

The Clean revolution begins with outhouse

prepares for the 21st century According to the United Nations Children's Fund, 650 million Indians...

work in pay 20 paise, a clean public toilet. To up the sanitary revol

By JOYIN STACKHOUSE Development Issues Reporter New Delhi

INDIAN: SHIVAR Pathak is up to his ears in...

The New York Times FRIDAY, NOVEMBER 28, 1980 From pit to pot, the toil

Less Demeo

New Delhi, June 28: In the Europe of 13th century AD, a strange custom existed As told in the accounts of Sharivar...

UN body praises Sulabh work

Gandhi's program rural construction. Sulabh also community latrine

It's The Pits

Dr. Bindeshwar Pathak, the man behind the chain of Sulabh toilet complexes in the country, is a saviour of scavengers.



What did Louis XII of France have in common with a present-day Indian villager in terms of personal hygiene? Sociologist Bindeshwar Pathak supplies the answer in his Sulabh International Museum of Toilets, in New Delhi's dusty suburb of Palam

Sitting Pretty

Sociologist's unique toilet museum helps flush away poor sanitation

Born into an upper-caste family in Bihar, Pathak as a young man was made aware of the caste hierarchy. "night-soil" - or excrement - had demanded

Turning shit into gold

AN early morning train journey going out of any large city can be a nauseating experience. On both sides of the rail track lined men with their

noticed is that there are no women among these day-light defecators. They are too modest to expose their hind parts to public gaze and suffer agonies till it is clean enough for them to go out.

Sulabh's agents of Scavenger Class Still

by Usha Rai

By William Claiborne Washington Post Foreign Service

NEW DELHI - They can be seen almost anywhere in urban or rural India, wretchedly poor men and women in tattered rags going from door to door carrying away

United Nations age into the ing hun cost, flu septic rehabl in the decl

WHEN Dr Bindeshwar Pathak first proposed that people pay for use of clean toilet facilities, everyone sniggered. But he has demonstrated it can be





# **SULABH SANITATION MOVEMENT IN INDIA**

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## A promise to keep



*The distance is long and day is short  
Hurry home, traveller, hurry home.*

*Target to liberate scavengers is still  
too far and away; the faster we run the  
farther it recedes beyond horizon.  
Scavengers and their families look to us  
for their salvation and a new life.  
Let us not disappoint them, or else,  
we shall be accountable to  
history and future generations.*

*The distance is long and day is short  
Hurry home, traveller, hurry home.*

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Knowledge brings with it  
truth, honesty, fairness and  
democracy - Paul Kennedy

## A knowledge-based social service organisation

SULABH INTERNATIONAL SOCIAL SERVICE ORGANISATION, the largest nationally and internationally recognised pan-India non-profit voluntary social organisation, has 35,000 volunteers on the rolls who work to promote human rights, environmental sanitation, health & hygiene, non-conventional sources of energy, waste management and social reforms through education, training and campaign. It has developed a scavenging-free two-pit pourflush, safe and hygienic on-site human waste disposal technology; a new concept of maintenance and construction of pay-and-use public toilets, being used by about ten million people every day, and generation of biogas and biofertiliser produced from excreta-based plants. It has set up an English-medium public school in New Delhi and also a network of centres all over the country to train boys and girls from poor families so that they can compete in open job market. Sulabh, thus, seeks to set up a modern, humane social order based on mutual cooperation. The United Nations Centre for Human Settlements has recognised Sulabh's cost-effective and appropriate sanitation system as a '*Global Urban Best Practice*' at the Habitat-II conference held at Istanbul, Turkey, in June 1996. The Economic and Social Council of United Nations has granted *Special Consultative Status* to Sulabh in recognition of its outstanding service to people, specially those living on the edge - socially deprived and underprivileged. ●

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## What they say about Sulabh

- "Untouchables gain the help of a brahmin."  
- *The New York Times*
- "The most successful of the voluntary scavenger emancipation enterprises has been the Sulabh Shauchalaya Sansthan which has started something of a mini-revolution in Indian sanitation planning by using entrepreneurial business practices, modern technology and aggressive marketing methods."  
- *The Washington Post*
- "Followers of Gandhi help "Untouchability of the untouchables".  
- *Frankfurter Allgemeine*
- "A Brahmin has associated himself with menial work which shows that there a revolution in the making."  
- *Frankfurter*
- "Dr. Pathak has made it his aim in life to free scavengers from drudgery."  
- *Globe and Mail*
- "Dr. Bindeshwar Pathak is a great redeemer."  
- *The Hindustan Times*
- "Dr. Pathak won't find relief until his countrymen all do loo - in private."  
- *Far-Eastern Economic Review*
- "I can well believe that your work has been an inspiration to people in many parts of the country - quite impressed with your integrated approach toward urban redevelopment, public sanitation, and power generation. I wish you continued success with your numerous public projects and look forward to greeting you next time".  
- *Mr. Harry G. Barnes, Jr. former US Ambassador in New Delhi*
- "Dr. Pathak has been universally acknowledged for his good work. He has been doing a great service to humanity and, in him, we have a great individual who has learnt to work for human dignity and, hence, we wish him and his organisation all the best for their efforts."  
- *His Excellency Mr. Jarassa, Ambassador of the Philippines in New Delhi*
- "I will like to congratulate Dr. Bindeshwar Pathak who fully deserve this coveted recognition".  
- *His Holiness Pope John Paul-II when he gave audience to Dr. Pathak at the Vatican in 1992 after the Sulabh Founder was honoured with St. Francis Prize for the Environment*

# OPINION

- "I read with great sympathy your account of the situation of the scavenger community and I congratulate you on the work which you are doing on its behalf. I am sure your *International Saint Francis Prize for the Environment* was richly deserved."  
- **Mr. Boutros Boutros - Ghali,**  
**Former Secretary-General of the United Nations**
- "Sulabh work is very seminal, it is humane and educative."  
- **Dr. Wally NDow, Secretary-General, Habitat**
- "My heart is full and overflowing; this fully reflects my sentiment about Sulabh work which we will try to replicate in our country."  
**His Excellency Mr. Bernard Soyasa,**  
**Sri Lankan Minister for Science and Technology**
- "The Sulabh Movement is indeed a reminder and jolt to conscience. It is performing the double task of socially rehabilitating the suffering segment of our society and providing healthy and clean municipal life. It deserves all support".  
- **Mr. I.K. Gujral, the Prime Minister of India**
- "Sulabh is a great reform movement of our times".  
- **Dr. Karan Singh, scholar and diplomat**
- "The nation should be grateful to Dr. Pathak."  
- **Mr. Khushwant Singh, columnist & writer**
- "Dr. Pathak has done to scavengers what Lincoln had done to blacks in America."  
- **Dr. Mulk Raj Anand, writer of "Untouchable"**

**Distinguished visitors from all over world:** A large number of distinguished persons, including political leaders, social reformers, academics, experts, diplomats, journalists (TV and print media), opinion makers and social activists have been visiting Sulabh social service centres. These visitors are largely from the following 56 countries of the world - The USA, Nepal, Switzerland, Indonesia, Britain, Argentina, Sweden, Japan, Vietnam, Finland, the Netherlands, Spain, Myanmar, Thailand, Canada, Jamaica, Mongolia, Ghana, Zimbabwe, Nigeria, Belize, Romania, Tanzania, Egypt, Iraq, Russia, Guyana, Philippines, Malaysia, Kenya, South Korea, Germany, France, Sri Lanka, Cambodia, Lithuania, Bhutan, Bangladesh, Mauritius, South Africa, Norway, Australia, Panama, Zambia, Ethiopia, Uganda, Cuba, Botswana, Uzbekistan, Singapore, China, Hong Kong, New Zealand and Italy.

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## CONTENTS

	<i>Pages</i>
Origin & Growth	6-11
A great social movement	12-18
Areas of major initiative	19-28
A tale of two sanitation movements - Chadwick and Sulabh	29-32
Sulabh low-cost indigenous sanitation technology	33-36
No groundwater pollution from Sulabh toilets	37-43
Areas of research & development	44-50
Magnitude of sanitation problem	51-52
Sulabh and sanitation	53-56
Sanitation and health status report	57-59
On ecology, turns survival of human civilisation	60-63
Human Rights - Principle & Practice	64-68
Sulabh promotes human rights	69-71
For want of toilets battles were lost	72-75
Towards a cleaner society	76-78
Mars mania grips 'toiletless' world	79
Dr. Bindeshwar Pathak - A Profile	80-93

Sulabh was born when the national conscience was in pain - Dr. Pathak

## Origin and Growth

Some ages are defined by their epidemics. In 1347, rats and fleas, stirred up by Tartar traders cutting caravan routes through Central Asia, brought bubonic plague to Sicily. In the space of two years, Black Death which spread from China and killed up to 30 million people in Europe in the 14th century. It is estimated that between one-third and one-half of British population was affected by it in 1348-49. In 1520 Cortes army carried smallpox to Mexico, wiping out half the native population. In 1918, a virulent strain of flu swept through troops in trenches of France. By the time it was over, 21 million men and women had died - more than those killed in the World War-I.

The post-independence India had many achievements to its credit but many social asymmetries, distortions and injustices still persist that has undermined our claim to be a civilized society. One such social disparity is the continuance of the system of manually cleaning and carrying human excreta. And, those who do it - scavengers - are the poorest among the poor and untouchables among the untouchables. They are hated even by those whose excreta they clean and carry physically. Scavengers live far away from village areas in huts along with pigs and other animals - starving, boycotted, disadvantaged and disenfranchised. Against social injustices,

much less hurting than this, many revolutions were caused. If did not happen in India, it was because of the *Sulabh Sanitation Movement* which is a major attempt at social reform - more important than any launched after Rammuhan Roy.

The Sulabh pan-India sanitation movement had a small beginning in 1970 when it started as a trickle in Arrah district of Bihar (India) to become a mighty movement, enclosing within its fold the entire area between Kashmir and Kanyakumari. Falling over the brims, it has also crossed national boundaries to go over to the South-East Asia, Africa, and Latin America where Sulabh methodology and technology have been recommended for adoption by U.N. agencies, including UNDP, World Bank, UNICEF and WHO to be finally declared as the *Best Global Practice* at Habitat-II conference at Istanbul, June, 1996, in recognition of which the Sulabh International Social Service Organisation was given *Special Consultative Status with the Economic and Social Council of the United Nations*.

The Sulabh Sanitation Movement was launched by Dr. Bindeshwar Pathak. And, in order to realise the objectives of the movement, he founded a non-profit voluntary non-Governmental social organisation, the *Sulabh International Social Service Organisation*, which is a self-sustaining attempt to render social service without having to depend on grants and loans. It does not get any aid or assistance from any national or international agency because it asks for none. It generates its own resources to meet its commitments and promote the ideals of the movement by setting up its own delivery system and working out its own methods.

The Sulabh Sanitation Movement aims at restoration of human rights and dignity to scavengers, their social integration, and poverty alleviation on one hand; prevention of environmental pollution and promotion of ecology, health and hygiene, on the other.



