.	Cyclosporiasis	Cyclospora cayetanensis
15.	Dermatophytosis (Athlete's foot, Tinea unguium, etc.)	Trichophyton rubrum, epidermophyton,
16.	Diphyllobothriasis	Diphyllobothrium
17.	Enterobiasis	Enterobias vermicularis
18.	Fascioliasis	Fasciola hepatica
19.	Fasciolopsiasis	Fasciolopsis buski
20.	Gastrodiscoidiasis	Gastrodiscoides hominis
21.	Gastroenteritis	Rotavirus, Norovirus, Adenovirus, Astrovirus, Escherichia coli, Campylobacter, Staphylococcus
22.	Hand, foot and mouth disease	Coxsackie A virus and enterovirus 71 (EV-71)
23.	Hepatitis A (Infectious hepatitis)	Hepatitis A virus
24.	Hepatitis E (Infectious hepatitis)	Hepatitis E virus
25.	Heterophyiasis	Heterophyes heterophyes

S.No.	Disease/Condition/Syndrome	Infective/causative agent
26.	Hookworm	<i>Ancylostoma duodenale</i>
27.	Hymenolepiasis	<i>Hymenolepis nana</i> , <i>Hymenolepis diminuta</i>
28.	Isosporiosis	<i>Isospora belli</i>
29.	Leptospirosis	<i>Leptospira</i> spp
30.	Liver abscess	<i>Klebsiella pneumoniae</i>
31.	Malaria	<i>Plasmodium</i> species
32.	Acute Meningitis	Echovirus
33.	Neonatal meningitis	<i>E.coli</i>
34.	Neuro-cysticercosis	<i>Taenia solium</i>
35.	Polio	Poliovirus (Enterovirus)
36.	Primary Amoebic Meningoencephalitis	<i>Naegleria fowleri</i>
37.	Rash	Mold (e.g. bathroom mold)
38.	Salmonellosis	<i>Salmonella</i>

S.No.	Disease/Condition/Syndrome	Infective/causative agent
39.	Sarcosporidiosis	Sarcocystis
40.	Schistosomiasis/Bilharzia	Schistosoma mansoni, Schistosoma haematobium, Schistosoma japonicum
41.	Shigellosis / bacillary dysentery	Shigella
42.	Strongyloidiasis	Strongyloides stercoralis
43.	Taeniasis	Taenia solium/Taenia saginata
44.	Tonsilitis	Adenovirus
45.	Trachoma	Chlamydia trachomatis
46.	Traveler's diarrhoea	Enterotoxigenic Escherichia coli, Shigella spp. and Salmonella spp. Campylobacter, Yersinia, Aeromonas, and Plesiomonas spp
47.	Trichuriasis	Trichuris trichiura
48.	Typhoid fever	Salmonella typhi
49.	UTI	E.coli, citrobacter
50.	Yersiniosis	Yersinia enterocolitica



# HOLISTIC WASH REQUIRES A MULTI-DISCIPLINARY APPROACH



# SWACHH BHARAT MISSION (URBAN)



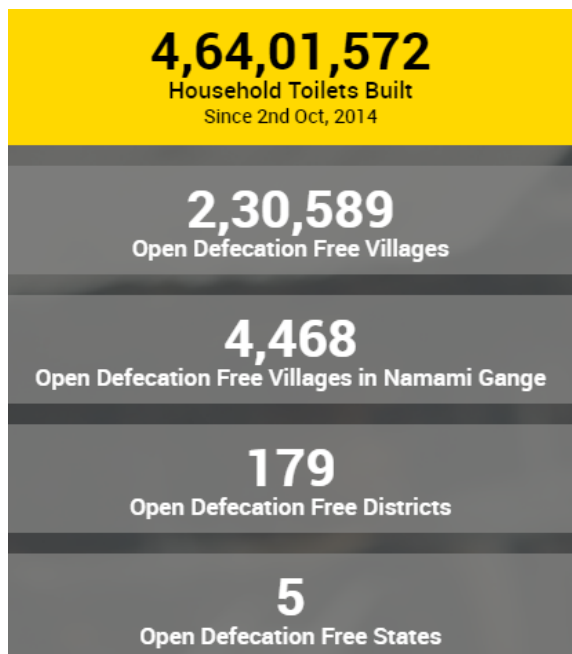
(As on 16.08.2017)