A scavenger at work

## SULABH SANITATION MOVEMENT

The Sulabh Sanitation Movement, of which the *Sulabh International Social Service Organisation* is the executive wing, was launched to restore human rights and dignity to half a million scavengers and abolish the cruel practice of manually cleaning and carrying human excreta. No human rights violation is greater than this.

During Gandhiji's lifetime, and even after that, many attempts were made by different organisations to solve the problems of scavenging and environmental cleanliness but no tangible results were achieved. Dr. Pathak conceived the idea of relieving scavengers from the centuries-old inhuman cruel practice of carrying human waste as headload in 1968 while he was working for the Bihar State Gandhi Centenary Celebration Committee, constituted to celebrate the birth centenary of the Father of the Nation Mahatma Gandhi. Dr. Pathak was entrusted with the task of studying the problem of the poor specially scavengers. Dr. Pathak travelled all over the country and lived in the colonies of scavenger where he realised the magnitude of their problems and he was so deeply moved with their miseries that he made restoration of human rights and dignity as the sole mission of his life.

The Sulabh Sanitation Movement aims at restoration of human rights and dignity to scavengers, their social integration, and poverty alleviation on one hand; prevention of environmental pollution and promotion of ecology, health and hygiene, on the other. During these years, Sulabh succeeded in liberating more than 35,000 scavengers from the demeaning practice of physical cleaning and carrying human waste, rehabilitating them in other professions, setting up about one million scavenging-free pour-flush toilets with bathing facilities, now being used by over 10 million people daily, working all over the country, employing 50,000 strong dynamic force of engineers, scientists,

social scientists and sanitarians to become the largest social service organisation in India and abroad. In fact, there is a rapid deterioration of ecological balance all over the world. Population explosion, urbanisation and industrialisation of towns and villages, destruction of forests, soil erosion and an ever-increasing number of motor vehicles are the main causes of this imbalance. Moreover, in Third World countries like India another major cause of environmental pollution is the absence of a hygienic and safe human waste disposal system.

Out of 5.5 billion people living on the planet earth, about 3 billion are not having access to safe and hygienic



**THE DAMNATION: A scavenger is physically cleaning human excreta from a dry latrine**

sanitation facilities. In India alone, out of 950 million people more than 700 million are either using dry latrines, manually cleaned by scavengers, or they use the surrounding environment for open-air defecation. Due to non-availability of toilets, specially in rural areas, women cannot defecate in privacy with dignity. They go for open defecation either before sunrise or after sunset, which is not always safe for them. In India, nearly half a million children die each year of the diseases like dysentery, hookworm or cholera and of all the diseases diarrhoea claims the highest number of lives in the country. This staggering mortality rate arises due to lack of safe human waste disposal

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system. Therefore, sanitary engineers, social scientists, planners and administrators all over the world were feverishly searching for an affordable, safe, scavenging-free and hygienic system of human waste disposal which could be adopted on a mass scale.

In India out of about 4,800 towns only 300 are sewer - based and that too partially. The cost of construction and maintenance of sewerage is prohibitive in a densely populated country like India. In addition, the septic tank has found favour with only 20% of the urban population. The vent pipes constitute a danger of foul odour and air pollution. Moreover cleaning the tanks periodically renders the need of scavengers imperative.

On the basis of available material and research done in India and abroad, Dr. Pathak modified and developed a low-cost sanitation technology of two-pit pourflush toilet and named it as Sulabh Shauchalaya. It requires no manual handling of human waste. It is a pourflush watersealed latrine with two leach pits. It has a specially designed pan with a steep slope, a trap and a water seal. The space of about two sq. metres would suffice for its construction. The water-seal prevents foul gases from leaking out of the pit. This economy toilet requires only two litres of water for flushing instead of 10-15 ltrs needed in the conventional system. Thus, the enormous quantity of water, which is a scarce commodity, is saved. The biggest advantage of the Sulabh toilet system is the fact that it does not require services of scavengers and it also saves the environment from pollution. It is the safest low-cost on-site human waste disposal system. The Sulabh technology has been found to be a viable alternative to sewerage and septic tank systems. This technology has been recommended by the UNDP (World Bank), UNICEF, WHO, HABITAT and other agencies for adoption in South East Asia, Africa and Latin America. Queries are received from all over the world on the technical know-

Sulabh technology has served two major purposes. Firstly, it has found ways to stop the open-air defecation, which is a common practice in India, and secondly it has been able to pave the way to end the sub-human and unhygienic practice of manual handling of human waste which is also a great human rights question.



*A SOLUTION: The view of a two-pit pourflush Sulabh toilet*

how involved.

Moreover this technology has served two major purposes in India. Firstly, it has found ways to stop the open-air defecation, which is a common practice in India, and secondly it has been able to pave the way to end the sub-human and unhygienic practice of manual handling of human waste which is also a great human rights question. The technique of construction of Sulabh low-cost sanitation toilets is simple enough and even an ordinary mason can construct it easily. The pans and traps may be of ceramic, fibre glass, PVC, HDPE, cement or mosaic. Various models of Sulabh toilets have been designed to suit users of different economic level both for rural and urban areas. The leach pits can be rectangular, circular or square in shape depending upon the space availability. The cost of these toilets ranges between Rs. 600 (or US \$ 20) to Rs. 5000 (or US \$ 170). Nearly 700,000 dry latrines have been converted into Sulabh toilets by the Sulabh International.

## ZERO SUBSIDY SANITATION REGIME

In 1974, Dr. Pathak introduced the system of operating and maintaining "Pay-and-Use" community toilets with bathing, washing and urinal facilities with round the clock attendant's service and availability of water and electricity. Soap

powder is supplied to users for washing hands. Users have to pay a nominal charge; the children, disabled persons and those who cannot afford to pay are not charged. Urinal use is free. It is an unique example of community participation and zero subsidy. These toilet complexes are used by a large floating population. Slum and pavement dwellers, rickshaw pullers, physically handicapped, the weaker sections of society, commuters and the tourists are benefited by these facilities. Medical service by qualified doctors are also provided at some complexes. The Sulabh toilet complexes have, therefore, been accepted by the people and the authorities for their cleanliness and good management.

After establishing neat and clean toilet complexes and liberating scavengers, Sulabh has set up a number of vocational training institutes throughout the country where liberated scavengers, their sons and daughters and the other weaker sections of society are given training in various vocations like computer technology, typing and shorthand, electrical trade, woodcraft, leathercraft, diesel and petrol engineering, cutting and tailoring, cane furniture making, masonry work, motor driving etc. The purpose of providing them this training is to give them new means of livelihood, alleviate poverty and bring them into the mainstream of society.



Girls being trained in beautician course

Sulabh has set up an English-Medium School in Delhi for children of the poor. Half the number of children are from scavenger families and the other half from others. This homogenous composition ensures that there is no discrimination. Free education is imparted to the underprivileged children. They are provided free textbooks, school uniforms, mid-day meals and bus services. The children are also provided with excellent playground facilities inside the school premises for their overall growth. The schooling is vocation based from IV standard onwards, with training facilities in typewriting, computer handling and office management, so that employment may not become a problem later.

### ATTITUDINAL CHANGE

Dr. Pathak continues his relentless crusade for liberating and rehabilitating scavengers and other weaker sections of society but the stigma of untouchability remains deep-rooted. A programme for removal of this social curse has been initiated. In 1988, Dr. Pathak, the Founder of Sulabh Sanitation Movement, led 100 scavengers alongwith Vedic Brahmins to the famous Nathdwara temple in Rajasthan. In the temple, everybody performed *puja* and took '*prasad*' and meals together. Similarly, on the birth anniversary of great social reformer, Dr. B.R. Ambedkar, a seminar and community lunch was organised in the premises of Sulabh International Social Service Organisation, Delhi, where people of all castes and creeds exchanged views and took meals together. On October 2, 1990 Sulabh organised a massive rally starting from the scavengers colony, New Delhi, and alongwith scavengers and others. Everybody took a vow at the national memorial of Mahatma Gandhi to abolish scavenging by the turn of the century.

In 1993, Sulabh embarked on a noble programme of social upgradation

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and integration of four hundred thousand scavenger families. Under this programme, Dr. Pathak has made an open appeal to the elite of society to have social interaction with at least one such family to enable them to lead a dignified life as equals in the society. So far 5,000 scavenger families have been socially upgraded and brought in the main stream of the society. Similar programmes are envisaged in a phased manner throughout the country for the removal of untouchability and restoration of human rights and dignity to those who have been deprived of these for generations.

The Sulabh International Social Service Organisation has developed use of biogas produced by recycling the



*Human excreta-based biogas is also used for cooking*

human waste at community toilet complexes. It is an unique experiment in the use of low-cost non-conventional sources of energy. The bio-gas, thus produced, is utilized for different purposes such as cooking, lighting mantle lamps, heating water, warming bodies in the cold climate and generating electricity. An entire stretch of Gandhi Maidan situated in Patna city and the main bus stand at Ranchi (Bihar) are now lit by the electricity generated from Sulabh biogas plants. This organisation has also developed bio-fertilizer from human waste. Through a simple process; it is converted into odourless granules which can be used to enhance the productivity of the soil. Sulabh volunteers go to different rural and urban areas and try to inculcate a sense of sanitary awareness among the masses popularising the use of non-conventional

sources of energy like smokeless stoves, biogas plants and solar energy etc. This relieves the villagers and housewives from the trouble of bringing firewood for cooking purposes, smoke in the kitchen and also helps to curb deforestation, thereby preserving the natural resources and the environment. School children are periodically taken round Sulabh complexes along with teachers to create sanitary awareness.

### A NEW APPROACH TO GROWTH

Sulabh has developed an innovative approach for integrated rural development and poverty alleviation. It has initiated a massive programme to train two rural youths from each rural local body to function as change agents. These agents are trained in multi disciplinary developmental activities such as construction of Sulabh toilets, repair and maintenance of hand pumps, construction of smokeless stoves, primary health care services and social forestry etc. so that they may earn their living by remaining in villages. These trained persons work as catalytic agents to serve as a link between the government and the community. This programme has generated employment to rural youths. So far nearly 35,000 youths have been trained in water supply, sanitation and other allied work and provided employment. Thus, about two hundred thousand persons have been elevated above the poverty-line. The uniqueness of Sulabh lies in the fact that a sense of discipline, duty and dedication work and all the human beings is inculcated in all its workers by way of compulsory morning prayers in all the branches of the organisation throughout the country. After the prayer meetings, the workers are encouraged to implement the various developmental programmes to the best of their abilities.

For the benefit of the masses,

# SULABH SANITATION MOVEMENT

Sulabh International Social Service Organisation has published literature on the Sulabh Sanitation Movement in all the 15 major languages of the country. Dr. Pathak has himself written a number of books prominent among them are:

1. *Road to Freedom;*
2. *A Study of Directed Change;*
3. *A Simple Idea that Worked*  
*And*
4. *Eradication of Scavenging and*  
*Environmental Sanitation in India.*

Dr. Pathak also gives personal attention to the problems of the masses. Moreover, he periodically holds meetings with senior workers of his organisation involving discussions on various policies for the upliftment of the poor and downtrodden. He takes keen interest in



**Books authored by Dr. Pathak**

developmental activities and visits various sites to monitor the implementation of different schemes under the Sulabh Sanitation Movement.

Sulabh International has laid special emphasis on technical research and development. Techno-economic issues relating to low-cost sanitation and bio-technology are studied to make them more cost effective and efficient. Pollution aspects of on-site sanitation system and the preventive measures are also studied. Investigations are going on for optimum utilisation to recycle the other wastes such as aquatic and terrestrial weeds, agricultural wastes, certain organic industrial wastes etc. for producing bio-



**Late Mr. J.R.D. Tata in a Sulabh toilet, Mumbai.**

energy. Many R&D projects have been taken up in collaboration with various national, and international agencies. Sulabh has also a tie-up with the British Council to train teachers on environmental and sanitation programmes. And the teachers will finally transfer this knowledge to students to ensure sanitation and environmental protection. The noble activities of Sulabh International Social Service Organisation have drawn world wide attention. It would not be out of the place to mention here that Bharat Ratna, late Mr. J.R.D. Tata was so impressed with the activities of this organisation that he himself not only sponsored a new Sulabh toilet complex in Bombay but proudly inaugurated the same.

Sulabh activities are permanently recorded in various citations and media reports, both at home and abroad. Many eminent persons from all over the world have visited its various activities and recorded their appreciation. Dr. Pathak has been invited by different countries to seek his guidance on low-cost sanitation. What started as a small voluntary group of five persons has snowballed into a mighty movement with more than 35,000 persons working round the clock all over India to promote human rights, environmental sanitation, personal and community hygiene, healthcare and a new social order by alleviating poverty and abolishing glaring inequality. And, in so doing the Sulabh Sanitation Movement is well set to build a society based on equality and fraternity. ●

## A great social movement

The Sulabh Movement was launched in March 1970 in Patna, Bihar, India, by an action sociologist, Dr. Bindeshwar Pathak, who combined in himself the traits of an engineer, academic, planner and social activist - all blended into a happy harmony to produce a multi-faceted personality, dynamic and daring, to become a leading social reformer of our time. To begin with, the first meeting was held in a hut attended by only seven persons, *The Pioneers*, who laid out the broad outline of policies, and philosophy of the mission. However, they could never foresee that the small one-time effort at social service will become a pan-India movement, now set to cross the national and international boundaries.

To be true, nobody could know, not even the *First Seven*, that a trickle will become a torrent to convulse the sedate and traditional Indian society, and that the Sulabh Movement will become a phenomenon with close to 35,000 social volunteers working round-the-clock to promote its objectives. Who knows what the future holds for us. Gandhiji only wanted a seat in an all-White railway compartment in South Africa and he was not given. The British lost the Indian empire. Napoleon just asked 24 francs from his girlfriend, Disrae, to buy uniforms and with that he went to Paris from Corsica and captured the entire Europe. Lincoln's life's dream was to travel from his log cabin in Kentucky to walk along river Potomac in Washington where he finally lived and died as President of the United States. Newton was a shy indoor man, but when he decided to sit out in his orchard, he saw the apple fall. And, the world was never the same again.

Bihar has been a land of great leaders, emperors, social reformers, saints

and seers. Lord Mahavira, Chandragupta Maurya, Samrat Ashoka, Guru Govind Singh, Dr. Rajendra Prasad, and Arya Bhatt were born in Bihar. Lord Gautam Buddha attained *Nirvana* in Bihar. Which has also been the place where many religious, social and agrarian movements started. Mahatma Gandhi launched the first civil disobedience movement from Champaran, (Bihar). Earlier in Middle Ages, and in the last century, there had been other movements in the country, including Jainism, Brahma Samaj and Arya Samaj. All these were protest movements launched to change the social order. The Sulabh Movement is also a protest movement, seeking a change in social dispensation without violence and bloodshed. The place of the genesis of the Sulabh Movement has its atmospheric advantage, much of which is reflected in the purity of its thought and philosophy, so also in a well-defined profile of the social change that it seeks to bring about.

In this century, many social movements were launched and many more died stillborn. In 1951-52, for instance, there was a battle-cry; *Tiller of the lands the owner of the land*. And that upset the age-old concept of rights over land. The impact of this change on society was heard all over the country, the loudest in the Telengana region of Andhra Pradesh where the dispossessed peasants rose in revolt. The Army was called in to control the situation. The forcible seizure of land and property became the source of violence. The Naxalite movement, and its many political wings, were the manifestations. But, the problem was not solved; not even law could do that. Hence, Vinoba Bhave, a disciple of Gandhiji, said if the law could not solve the problems nor violence, people's participation was the only way out. And,

Every thought system is a response to a situation. Karl Marx protested against the cruelty of the 18th century; Keynes provided a solution to the Depression of the thirties; Gandhi symbolised anti-colonialism; Nehru stood for liberalism and Sulabh is a protest movement launched to abolish scavenging and establish a discrimination-free system.

## CONCEPT & COMPARISON

he launched the Bhoodan Movement which had great social impact.

The Bhoodan Movement was itself a product of the Gandhi's *Sarvodaya* (uplift of all) movement launched in the early thirties. Within *Sarvodaya*, was yet another movement, *Antodya*, uplift of the poorest among the poor. Quite at a time when the Bhoodan Movement was in full swing, there was yet another revolt, called Berkeley Movement. (Berkeley is one of the seven campuses of California University in the US) where students rose in revolt, not demanding job or food; they had both. They wanted a share in power. This movement spread all over Europe, resulting in a change in power structure and revision of age-limit on voting.

Every thought system is a response to a situation. In fact, every new idea is a product of its own time and place; it cannot be seen apart from the world it seeks to interpret. And, the world changes, so do ideas. Karl Marx reacted to the cruelty of the Industrial Age; John Maynard Keynes found a response to the Depression of the thirties; Nehru was the product of the liberal thought system and Gandhi represented the post-colonial age after the end of the World War-II in 1945. In the early forties, nobody could teach at Harvard without being a Kenysian and in the late sixties, no Kenysian was allowed to enter Harvard. Aristotle and Chanakya were contemporaries; while Aristotle talked about the economics of politics in European context, Chanakya talked about ethics of economics in his *Arthasastra* in Indian context. Both the ideas were response to differing situations. The Sulabh Movement cannot be an exception.

Every great event has its geographical epicentre. The American Revolution (1776) had Independence Hall in Philadelphia, the French Revolution (1789) started from the State prison house of *Place de la Bastille*; the Revolution of 1848 was sparked off in the Luxembourg

Palace where President Louis Blanc examined Communist Manifesto, launched by Karl Marx and Friedrich Engels in London a year before. This movement toppled Emperor Louis Philippe of France, Prince Metternich of Austria and almost totally destroyed the feudal system and *ancien regtme* in Europe, paving the way for liberalism of the 20th century. Strangely enough, the Communist Movement was launched in the shop of a German tailor, Wilhelm Wetzling, who set up a *Society of the Just*, later re-named by Marx as the Communist League. In the tradition of great events starting from small places, the Sulabh Movement also began from a dusty, time-beaten town of Arrah in Bihar where the first two-pit pourflush toilet was set up to later become a great movement.

India is the sixth largest country in the world, spread over an area of 4.2 million sq.km., enclosing within its fold close to a billion people to become the second most populous country next only to China. The cultural, linguistic, (15 major languages), geographical and ethnic diversities have made it the most colourful tapestry woven together over 5,000 years of its history marked by migration, assimilation, conflict and fusion. Karl Marx has said in his *Das Capital*: "It is amazing how a country, invaded so many times in its long history and under the control of alien rulers for hundreds of years, could maintain its identity. It is all because of the richness of its culture which is rooted in villages that did not change with the change in rulers and dictators". It is also because of this diversity that all religions, born in India, talked of universal brotherhood and unity of human species; they did not address to any particular group or race. It may be Buddhism, Jainism or any other religion. Hinduism, for that purpose, is not a religion; it is a pan-India culture which represents the entire mosaic of this colourful assembly of religions and races. Max Muller, who was

The society was created by our wants and the government by our wickedness. The voluntary organisation is, however, a different story. It is neither our want, nor wickedness; it is all about working together to change social dispensation and beliefs.

first to translate the *Vedas* into German language, said, "The more I try to unravel the mystery of India, the deeper it becomes". So amazing is the country, so wonderful its people and their culture.

Working within these historical legacies and cultural parameters, India has made progress, specially after 1947, in the fields of science, technology, defence capability and food production. It was a case of "begging bowl" turning into "bread basket"; a weak and famished nation flying into space and producing the finest computer chips to better the best in the world. To say there is, however, not to suggest that we have solved all problems; far from it. Regional imbalances, illiteracy, poverty and structural distortions continue to afflict people. Sanitation and social discrimination, specially untouchability, are damaging the social cohesiveness. Sulabh has also taken up these issues, besides producing energy from non-conventional sources, health, human resource development and technical research and training.

Sanitation is a broad term that includes water supply, disposal of human waste, waste water and solid waste, control of vectors of diseases, domestic and personal hygiene, food sanitation, housing etc. Human excreta is the cause of many enteric diseases such as cholera, dysentery, typhoid, paratyphoid, infectious hepatitis, hookworm, diarrhoea etc. Studies reveal that over 50 infections can be transferred from a diseased person to a healthy one by various direct or indirect routes from excreta and cause nearly 80% sickness in India. Hence in India, sanitation programme primarily refers to safe disposal of human excreta and implies the provision of sanitary toilet facilities to the community.

The Sulabh Movement also seeks to prevent environmental pollution. The rapid deterioration of ecological balance, population explosion, urbanisation, industrialisation, destruction of forests, soil erosion and an ever-increasing number

of motor vehicles are the main causes of this imbalance. In the Third World countries, including India, another major cause of environmental pollution is the absence of a hygienic and safe human waste disposal system.

Due to cultural background, most households in India have no toilets. During the *Puranic* time, Indians were advised not to have toilets in the house; it was suggested that people should defecate quite away from the habitat. Although Chanakya, chief adviser to Emperor Chandragupta, had suggested that each house should have kitchen, bath and a toilet, but his advice did not succeed over the prevailing beliefs and faith. No wonder, the sanitation situation in India even today continues to be alarming. At present, about 102 million households in rural areas and five million in urban areas have no toilets. Consequently, out of the 900 million total population, 700 million Indians (which is about the total population of Europe and Latin America) defecate in the open, causing environmental pollution, filth, insanitation and many health problems. About half a million children (out of 2.5 million of such deaths in the world) die in India of dehydration, diarrhoea and other sanitation-related diseases. The sanitation scenario of the country at the time of the birth of this movement was appalling. V.S. Naipaul, the British novelist, in his famous book, *An Area of Darkness*, has made elaborate references to the practice of open defecation, the unsightly nakedness and humiliation, specially of women who squat along roads, railway lines and in public places to present a sickening spectacle of a decaying society. The *Sulabh Movement was a response to this situation*.