(As on 17.08.2019)

[Source: <http://www.swachhbharaturban.in/sbm/home/#/SBM> (accessed on 16.08.2017) and <http://164.100.228.143/sbm/home/#/SBM> (accessed on 17.08.2019)]

# SWACHH BHARAT MISSION (GRAMIN)

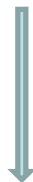


(As on 16.08.2017)

## PERCENTAGE OF HOUSEHOLDS HAVING TOILETS

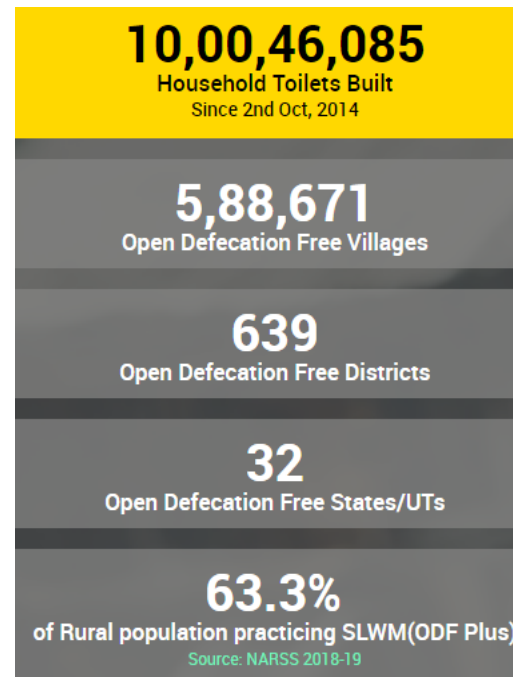
38.70%

(02.10.2014)



99.97%

(AS ON 17.08.2019)



(As on 17.08.2019)

[Source: <http://sbm.gov.in/sbmdashboard/Default.aspx> (accessed on 16.08.2017 and accessed on 17.08.2019)]

# CONTRIBUTION OF SULABH FOR SBM

- Till date, Sulabh has installed more than 15 lakh household toilets in the country
- Constructed and maintained about 9000 community/public toilets (about 200 are attached with bio-digesters) at public places
- Constructed about 20,000 school toilets in different parts of the country. Above-referred toilets are being used by about 20 million persons every day
- In addition, more than two lakh scavengers liberated from manual scavenging and being trained and rehabilitated

# SOME CSR PARTNERS OF SULABH

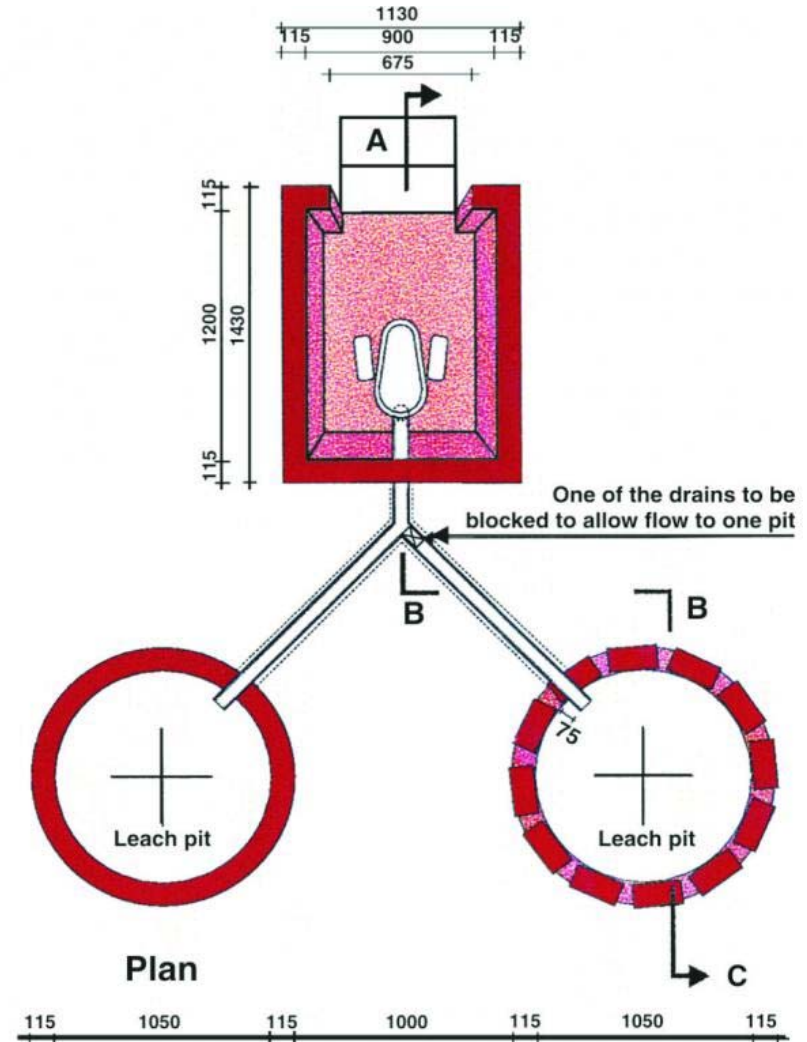
For SBM, 125 Companies partnered with Sulabh during October 2014 to December 2018:

- Abbott India Limited, Bharti Foundation, Boeing India, Flometallic India Private Limited, Shell, Maruti Suzuki India Limited, Honda Motorcycle and School India Private Limited - Household Toilets
- Bata India, HDFC Bank, IGL, ONGC, Petronet LNG Ltd, NABARD Financial Services Ltd, Koch Chemical, NALCO, NPCIL, THDCIL, SBI - School Toilets
- CONCOR, HPCL, NCDC, NTPC, MMTC, Veolia Waters - Community/Public Toilets

# SULABH SHAUCHALAYA APPROPRIATE TECHNOLOGY OPTION -TWO-PIT POUR-FLUSH COMPOST TOILET

Sulabh toilets have 2 pits, one of which is used at a time. When one becomes full then the other pit is used. Both the pits are used but one at a time

After 2 years, in the first pit the excreta turns into bio-fertilizer, which can be cleaned by anybody and then be used safely in fields/gardens



# **WATER SAVING P-TRAP USED IN SULABH TWO PIT POUR FLUSH COMPOST TOILET**



**It requires only 1 to 1.5 litres of water to flush**



**Ceramic Pan with 25° to  
28° slope**



**P – trap is between  
12-20 mm water seal**



**Pre-cast P-trap**



# HUMAN EXCRETA BASED BIOGAS PLANT

- Human excreta recycled resulting in the production of bio-gas
- Used for cooking, lighting, electricity generation & warming oneself in winter



Public toilet linked to biogas plant with gas holder



# USES OF BIOGAS



Biogas used to warm oneself in winter



Biogas used for lighting of mantle lamps



His Excellency Timothy J. Roemer former, Ambassador of USA to India trying his hand in frying a papadam

# SULABH EFFLUENT TREATMENT PLANT

- Biogas effluent treated through sedimentation tank, aeration tank, sand filter, activated charcoal followed by Ultra Violet (UV) rays
- After the treatment the Biochemical Oxygen Demand (BOD) reduced to less than 10 milligram per litre and treated effluent turns colourless, odourless and pathogen-free
- Safe for aquaculture, agriculture, gardening & discharging into water body





# SULABH INTERNATIONAL MUSEUM OF TOILETS

- ❖ Dr. Pathak established Sulabh International Museum of Toilets in 1992
- ❖ The Museum has rare collection of facts, objects & artifacts detailing the historic evolution of toilets from 2500 BC to date
- ❖ Extensive display of privies, chamber pots, toilet furniture, bidets and water closets in use
- ❖ Rare collection of poems, humorous posters on toilets and its usage
- ❖ Toilet Museum is a famous tourist destination in Delhi





# SAFE DRINKING WATER PROJECT

**Sulabh** Project Support -  
techno. IAES & PH (N.Delhi) & 1001 FONTAINES  
Org. MADHUSUDANKATI K.K. SAMITY.

The project is a Pilot Project of Sulabh International with the aim to ensure arsenic-free safe drinking water at a very low expenditure at only a cost of 50 paise per litre