Sanitation in other countries, specially in the last century when the Industrial Revolution was taking place in the West, has been entirely a civic problem. But, in India, it involved social discrimination also. More than 10 million households in urban and rural areas of

India is the sixth largest country in the world with a population close to a billion people, struggling to improve things. But, many problems still remain unsolved, sanitation and social discrimination are the ones.

## CONCEPT & COMPARISON

the country have bucket latrines, cleaned by a section of people called, *scavengers*, who had the status of untouchables before independence. It is amazing that the people who kept houses, and cities clean were made to suffer a variety of indignities unheard of since the days of slavery in Rome. These scavengers were made to live outside the village and forced to wear bells around the neck to announce their coming, or stamp the ground to keep the people away from their shadow. They were not allowed to wear slippers, nor could they eat fresh food; only stale left-over crumbs collected from houses were eaten by them. Scavengers could not use vehicles; they walked long distances in scant clothes. They always lived in small stinking huts along with pigs where fire would ravage in the summer. In which case they would live under the tree. Nothing like this was heard in any civilised society. After independence, things have changed for scavengers and they are made equal before the law, but they continue to be unequal in education, living conditions and in many other ways. About 700,000 of them still physically clean and carry human excreta only to suffer social degradation which their forefathers did before independence.

Sulabh is an organised, well-structured institutional arrangement to abolish scavenging, restore human rights to scavengers and create a new sanitation order. It has a viable nationally and internationally recognised technology and methodology to achieve its objectives. Technology has always been a lever of change. The wheels, spinning-jenny and computer chips, among many others, changed lifestyle, perception and social structures of the time more than any thought system did before. Technology ushered in the Industrial Revolution, demolished Communist empire, changed global relations, destroyed geographical boundaries, and war strategies to produce a new global information society when what is happening at one end affects

the people living at the other end of the world. Hence, when Dr. Pathak thought of launching a movement to abolish open-air defecation and scavenging, he developed an indigenous, culturally acceptable low-cost sanitation technology, first. Sulabh also seeks to abolish this inhuman and cruel practice forever by use of this scavenging-free technology. Sulabh aims at providing toilet in each house and public toilets and bath facilities for the floating population in cities and other places of congregation. It seeks to free scavengers from this subhuman practice and resettle them in other professions after training. And, give quality education to their sons and daughters so that they can compete for jobs in open market and live a good life, fully acceptable and respected by joining the mainstream of society.

Sanitation has many linkages with health, or they are complementary with each other. Hence, Sulabh has taken up massive health programmes that include primary healthcare, population control, prevention of disease, like AIDS, through awareness programmes and other preventive and curative measures. The Sulabh toilet complexes have been developed into multi-purpose centres of community service which provide facilities like bathing, washing clothes, safe drinking water, first-aid service and telephone. These toilet blocks also work as centres to organise training and other community programmes among slum-dwellers. Sulabh has a wide access to community because about ten million people use Sulabh toilet facilities everyday.

The social intervention by action sociologists produces change which finds manifestation in Sulabh strategies that combine the process of helping and learning through social action. Sulabh represents conscious efforts to induce systemic change leading to the uplift of the poor. Its technology puts a premium on smallness and self-sufficiency. In fact its simplicity and smallness make it appropriate to meet the local needs. The

Sulabh represents a paradigm shift; in that it uses technology to launch a movement which had never been the case before. Those who invented technologies launched no movement and those who launched movements invented no technology in known history.

Social Intervention  
by action  
sociologists  
produces change,  
much of which is  
manifest in Sulabh  
methodology that  
presupposes  
extensive use of  
affordable,  
Indigenous and  
appropriate  
technologies, public  
awareness and  
conscious choice.  
Borrowed concepts,  
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too.

technology is appropriate against economic and social background. Its relevance goes beyond the boundaries of states and regions. The Sulabh technology of excreta disposal, therefore, represents a choice between modern growth and traditional stagnation. Borrowed concepts and imported methodology can hardly be a substitute for appropriate technology. Sulabh also represents an investment in man. The change that is being witnessed in the field of sanitation and upliftment of the downtrodden has not been forced from above. Dr. Pathak provides alternatives, leaving the target group to make the right choice. The initiative for adoption comes from within.

To be true, Sulabh is a concept which envisages a change in social dispensation and human relationships. Sir James Chedwick (1891-1974) was a lawyer by profession who wrote a comprehensive report in London (*The Great Sanitation Report*) that highlighted the grim sanitation situation in England. His report produced a great impact on the sanitation situation in the latter half of the last century. The Sulabh Movement has gone beyond sanitation, it has a strong conceptual underpinning encompassing social and cultural revolutions for transforming the social structure of India. The shift in the universally replicable paradigm from scavenging - based sanitation to scavenging-free two-pit affordable system of sanitation is a revolution, also because it is sharp transition from one paradigm to another supported by a new technology. For instance, pastoral civilisation ended with the invention of the wheels, a technology developed by Assyrians, and the Industrial Revolution began with the invention of spinning-jenny. Modern civilisation is marked by computer chips (cyberage). History will suggest that the road to social revolution is extraordinarily arduous and there has always been a technology behind it. Einstein says; "Science and technology, not tears and rhetorics, will change society and abolish

poverty".

The Sulabh Movement is dialectic (thesis, anti-thesis and synthesis) in nature. Marx said under his famous *dialectical materialism* that political and historical events happen due to conflict of social forces caused by man's material needs. The practice of scavenging in India is a product of thousands of years of history and it continued because of many social contradictions (untouchability, caste system etc.) and this cruel system expanded to meet the man's "material" needs to clean toilets in city centres. Marx sought to correct social distortions by abolishing Capitalism and "*expropriating the expropriators*" while social reformers sought to achieve this through education, campaign, law and persuasion. Quite a piece with this hallowed tradition, Sulabh reforms proceeded in practical and achievable ways, step by step, wrapped up in an attractive package comprising technology, liberation of scavengers, their training and education, rehabilitation and, finally, their social upgradation when the last among scavengers will join the mainstream of social and national life.

The Sulabh Movement is all-inclusive; in that it has attracted enduring groups of adherents, away from the competing practices. And, it was sufficiently open-ended to also include social and legal reforms, population control, education, and many other related issues for the re-defined groups of Sulabh practitioners who seek to solve problems. The change in the previous pattern of "*non-solution*" to another pattern of finding "*solution-based*" social reform is called *Sulabh paradigm* which is an accepted model that can be replicated. In English Grammar, for instance, the verbs "*go, went, gone*" are paradigms because they can be reproduced in a variety of ways, conjugating a large number of other words and phrases. In this standard application, the paradigms function by permitting the replication of examples. Sulabh has paradigms

### Areas of major initiative

The Sulabh International Social Service Organisation is the leading non-profit outfit, working to promote sanitation and prevent environmental pollution which are critical components to a healthy and productive society. The growing population and the consequent strain on shrinking resources have produced slums, violence, houselessness and human misery which are evident among the people living on the edge. The growing urbanisation has also produced serious shortages of houses, forcing people to live in shanty colonies without toilet facilities. Beginning from a small town in Bihar (a State in India), Sulabh now works virtually all over the country with the help of a large work force of over 35,000 committed volunteers belonging to various disciplines like administrators, financial and management experts, engineers, architects, sociologists, scientists, media persons etc. It has infrastructure in 22 states and two union territories.

It is now an established fact that most diseases are caused by bad sanitation. People build houses but not toilets, indicating skewed attitudinal and cultural preferences. Official agencies are sinners, no less. They also don't give sufficient stress on sanitation, most specially toilet facilities, while building community houses. The snag in sanitation programmes is also technological. The sewerage system is very costly and not sustainable. There is not enough water in rivers to flush out city effluents, nor enough money to set up sewage treatment plants. Even France has been able to treat only 40% of Paris sewage; the remaining waste flows into the Sein river, untreated.

The Sulabh human waste disposal system is a radical departure from the

sewerage system and that makes it eminently suitable for use in both individual and cluster houses. This novel sanitation system is a frontier technology which will keep our habitat centres clean and people healthy. As a matter of fact, the advent of Sulabh International in the field of sanitation in 1970 gave a new turn to the sanitation movement by evolving low-cost pourflush water-seal toilet with two pits for on-site disposal of human waste as an alternative to bucket latrines, thus also abolishing manual handling of human waste. The organisation has also been able to improve the environmental sanitation and community health and hygiene.

#### SULABH TECHNOLOGY

The Sulabh toilet system is a cost-effective and most appropriate technology option. It needs much less water (only two litres) than is needed (10 litres) for flushing out the conventional water closets (WC). And, thus, conserves water which is scarce in most developing countries. Sewerage and septic tanks are very expensive which the developing countries cannot afford. The toilets built on Sulabh technology have a large variety of designs to suit different income levels topographical terrains and local resources. It is economically and socio-culturally acceptable to the people. It is free from foul odour and can be built by indigenously available materials. It is easy to build and easy to maintain. With high potential of upgradation, it can also be connected to sewers easily when introduced in the area. It does not need the services of scavengers - makes available high quality manure and soil

Sulabh has so far constructed and converted over 700,000 Sulabh household toilets and 3,154 public toilets, now being used by 10 million people every day. Over 37,500 scavengers have been liberated from the task of manual scavenging and 3,500 wards and family members of the liberated scavengers have been given vocational training.

conditioner.

## IMPACT AND SPREAD

Sulabh has so far constructed and converted over 700,000 Sulabh household toilets and 3,154 public toilets, now being used by 10 million people every day. Over 37,500 scavengers have been liberated from the task of manual scavenging and 3,500 wards and family members of the liberated scavengers have been given vocational training. As many as 240 towns have been made scavenging-free. There has been a dramatic change in the physical environment of the towns where the Sulabh system is used. In the towns which have become scavenging free, all dry (or bucket) household privies have been converted into the new twin-pit pourflush Sulabh toilets. The houses which had no latrine too have been provided with sanitary toilets and for those who could not afford or space was a constraint, well managed community toilets were provided. Thus, the dumping of fresh pathogenic night-soil had stopped, leading to the improvement in the physical environment.

## SELF-SUSTAINABLE SYSTEM

Sulabh's innovativeness is best demonstrated in the public toilet system operated on the *pay-and-use* basis which is self-sustaining. Along with public toilets, Sulabh provides bathing washing and urinal facilities with separate compartments for men and women. Some more amenities like cloakroom, public telephone, primary healthcare, drinking water, school for children in slums etc. have also been provided at some places. The user-charge is nominal; the disabled, children and those who cannot pay are allowed to use the facility free. The authorities, therefore, do not have to provide funds for the maintenance of the public conveniences for a period upto 30

years which is an unique example of community participation. In addition, these toilet complexes have provided dignity and safety by providing facilities for defecation and bathing in privacy, specially for women who are the greatest beneficiaries. Sulabh plays the role of a catalyst between and among government, local authorities and the users of community facilities.

*The objectives of Sulabh Sanitation Movement are :*

- **To restore human rights and dignity to scavengers :**

Liberation of scavengers from unhealthy and subhuman occupation of manual handling of excreta by converting bucket privies into Sulabh Shauchalayas (pourflush toilets with two pits for on-site disposal of human waste). Get rehabilitated the relieved scavenger and their wards in other occupations after training. To help in social upgradation of scavengers and their promotion as equals in society. Set up information and employment exchange centres and help scavengers get employment either in government or non-governmental organisations. Open English-medium schools to provide education among sons and daughters of scavengers along with others and help scavengers build their houses away from slums so that they can be taken out from the stinking environment.

- **Prevention of environmental pollution:**

Sulabh seeks to educate people not to defecate in the open in, lanes, byelanes, parks, streets, by the side of roads of railway tracks etc. Motivate people to get bucket privies converted into Sulabh Shauchalayas and to have toilet facility in houses provide community toilet with bathing, washing, and urinal facilities on the pay-and-use basis in slums, and for

This toilet design has been widely accepted by the people because it is low-cost; it requires only two litres of water to flush. It does not require the services of scavenger nor does it pollute air; it provides manure on the spot, can be cleaned and easily maintained by house-owners themselves.

because it (Sulabh model) can be replicated in the fields of sanitation, environment protection, healthcare, education, human excreta-based biogas production and so forth. A paradigm can be related to different conditions in different societies facing the same problems like sanitation, healthcare etc. Sulabh is also called a revolution in the field of sanitation because it clearly marks a departure from the current practices, combining in itself more than cleaning toilets and streets.

The transformation of paradigms in physical and social sciences and their successive transition from one paradigm to another by revolution (or movement) is the normal development in all mature sciences. For instance, today's textbooks of physics tell us that light is photon (i.e. quantum-mechanical entities) that exhibit some characteristics of waves and some characteristics of particles. This was the concept developed by Planck. But, Einstein later said that light is transverse (acting in cross-wise direction) wave motion and it bends, a theory on which he got Nobel Prize. The dilemma of light did not end there. Instead, there had been a number of other competing replicable paradigms. One group took light to be particles emanating from material bodies; for another, it was the modification of the medium that intervened between the body and the eye; still another explained light in terms of an interaction of medium and emanation from the eye.

It is, thus, evident that even in physical sciences where the factor like the speed of light is constant, there is a variety of opinions, one being as good as the other. And, even when the factor is constant, paradigm can be a guide only to a limited extent or in a specific time-frame. But in social sciences, human behaviour is the basis and it is not a constant factor. Therefore, the inference drawn from the changing human behaviour is variable. For instance, historians say extreme poverty causes revolutions. But almost all revolutions,

including the French, were caused not in poor societies. Poverty stuns and benumbs the poor; only half-met demands and social disparity cause social upsets.

George Bernard Shaw once observed that all progress depends on the unreasonable man. He said the reasonable man adapts himself to the world while the unreasonable man persists in trying to adapt the world to himself. Therefore, for any change the world must look to unreasonable man (or woman). Dr. Pathak quite fits the bill; for he persisted in changing society and its attitude towards the dispossessed and the poor. For his *unreasonableness*, he had to run the gauntlet; his parents punished him for touching a scavenger and society condemned him as a Brahmin becoming scavenger. His unreasonableness, has finally succeeded. However, change will be best absorbed if it comes slowly, says Dr. Pathak. For instance, a frog put in the cold water will not stir or agitate if the water is heated up slowly and gradually. And it will not agitate again when it is finally boiled dead in the hot water. Slow and gradual changes (heating up) gives time for the people to absorb change without agitation. Hence, Sulabh is more a movement than revolution, working to bring about a gradual change in the system without causing damage (boiling) to its structure as Naxalite movement sought to do.

In the beginning, Sulabh movement was started by social workers but, later, distinguished persons from different disciplines joined it, including engineers, scientists, academic, architects, planners, administrators, doctors and others. Over a time, it became a self-reliant and sustainable agenda for growth. Sulabh has its own philosophy and religion which stands for eternal varieties like respect for all cultures, religions and mutuality of interests of all mankind. This effort has been acclaimed by the State and Central Governments and various national and international agencies,

The Sulabh Movement is dialectic - thesis, anti-thesis, and synthesis. Historical events take place due to the conflict of social forces caused by man's needs. The practice of scavenging in India has a long history and it continues in the midst of many contradictions. For it to phase out, it will involve a historical process like education, campaign, law and technology. And, Sulabh is all these things and more.

Thucydides, a Greek philosopher and warrior, says in his magnum opus, *The Peloponnesian War*, that events should not be judged earlier than 100 years after their occurrence. This time-gap is necessary to give a perspective to be able to judge men and events objectively.

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including HUDCO, WHO and UNICEF, UNDP, HABITAT. The World Bank has accepted the principles advanced by Dr. Pathak. UNDP has also evaluated its technology, and methodology, prepared a manual and passed it on to the countries of South-East Asia, Latin America and Africa for adoption. Sulabh has a strong scientific background and data processing facilities which produce replicable models. It has research (social and technical) facilities for training, demonstration and human resource development. Apart from these, there are blueprints for implementation, maintenance and follow-up action. It plays a crucial role in institution building. Use of non-conventional sources of energy is the need of the hour with the fast depleting fossil fuels of the world. Sulabh has also made progress in R&D in the fields of bio-energy and bio-fertiliser from human waste.

Twenty-seven years is not much of a time in the historical continuum to sit back and take a stock of the developments during the quarter of a century which is already crowded with many stunning developments. Thucydides, a Greek philosopher and warrior, says in his magnum opus, *The Peloponnesian War*, that events should not be judged earlier than 100 years after their occurrence. This time-gap is necessary to give a perspective to be able to judge men and events objectively. However, Thucydides did not respect his own guidelines and wrote the history of time. It may be too early to write the Sulabh story but half-told history of experiences will provide material for future historians to write about this great movement. For, in the long perspective, it may seem that

the really influential people in the last 100 years were not Hitler or Churchill, Stalin or Gorbachev, but Freud, Marx Einstein, and others who changed nothing except the way we think. Francis Crick is not a household name, yet he, with James Watson and Maurice Wilkins, discovered the genetic code, DNA, and so created the science of microbiology and the industry of biotechnology on which much of our future may depend. Sulabh has also changed our attitude and the way we think. And, that marks it out from many other movements.

The story of the Sulabh Movement is, however, still unfolding itself. At 27-year milestone, we simply pause to ponder over its successes and failures and how best it can have the tryst with its destiny. For, Pathak has always believed that future is not inevitable. Man can influence it, if we know what we want it to be. His plan is to create a new social order out of the old without a shot being fired, or a man being killed.

The fact is that, India's 120 million "untouchables" are set for a fight to demolish the caste-based structure. Their weapons are education, vote and guns also. The Dalits (one-sixth of the population) are also instigating a social revolution to topple the 2,500-year-old *juggernaut* of the Hindu caste system which condemns a man to his caste-determining whether he becomes a doctor or a scavenger. And, in this battle, power is gradually shifting to Dalits. Sulabh is for this change but it should be peaceful and without destroying the basic social structure. "Or else," Dr. Pathak says, "in the bloody social conflict, the ashes of Dalits and non-Dalits will become indistinguishable". ●

## AREAS OF WORK

pavement dwellers, rickshaw-pullers, floating population and also for those communities in whose houses toilets cannot be constructed due to space constraint.

Persuade people to plant at least 5 trees per family and also plant trees around public toilets for the protection of environment. Harness non-conventional energy sources from human waste and save fuel and forests. Procure manure from Sulabh Shauchalayas and use it to raise farm productivity. Promote job-oriented education and primary healthcare. Form groups of people from all walks of life throughout the country and abroad to build public opinion against social evils and for the cause of economically poor and neglected sections of society. Create new employment avenues by training change-agents for integrate rural development. Promote consultancy, research and development in technical and social fields. Promote diffusion of innovations, education, motivation and awareness through mass communication.

Dr. Bindeshwar Pathak studied various designs of toilets and work done in this field in India and abroad and developed Sulabh Shauchalaya which is the most suitable, affordable and a social-culturally acceptable technology. This toilet design has been widely accepted by the people because it is low-cost; it



*Sulabh healthcare centre*

requires only two litres of water to flush. It does not require the services of scavenger nor does it pollute air; it provides manure on the spot, can be cleaned and easily maintained by house-owners themselves. The two pits work alternately for several years. It can be easily connected to sewer.

The Central and the State governments, various national, and international agencies, like UNDP, UNICEF, WHO, World Bank etc., have accepted Sulabh Shauchalaya as the most appropriate low-cost technological option. They have suggested the adoption of this system in India and other developing countries.

The Govt. of India has included low-cost sanitation as a vital component in the Integrated Development of Small and Medium Towns (IDSMT) Programme. The Housing and Urban Development Corporation (HUDCO) also gives financial assistance for low-cost sanitation to various categories of beneficiaries. The Ministry of Urban Development, the Government of India, provides subsidy to local authorities for conversion of dry or bucket privies into Sulabh shauchalayas and construction of toilets in houses.

### LIBERATION OF SCAVENGERS

The point 11 in the Govt. of India's 20-Point Programme of 1986 relates to 'Justice to Scheduled Castes and Scheduled Tribes'. It aims at eradication of scavenging and undertaking special programmes for the rehabilitation of scavengers. Sulabh International Social Service Organisation is fully involved in achieving this objective.

### TRAINING AND REHABILITATION

Sulabh International Social Service

The facilities of special toilets, combined with bath having shower facility, cloak-rooms, telephone and primary healthcare have also been provided in some of the Sulabh complexes.

Organisation is the only non-governmental organisation which takes up the twin operations of liberation of scavengers by conversion of dry/bucket privies and training and rehabilitation of liberated scavengers and their wards. Sulabh organises programmes to train them in various vocations such as driving, mechanic, tailoring, typing, canework, carpentry, leatherwork, masonry etc. They are also educated on health, sanitation and personal hygiene. Sulabh established the first training institute exclusively for scavengers at Patna, now shifted to Palam, New Delhi. It has established such an institute at Bombay in collaboration with State government and is running it successfully.

Presently, it is working for optimum utilisation and techno economic evaluation of human excreta and other mixed wastes based biogas plants to ensure effective waste disposal and harnessing of bio energy.

### SOCIAL UPGRADATION

The liberation of scavengers and their rehabilitation in other professions is not enough; no less important is the upgradation of their social status so that they can be absorbed into the mainstream of social life and untouchability can be abolished. Towards that end, Sulabh has persuaded a large number of eminent persons, judges, politicians, ministers, journalists and eminent lawyers to "socially adopt" one scavenger family each and help them get jobs and other benefits permissible under the law. The adopter visits the adoptee (and vice-versa) openly so that they can get the social respectability. This programme is getting a very encouraging response.



A Sulabh community toilet-cum-bath complex at Surat, Gujarat

In October 1988, Dr. Pathak visited the Nathdwara temple in Udaipur (Rajasthan) alongwith 100 sons and daughters of scavengers and some Vedic Brahmins. Earlier, Harijans were not allowed to enter that temple. Dr. Pathak organised Puja and community meals with Harijans, both at Patna and in Delhi. Participation of the so-called high-caste people in such functions was an indication that Dr. Pathak succeeded in bringing about a measure of change in society, dominated by orthodox Hindus.