# SULABH SAFE DRINKING WATER SITES - WEST BENGAL

Name of NGO	Village	District	Source of Water
Sri Mayapur Vikash Sangha	Bamonpukur, Baganepara	Nadia	Ganga River
West Bengal Voluntary Health Association	Phoolbagan, Muragoar, Pathanpara, Kumarpara	Murshidabad	Ganga River
Madhusudankati Krishi Unnayan Samity	Bishnupur, Jamdani, Tegharia, Faridkati, Madhusudankati	North 24 Parganas	Private Pond
AkshaynagarPallisri Sangha, Suvasgram	Akhna, South Garia	South 24 Parganas	Pond
ISKON	Haridashpur Bangaon	North 24 Parganas	Well
MehanatiKishanSamabay Krishi Unnayan Samity Ltd.	Chaksultan, Mirzapur	West Midnapur	Well



# DESIGN & CONSTRUCTION OF THE WATER TREATMENT PLANT

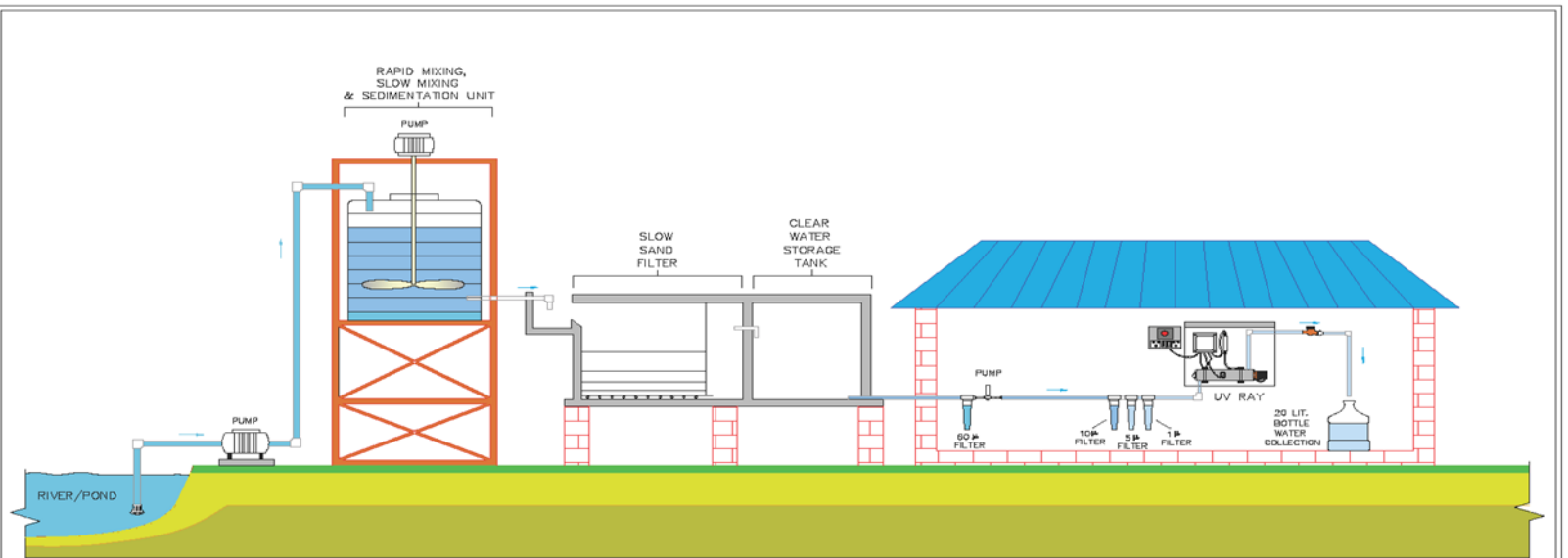


DIAGRAM OF RIVER WATER TREATMENT PLANT