### PUBLIC TOILETS AND BATH

The year 1974 may be recalled as a landmark in the history of sanitation when the system of operating and maintaining community toilets with bathing washing and urinal facilities with attendant's service round the clock was initiated on the pay-and-use system with people's participation without any burden on public exchequer or local authorities in Patna.

Sulabh complexes have been welcomed both by the people and the authorities due to their cleanliness and good management. These have electricity and 24 hours water supply Soap powder is supplied free to users for washing hands. The complexes have separate enclosures for men and women. The users are charged nominal charges for using toilets and/or baths, but use of urinal facility is free. Children, disabled persons and those who cannot afford to pay are allowed to use the facility free of charge.

Availability of bathing facility is a boon to the poor. End to open defecation had resulted in improvement of environment, community health and quality of life, thus raising the productivity of the people. The facilities of special toilets, combined with bath having shower facility, cloak-rooms, telephone and primary healthcare have

## AREAS OF WORK

also been provided in some of the Sulabh complexes. For the Royal Government of Bhutan Sulabh International Social Service Organisation has constructed and is operating and maintaining one complex on pay and use basis at Thimphu, Bhutan.

### BIOGAS FROM HUMAN EXCRETA

Sulabh International Social Service Organisation is the first to generate biogas from human excreta on a large-scale at public toilets. The Gandhi Maidan at Patna has been lighted by converting biogas generated at Sulabh toilets into electricity by a dual fuel engine. Sulabh is assisting in achieving the objective of the Ministry of Non-conventional Energy Sources (MNES), The Govt. of India by putting up human excreta based biogas plants all over the country. So far 62 biogas plants have been installed and the biogas is being utilised for lighting the complexes and cooking purposes. The organisation also proposes to utilise biogas to supply warm water for bathing and warming bodies and hands during winters at Sulabh Shauchalaya Complexes.

### SULABH CENTRE FOR ACTION SOCIOLOGY

The Centre has been established to study social problems and find their solutions. The Centre also imparts training in various vocations to scavengers and their dependents. It also runs the English-medium school at Delhi for education of children of scavengers. To develop personality of scavengers' children is yet another aspect of the problem. Boys and girls of Sulabh Institutes are given training in dance and music. A programme was held at India International Centre on January 29, 1994 when girls of scavenger families staged a cultural programme, presided over by

Delhi Chief Minister, Mr. Madan Lal Khurana. It was a spectacular music and dance festival appreciated by all.

### ENGLISH-MEDIUM PUBLIC SCHOOL

Sulabh International Social Service Organisation has opened an English-medium public school for children of scavengers who are given free modern education in a variety of subjects, with thrust on vocational training, including computer and office management. The Sulabh Founder says that education is a great redeemer; it is only through education that the final solution can be found to any social problem, especially when it comes to abolishing attitudinal prejudices. The scavengers' children are taught through English-medium so that they can compete as equals in open job market. Hindi is taught as national



*Schoolchildren, mostly from scavenger families, studying at Sulabh English-medium Public School*

language along with Sanskrit (Sanskrit because it has been a source of Brahmin dominance in society). Sulabh plans to set up such schools in all state. In non-Hindi speaking state regional language will also be taught besides English, Hindi and Sanskrit.

### TECHNICAL RESEARCH & DEVELOPMENT

The Institute of Technical Research and

The accent is also on strengthening the cottage industry base of Teekli and promote the growth of village industries by utilising local renewable resources as well as the locally available skill for Sustainable Rural Development, in the true sense of the term.

Development is engaged in research and development in the fields of low cost-sanitation and biogas technology for overall environmental improvement. It studied the performance of different types of biogas plants in varied situations in Bihar at the request of Ministry of Non Conventional Energy Sources, Govt. of India. Presently, it is working for optimum utilisation and techno economic evaluation of human excreta and other mixed wastes based biogas plants to ensure effective waste disposal and harnessing of bio energy. Study on Indo-German collaborative project in low maintenance waste water treatment system is being carried out in Delhi. Study and research was carried out for optimising the low-cost sanitation technology and on pollution of ground water and soil likely to occur from on-site sanitation near Calcutta with radio isotope tracers in high sub-soil water level areas.

The expansion of the Sulabh technology has also been phenomenal during the past decade. Sulabh work has been recognised as a *Global Best Practice* at the Habitat-II conference at Istanbul, In June, 1996. Sulabh has been *Special Consultative Status with the Economic and Social Council of the United Nations*.

### OVER TO VILLAGES

Dr. Pathak has evolved an appropriate strategy of rural development by creating horizontal as well as vertical linkages between the local people and the development agencies via a network of local youth who will be trained as change-agents and act as catalysts in promoting rural development programme by motivating the rural folk and acting as facilitators between the government agencies as well as voluntary organisations engaged in this campaign of creating model villages.

SIIRD has taken up a village called Teekli, situated in Gurgaon district of Haryana, with the aim to transform it into a model village. After a series of surveys and meetings with the local people of Teekli, 'health' seemed to be their top priority as per the need-identification. Hence, SIIRD has launched a health survey, wherein the family health record



**SIIRD'S BETTER SCHOOL - BETTER LIVING MODEL : Teachers preparing visual aids for students**

of all the 1006 households is completed; 3920 persons (85%) have gone through complete medical check-up; a hundred percent check-up of pregnant women (pre-natal check-up) is done; 70% have procured family-planning services; around 2000 people have been immunized through vaccination (including 989 under-fives; and a blood-bank of 150 voluntary blood donors has been created so far. Around 300 Sulabh toilets have been set up in this village of 600 houses.

Another area in which SIIRD has contributed significantly is the promotion of environmental sanitation and community health through community action. This has been achieved through the implementation of a new school training model. This model was put in practice in Andhra Pradesh successfully. It has been very received by ODA. Accordingly it has been decided, in principle, that the model should be replicated under the programmes of ODA programme in West Bengal and Orissa. Under the Andhra project, SIIRD conducted a series of orientation and intensive training courses at all the six Municipal Corporations of Andhra Pradesh, namely Hyderabad, Vishakhapatnam, Vijaywada, Warangal, Guntur and Kurnool. The total number of those trained during the first phase was 1000 teachers, 300

## AREAS OF WORK

students, 200 sanitation workers and 60 public health engineers. For each course and each category of the trainees, the training modules were specially designed keeping in view the perception level and the interest background of the target group.

The training modules developed for each course were primarily based on the principles of participatory learning. As such, the emphasis was more on discussions and experience sharing exercise rather than on the common practice of class room teaching. One unique feature of this programme was a three day sanitation and community health exhibition organised at Guntur where the trained teacher's and students set up different stalls exhibit their visual aids which they prepared during the training programme. The Ministry of Environment and Forest, has granted



ODA PROJECT ON SANITATION TRAINING:  
*An exercise in participatory learning*

a pilot project on the same terms to develop schools as the focal point of awareness and motivation for involving masses in National River Action Plan.

National Fertilizers Ltd. - a public sector undertaking of Govt. of India has sponsored a pilot project on sustainable rural development in tribal area (Bastar district) of Madhya Pradesh of which SIIRD is the implementing agency has been developed with the specific purpose of evolving a unique model of GO-NGO

partnership in initiating community action based approach of alleviating poverty through employment generation in the tribal villages. The emphasis is on total development of the villages through awareness creation, self help initiation and skill development of the people so that they develop their communities as models of self-sustained growth. The major areas of the activities under the project are; Sanitation and community health, Employment generation through vocational training to tribal men and women, Use of Non-conventional sources of energy, Agricultural development and Empowerment of women through functional literacy and creation of self-help groups of skilled workers. Another action project on integrated rural development in Uttar Pradesh is to start soon under the sponsorship of Indian Overseas Bank as a part of the celebrations of golden jubilee year of India's Independence.

With community participation, Sulabh seeks to provide one Sulabh toilet to each household; provide access to safe and clean drinking water to every villager; medical aid to each individual; family welfare of each (eligible) couple; complete health care of every pregnant mother; complete immunization of the whole village populace; and total medi-care, apart from other development activities, i.e. paving all the lanes and roads with bricks; training village youths in toilet construction, hand-pump installation and maintenance, smokeless chullahs, biogas, adult education, family welfare and public works, etc. The accent is also on strengthening the cottage industry base of Teekli and promote the growth of village industries by utilising local renewable resources as well as the locally available skill for Sustainable Rural Development, in the true sense of the term.

The Sulabh Founder, Dr. Bindeshwar Pathak, has been honoured with many national and international awards, including Padma Bhushan and St. Francis Prize for the Environment, Italy.

### SULABH INTEGRATED HEALTHCARE SYSTEM

Health is closely related to sanitation. As such, recently a new dimension has been added to Sulabh Movement by developing "Sulabh Integrated Healthcare Model" It aims at bringing all component of activities related directly or indirectly to health care under one umbrella. It will act as complement or supplement to existing healthcare.

A massive programme for providing latrines in rural areas is being planned for implementation in consultation with the various state governments. The approach is to develop human resource and provide alternative designs of Sulabh Shauchalaya of different costs. The beneficiary is given the option to select a design which suits him most.

### HUMAN RESOURCE DEVELOPMENT

A programme has been taken up to create infrastructure at grass-root level (every panchayat) for rural development by training two youths in each panchayat in different vocations e.g. water supply, low cost sanitation, health immunisation, biogas, solar energy, social forestry, adult education, agriculture, street paving, drain construction and smokeless chulas. A massive programme for providing latrines in rural areas is being planned for implementation in consultation with the various state governments. The approach is to develop human resource and provide alternative designs of Sulabh Shauchalaya of different costs. The beneficiary is given the option to select a design which suits him most.

### EMPLOYMENT GENERATION

More than 35,000 Associate Members render their social services to Sulabh International. The total mandays created by Sulabh add up to many million on the construction of nearly 7.8 lakh Sulabh Shauchalayas and about 3,154 community toilet complexes. Those who are employed in allied works are many more.

The Institute was involved in the

prestigious project for prevention of pollution of river Ganga. Project reports for construction of Sulabh Complexes, conversion of bucket privies and construction of sanitary toilets in houses where none existed were prepared for a number of towns in Bihar and U.P. Sulabh International, in collaboration with the Dutch consultancy firms (M/s. Haskoning and Euroconsult), prepared project reports for Kanpur and Mirzapur towns under the Ganga Action Plan. Sulabh is involved in cleaning river Yamuna in Delhi by building a series of facilities along it.



*Preparing them for jobs*

### WORK APPRAISAL

Sulabh's work and achievement have been praised by national and international agencies, including UNDP (World Bank), UNICEF and WHO. Sulabh is tied up with many agencies in research and project work, including WHO, UNDP, ODA (Overseas Development Agency of the British Government, BORDA, SIDA (Danish International Development Agency), DANIDA (Danish International Development Agency), KFW (Kreditanstalt Fur Wiederaufbau, German Development Corporation) EEC (European Economic Community), the Netherlands Government also fund low-cost sanitation projects in many States in India. Sulabh is working in the neighbouring countries like Nepal, Bhutan, China, Pakistan and Bangladesh. It has also taken up many programmes

## AREAS OF WORK

in collaboration with the UN Centre for Human Settlement, Nairobi, the International Water and Sanitation Centre, Loughborough University of Technology, (UK), through the Water Engineering and Development Centre (WEDC). Sulabh International is closely working in collaboration with international agencies like WHO, UNICEF, UNDP and national agencies like NBO, CBRI, HUDCO, Ministries of Welfare, Urban Development and Rural Development, Govt. of India, All-India Institute of Hygiene and Public Health, Calcutta etc. The expansion of the Sulabh technology has also been phenomenal during the past decade. Sulabh work has been recognised as a *Global Best Practice* at the Habitat-II conference at Istanbul, in June, 1996. Sulabh has been *Special Consultative Status with the Economic and Social Council of the United Nations*. The Sulabh Founder, Dr. Bindeshwar Pathak, has been honoured with many national and international awards, including Padma Bhushan and St. Francis Prize for the Environment, Italy.

### STUDIES AND PROJECTS

Sulabh International has worked as a Consultant on a number of World Bank assisted projects either independently or in collaboration with Engineering Services (India) Pvt. Ltd. (CES). Some projects pertain to the collection of data and information on the status of rural water supply and sanitation development in seven states of India; laying down criteria and guidelines for selecting villages and districts to be included in the Integrated Rural Water Supply and Environmental Sanitation Project in Uttar Pradesh; identification of low-cost sanitation alternatives for Madras city and low cost sanitation for the Trivandrum (Kerala) Sewerage and Sanitation Improvement Project.

Sulabh is at present engaged in



*Fish farming in duckweed-treated waste water opens new possibilities*

consultancy in collaboration with CES on (i) Low-Cost Sanitation under Environmental Sanitation Programme in the City of Madras and the Adjacent Urban Areas; (ii) Low-Cost Sanitation Kozhikode Sanitation Planning Area and (iii) Community Awareness, Environment and Health Education Studies in Madras.

### PEOPLE'S MOVEMENT

Sulabh plays an important part in identifying ways and means of solving common social problems through people's participation on self-sustaining basis. Sulabh has proved that people themselves, and not the Government, can solve the problems on the self-sustaining basis and the NGOs should play the role of a catalyst in making it happen. Women's problem has largely been lack of education and skewed social structure which is set against them in gender bias, especially in developing countries. Women hold key to the success of sanitation programme; they can bring about lasting changes in the family and society. Sulabh's strategy is to ensure full participation of women in the sanitation programme by discouraging the prejudices flowing from casteism, religious radicalism and untouchability which have also been the sources of backwardness and poverty. Sulabh seeks to combat these by organising the poor in cooperation

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with others for creating an equitable and just social order.

## CAPACITY BUILDING

Community participation has been central to the Sulabh Movement which has laid special emphasis on health education and creating awareness about sanitation and environment. It has set up primary healthcare centres at community toilets.

As a result of this, considerable awareness has been created about the importance of personal hygiene and sanitation. It has helped in bringing about a change in social



*Women's empowerment through training*

values and hygiene habits of the urban poor and helped them adopt cleanliness and sanitation as a part of their daily routine. In fact, Sulabh works to turn development process into a people's movement with the people themselves becoming agents of change. Its innovative approach provides sustainable environmental sanitation strategy to change the habits and attitudes of the

people. This approach has helped in building the capacity of the community and usher in a new self-sustaining sanitation order in society. Literacy, specially of women, is the major ideological foundation of the Sulabh Movement which is a knowledge and technology-based organisation which seeks to change social norms and preferences education, campaign; persuasion and pressure.

Sulabh's success should be measured by its knowledge and radical ideas. Knowledge is the perceived value of a society while idea is the response to a problem. When we mix ideas with knowledge, we get capabilities to promote inter-group social relationship across divergent disciplines and perspectives. Norms are "unwritten, unstated, mutual understandings as to what is appropriate behaviour under given sets of conditions". In a society or country, customs are norms. How do norms differ from rules and laws? Authorities enforce laws and social pressure enforces norms. Violation of a law may not result in social disapproval but violation of norms does. Norms are the community's view of an action or behaviour. Prohibited action can be *mala in se* or *mala prohibita*. *Mala in se* means inherently evil. *Mala prohibita* means they are illegal only because the rules say so.

This is the ideological perspective of Sulabh and for that matter this movement is different from any social movement launched in India so far. ●

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## A tale of two sanitation movements

- Chadwick and Sulabh -

India has made considerable progress in the fields of science & technology (including space science), education, healthcare, medicine, food production etc. Many Govt. and non-govt. agencies and organisations have been working, many of them away from limelight, to make this progress happen. The leading among them is the *Sulabh International Social Service Organisation* which is a major institutional initiative to promote environmental cleanliness, human rights, primary education, vocational training, rural development, health and hygiene, non-conventional sources of energy. And, develop users friendly sanitation technologies to promote these causes.

Our image in the world took a beating when plague broke out in Surat in 1994. Poverty is not the sole reason for lack of sanitation and public hygiene. In India, private cleanliness co-exists with public dirt. While people keep the insides of their flats clean, the public areas such as corridors, staircase and surroundings are shockingly dirty. Open nullahs and gutters, uncleaned garbage, with people defecating along the roadside, polluted water sources, and open food-stalls with flies - are common sight in most cities. Overcrowding in ill-ventilated tenements infested with insects and rodents is another common feature in cities. No wonder then, our population is highly vulnerable to several sanitation-related diseases, ranging from the cold to pneumonia, tuberculosis, leprosy, typhoid, cholera, jaundice, malaria, *kala azar* and venereal diseases.

A scenario, quite similar to the one described above existed in the West in the 18th century in wake of the industrial revolution when garbage used to be flung out of windows onto the streets! Contaminated drinking water was collected in dirty vessels from common taps. At workplaces, men, women and

children worked long hours in unventilated factories. People surrounded by filth, often fell sick. Writers of those times have described how the medieval European habit of not taking bath and not washing below the belt was responsible for a large number of deaths. The stink on the roads was literally unbearable. In America in the last century, it was impossible to walk through the streets of mid-Western cities without having encounter with pigs and stray cattle. People used to fling excreta out of their windows which farmers would gather at night. Hence, the name, night-soil.

A strong public sanitation movement started in England in the mid-nineteenth century with the submission of the *Sanitation Report* by Mr. Edwin Chadwick, Secretary to the Poor Law Commissioners. Mr. Chadwick also discovered close correlation between unhygienic environment and the spread of infectious diseases. The Sanitation Report prepared by him in 1842 ushered, in the *Great Sanitation Revolution* in the Western world. The report also led to cleaning up of many places, including reservoirs where infectious agents which cause disease (germs and other micro-organisms) as well as insect and animal vectors (mosquitoes, rats, flies etc.), were thriving and breeding.

With the subsequent introduction of the sewerage system, provision of clean drinking water and safe disposal of garbage, the incidence of infectious diseases decreased dramatically. There is evidence to suggest that Indians also knew the correlation between sanitation and diseases and, hence, set the stringent norms of personal hygiene. It was around 1860 that it became clear that diseases were caused when certain harmful organisms (*pathogens*) entered the body. These organisms were spread by air, food, water, insects, animals and even by people. As they were invisible to the naked eye,

**EDWIN CHADWICK was a social reformer who devoted his life to sanitary reform in Britain. Mr. Chadwick was largely responsible for devising the system under which the country was divided into groups of parishes administered by elected boards of guardians, each board with its own medical officer. Later, as commissioner of the Board of Health (1848-54), he conducted a campaign that culminated in passage of the Public Health Act, 1848. Among his writings is the historic report; *An Enquiry into the Sanitary Condition of the Labouring Population of Great Britain (1842)*.**

they were labelled micro-organisms or microbes.

## CHADWICK REVOLUTION

Between the Chadwick revolution of 1840, and the Sulabh Movement, started in 1970, there is a gap of 130 years during which significant developments took place in the fields of science and sanitation technology. The problem also grew during this period, specially in the developing countries, where demographic expansion and mass migration to cities posed problems different from any Mr. Chadwick could envisage in a London of only two million people (the present population of London is about 10 million).

However, the Sulabh Movement can be compared with the *Great Sanitation Movement* launched in the West in the 1860s to raise the standard of public hygiene which had deteriorated considerably in the early nineteenth century, specially in England where the *Industrial Revolution* was at its peak and the people were leaving villages (read Oliver Goldsmith's *Deserted Village*, 1770) and crowding the city centres for jobs, education and good life. Charles Dickens has vividly described the situation in many of his books. Western cities, specially in London which led the Industrial Revolution, had become too crowded. The Great Plague of 1664 and Great Fire of 1665 had almost resulted in a new London which continued to be a livable place until the Industrial Revolution again changed the character of the city. It may be recalled that Karl Marx (1818-83) also worked in the dirty and oppressive London during that time when exploitation and filth marked the lives of industrial workers. And, he produced a book (*Das Capital*, 1867) after which the world was never the same again. By 1840, the scene started changing when the public-spirited men, including writers, lawyers, and other professionals, examined the living conditions of the poor. Mr. Chadwick was the acknowledged pioneer in the field.

The difference between the two great sanitation movements is distinct; while the Chadwick revolution was largely limited to awareness campaign with stress on sanitation, the Sulabh Movement talks of a set of human behaviour and change in social dispensation. It also talks of human rights to basic services, including sanitation, which is linked to the *right to survival*. A large number of children die of sanitation-related diseases and, hence, by denying an access to basic sanitation facilities these children are denied right to survival which is guaranteed under the *Universal Declaration of Human Rights* signed on December 10, 1948. Dr. Bindeshwar Pathak, Founder, Sulabh Movement, promotes partnership and alliance between civil society and the Government. Sanitation is also linked with right to know, right good health, and clean food. Dr. Pathak says sanitation is a different kind of right, no less important than any written in the Declaration. Sulabh provides a new, indigenous, culturally affordable and appropriate technology to solve sanitation-related problems. The Sulabh Movement has a comprehensive programme which includes low-cost technologies, education campaign and a whole range of people's initiatives to promote cleanliness. Dr. Pathak says sanitation is also a behavioural problem which should be addressed adequately to bring about a new sanitation order in India. The Chadwick report laid stress on the sewerage system because then rivers had enough water to carry untreated city sullage.

Yet another difference between the two movements is that of disparate historical conditions. For all we know, England had never had the problem of open defecation since Norman times. But in India, out of 950 million people, about 700 million defecate in the open - along railway tracks, in open places or in fields, causing filth, and diseases. It is now a proven fact that more than 50 kinds of diseases can be caused by open defecation

Dr. Pathak says sanitation is also a behavioural problem which should be addressed adequately to bring about a new sanitation order in India. The Chadwick report laid stress on the sewerage system because then rivers had enough water to carry untreated city sullage and waste.

which include diarrhoea, dysentery, jaundice, cholera, hepatitis etc. Also related to sanitation is a human rights question. The dry toilets are still cleaned manually by half-a-million scavengers are most depressed and exploited people in India. Ironically, they are hated even by those whose excreta they carry on the head. Unlike the Chadwick movement, the Sulabh Movement addresses both the problems - sanitation and manual scavenging.