# REACHING OUT TO THE ARSENIC AFFECTED PEOPLE OF MADHUSUDANKATI, WEST BENGAL





# SULABH SAFE DRINKING WATER HARIDASPUR, WEST BENGAL





# WATER ATM AT SULABH INTERNATIONAL



# **WORLD TOILET DAY**

on the theme of

**"SAFETY MEASURES FOR CLEANING SEWERS  
TO PREVENT DEATHS OF SEWER WORKERS"**

ON

**NOVEMBER 19, 2018, AT 10:30 AM**

AT

**MAVALANKAR AUDITORIUM  
RAFI MARG, NEW DELHI**

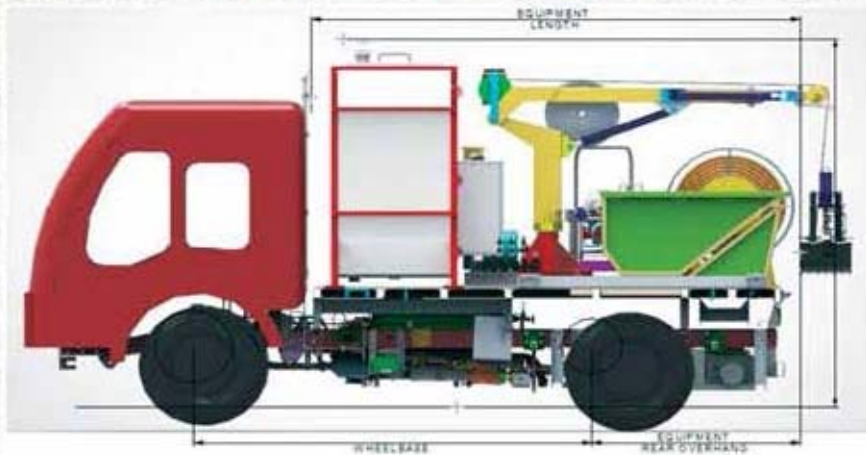
Equipment for cleaning sewers  
to prevent deaths of sewer workers



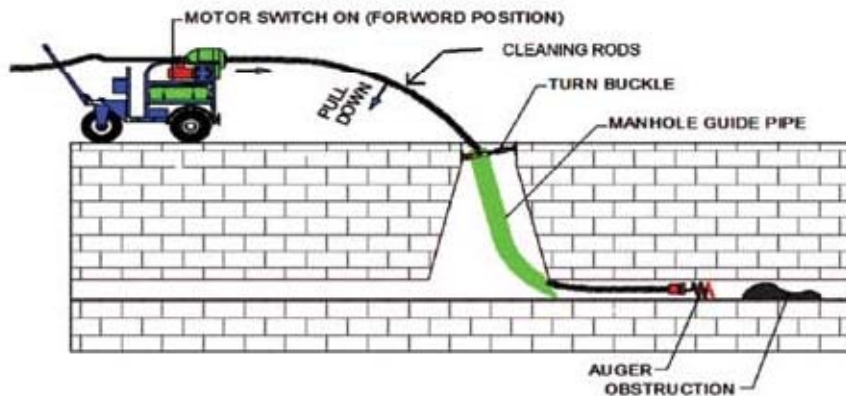
Special purpose vehicle mounted, Electro-hydraulically  
operated, Sewer Jetting cum Rodding cum Mechanical  
manhole desilting machine



## Desilting Machine



## Rodding System:



## Personal Protective Devices





In 1991, Dr. Bindeshwar Pathak was conferred Padma Bhushan by the then President of India, Shri R. Venkataraman, for his 'distinguished social service' 28



# DR. PATHAK RECEIVING 'MAHATMA GANDHI PEACE PRIZE' FROM HON'BLE PRESIDENT OF INDIA ON 26.02.2019

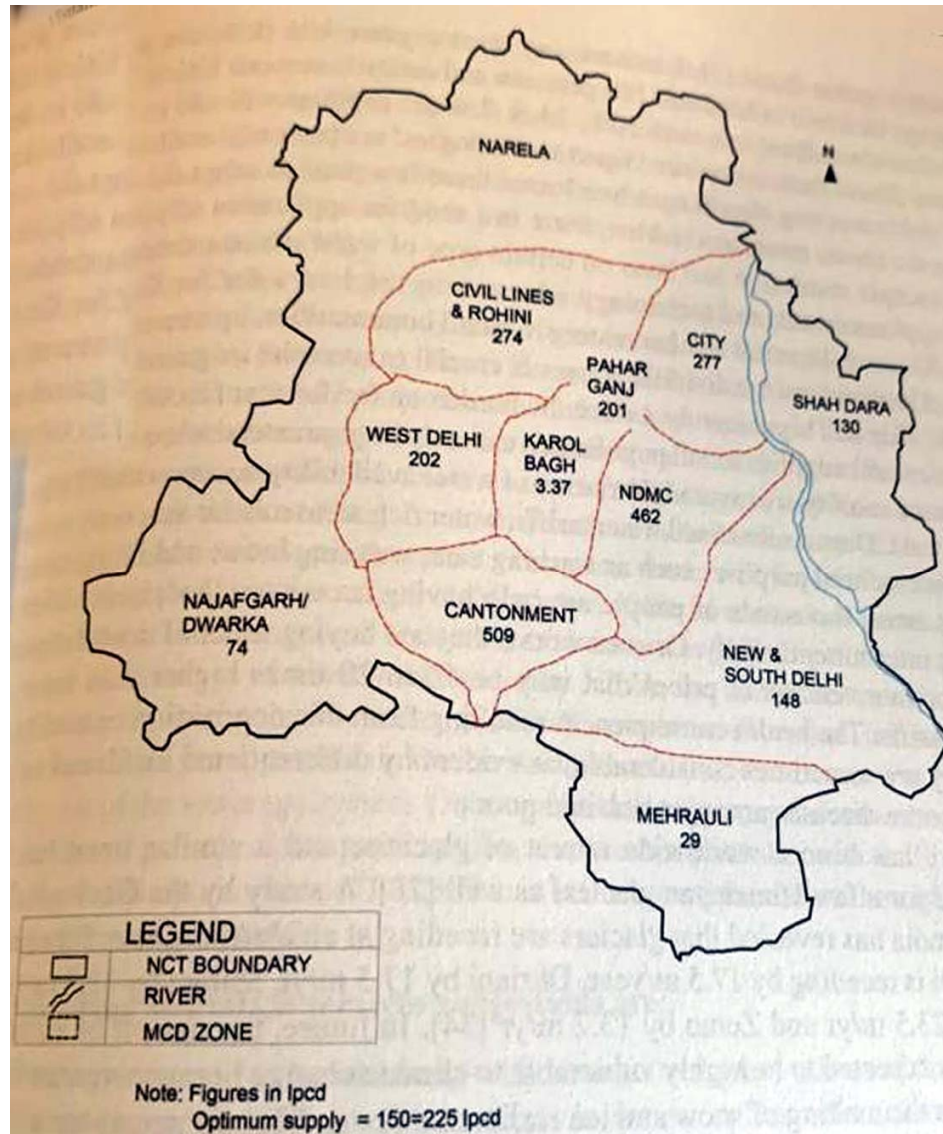


Reference about this award was made again by Hon'ble Prime Minister on 03.03.2019 at Patna and Hon'ble President on 06.03.2019 at New Delhi

# WHAT NOT TO PUT DOWN IN YOUR TOILET



# IN-EQUALITY OF WATER SUPPLY IN DIFFERENT PARTS OF NCR





# WAY OUT - ECOSYSTEM APPROACH

## [JAL SHAKTI, MoHUD, MoEFCC ...]

- JAL SHAKTI ABHIYAN (JSA) / JAL JEEVAN MISSION (JJM) ...

1. Smart Cities
  2. Atal Mission for Rejuvenation and Urban Transformation (AMRUT)
  3. Swachh Bharat Mission (SBM)
  4. Heritage City Development and Augmentation Yojana (HRIDAY)
  5. North Eastern Region Urban Development Programme (NERUDP)
  6. *Pradhan Mantri Awas Yojana*
  7. National River Conservation Plan
  8. Ecomark Scheme of India (ECOMARK) - Ecomark Labelling
  9. National Afforestation Programme
  10. National Action Programme to Combat Desertification
- PEOPLE'S PARTICIPATION / PEOPLE'S MOVEMENT



*Thank  
you*



Dr Lalit Kumar : Senior Adviser : 9810993136



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