### A RADICAL DEPARTURE

The Sulabh human waste disposal technology is a radical departure from the sewerage system which makes it eminently suitable for use in both individual and cluster houses. This novel sanitation system is a frontier technology which will keep our habitat centres clean and people healthy. As a matter of fact, Sulabh has given a new turn to the sanitation movement by evolving low-cost pourflush water-seal toilet with two pits for on-site disposal of human waste as a viable alternative to the sewerage system and bucket latrines and, thus, also abolish manual handling of human waste.

### IMPACT OF SULABH TECHNOLOGY

The Sulabh toilet system is a cost-effective and appropriate technology option. It needs much less water (only two litres) than is needed (10 litres) for flushing out the conventional water closets (WC). And, thus, it conserves water which is scarce in the developed countries also. Sewerage and septic tanks are very expensive which the developing countries cannot afford. The toilets built on Sulabh technology have a large variety of designs to suit different income levels, topographical terrains and local resources. It is economically and socio-culturally acceptable to the people. It is free from foul odour and can be built by indigenously available materials. It is easy

to build and easy to maintain. With high potential of upgradation, it can also be connected to sewers easily when introduced in the area. It does not need the service of scavengers and makes available high-quality manure and soil conditioner.

Sulabh has so far constructed and converted over 700,000 Sulabh household toilets and 3,000 public toilets, now being used by 10 million people every day, which is the total population of London which was the locus of the Chadwick revolution. Over 37,500 scavengers have been liberated from the cruel task of manual scavenging and 3,500 wards and family members of the liberated scavengers have been given vocational training. As many as 240 towns have been made scavenging-free. There has been a dramatic change in the physical environment of the towns where the Sulabh system is in operation. In the towns which have become scavenging-free, all dry (or bucket) household privies have been converted into the new twin-pit pourflush Sulabh toilets. The houses which had no latrine too have been provided with sanitary toilets and for those who could not afford or space was a constraint, well-managed community toilets were provided. Thus, the dumping of fresh pathogenic night-soil had stopped, leading to the improvement in the physical environment.

### A SELF-SUSTAINABLE PUBLIC TOILET SYSTEM

Sulabh's innovativeness is best demonstrated in the public toilet system operated on the *pay-and-use* basis which is self-sustaining. Along with public toilets, Sulabh provides bathing, washing and urinal facilities with separate compartments for men and women. Some other amenities like cloakroom, public telephone, primary healthcare, drinking water, school for children in slums etc. have also been provided at some places. The user-charge is nominal; the disabled, children and those who cannot pay are

There has been a dramatic change in the physical environment of the towns where the Sulabh system is in operation. In the towns which have become scavenging-free, all dry (or bucket) household privies have been converted into the new twin-pit pourflush Sulabh toilets.

allowed to use the facilities free. The authorities, therefore, do not have to provide funds for the maintenance of public toilets for a period up to 30 years which is an unique example of community participation. In addition, these toilet blocks have provided dignity and safety by providing facilities for defecation and bathing in privacy, specially for women who are the greatest beneficiaries.

## PARADIGM SHIFT

Dr. Pathak persuaded Mr. Maurice Strong of Earth Summit to make sanitation a part of *Agenda-21* and separate it from water supply to get adequate funds. At the Water Supply and Collaborative Council meetings at Oslo and Rabat, Dr. Pathak convinced the world community that sanitation is a co-efficient of economic growth.

The Chadwick revolution indicated a sharp change in the situation by creating awareness and a new approach to the sanitation problem. The Sulabh Movement is a paradigm shift which indicates a radical departure from the conventional sanitation practices. For instance, when Darwin says the man is a result of evolution, it was a paradigm shift from the earlier concept based on *Book of Genesis* that God wanted man, and man appeared from the blue. The Sulabh technology, methodology, human rights perspective to sanitation and the question of liberation of scavengers - these and others are entirely different from *one-issue Chadwick revolution* of cleaning up places, killing disease-causing microbes and laying sewerlines. Sulabh works for a change in human behaviour and attitude; technology is one component, (and very critical component at that) of the Sulabh Movement which has also a much larger spread, and much greater impact on the sanitation situation and on the life the people than any revolution had before. Sulabh is a concept, with strong technological underpinning, that seeks to usher in a new social order unlike the Chadwick movement which sought to clean up London city.

On Sulabh initiative, Central & State Govts. and civic bodies have changed laws, adopted the pay-and-use community toilets system as a accepted practice, funded Sulabh projects on biogas, training and rehabilitation and toilet conversion and liberation of

scavenger. A special clause has been included in the *20-Point Programme*, highlighting the importance of sanitation and abolition of scavenging. On Sulabh persuasion, the former Prime Minister of India, Mr. P.V. Narasimha Rao set the date (1997-end) when scavenging will be abolished. Working vigorously at the national and international levels, Dr. Pathak persuaded Mr. Maurice Strong of Earth Summit to make sanitation a part of *Agenda-21* and separate it from water supply to get adequate funds. At the Water Supply and Collaborative Council meetings at Oslo and Rabat, Dr. Pathak convinced the world community that sanitation is a co-efficient of economic growth. Sanitation which was a local affair, is now on global agenda.

The Chadwick sanitation revolution was a response to the problems in London, while the Sulabh Movement is a response to the problems in India and also of those developing countries with the similar problems of demographic expansion, migration to cities, illiteracy, poverty and the inability of the administration to lay sewerlines to dispose of city waste into rivers after sewage treatment. Today, even in Paris only 40 per cent of city waste is treated and the rest is discharged into river Seine, untreated. No wonder World Bank, (UNDP), WHO, UNESCO and other national and international agencies have recommended adoption of the Sulabh low-cost on-site human waste disposal technology and methodology to be adopted in all the developing countries. And, Sulabh technology and methodology has been declared as a *Global Best Practice* at Habitat-II conference in Istanbul in 1996. In recognition of its humanitarian work, Sulabh has been given the *Special Consultative Status with the Economic and Social Council of the United Nations*.

Although the two movements took place more than a century apart, they have one thing in common - both worked to live out the dream a clean and happy world where people can live well. And, grow. ●

Give me the place and I will lift  
the world - Archimedes of Syracuse  
who invented levers and pulleys

## Sulabh low-cost indigenous sanitation technology

No doubt conventional sewerage is an ideal solution. It satisfies most of the public health criteria and also provides convenience. But it requires enormous supply of water for its proper functioning. The capital cost of its construction is very high, much beyond the economic capability in the present stage of development. Besides this, operation and maintenance cost is also beyond the capacity of the poor countries. Although the sewerage was introduced in India in 1870 and the entire five year plan allocations for sanitation have been spent on sewerage, yet there are hardly 232 towns and cities (out of 4,689) with sewerlines. None of them, however, covers the entire municipal city area, leave alone the adjoining suburbs included in the municipal limits. In most towns, even on the streets where sewers have been laid, houses have not been connected in spite of municipal laws making such connections compulsory. Thus insanitation continues.

Septic tanks, an alternative on-site sanitation system, cost almost two and a half to three times more than that of low-cost pourflush system. It has many drawbacks in comparison to pourflush toilets. Safe disposal of its effluents poses a problem. Septic tank has to be cleaned after every one or two years. The wet sludge taken out is a health hazard and at times gets mixed up with fresh night-soil and has obnoxious smell. The sludge has, therefore, to be discharged at a safe place. Emptying the septic tank is not easy and is a burden on the municipality. For cleaning the septic tanks and disposal of sludge, scavengers are needed.

In such a situation, de-sludging of septic tanks will pose a serious problem.

The traditional quantity of 14 litres of water is needed for flushing. Though the design of septic tank was developed nearly 400 years ago and introduced in India about 150 years ago, yet less than 20% of the houses even in urban areas have septic tank latrines. Both sewerage and septic tanks are, therefore not at all suitable in the present economic condition of the country to solve the problem of insanitation.

The concept that these are the only suitable technologies for safe disposal of human waste has led to the continuance of a large number of bucket or dry privies and practice of open air defecation all over the country. Considering the vastness of the country with its divergent culture, social customs and attitudes together with variations in climatic, geological and hydrogeological conditions and low income of people, design of latrine which could suit the needs of rural and urban population raises several complex problems.

Environment influences the thoughts and habits of human beings. Their social and cultural development respond with better community health and personal hygiene amidst environment betterment. Sulabh International's goal is to remove such environmental deterrents by replacing the obnoxious smelling bucket privies in individual homes with low-cost sanitation and provide community toilets with bathing



Science can work wonders

If there were a technology for crop plantation in Southern America, the slavery system would never have existed at all. And, the greatest carnage in Civil War (1862) would have been averted. Again, if there were a technology, the hateful scavenging system would never have been there. But, there was none until Sulabh provided one.

facilities wherever needed to prevent indiscriminate open air defecation and improve health, hygiene and quality of life of the economically weaker section of the population.

While the provision of Sulabh Shauchalayas in individual houses has made the residents to live in a healthier environment, the toilet complexes with bathing facilities, in addition to the improvement of environment, have provided facilities for defecation and bathing in privacy. These measures have resulted in better health and environment, hence higher productivity.

It is a common sight in India to see the excreta flowing through drains due to open-air defecation and also due to the system of cleaning bucket privies by scavengers who wash and discharge the waste into the drains which flow in front of the houses. It is appalling to note that out of nearly 950 million people more than 700 million people of the country either use bucket privies or defecate in the open as they have no toilet facilities. Human excreta is, therefore, a significant factor for causing environmental degradation and it has been established as the cause of 80% sickness in this country. Degradation of environment and ecology affect the economic growth and health of the people. Besides other factors, one of the major causes of such a situation in India is the existence of 7.5 million bucket privies which are cleaned manually and centuries-old sub-human practice of open air defecation.

The bucket latrines are a potential



*Technology is power*

hazard to health and hygiene and environment. The latrine seat, squatting hole and collection chambers expose excreta to flies and encourage fly breeding in the locality. The excreta from the bucket are often spilled in the vicinity all along the road during its transport to the disposal site. The bucket is sometimes left in the open without cleaning, and exposing it to the flies. The chamber and the bucket are cleaned by pouring water from the squatting hole and raw night soil flows in the drains in front of the houses exposing the entire locality to health hazards.

Since the excreta is not properly segregated, collected and disposed of, it is liable to get access to water supply, contaminate food through flies and spread hookworm and other worms by polluting the soil. Consumption of polluted water and contaminated food and exposure of human beings to polluted soil transmit the pathogenic microorganisms from sick persons to healthy ones in the community. Safe disposal of human excreta can bring about maximum improvement in environment and health of people raising their productivity. This is the conclusion reached by researchers, scientists and experts all over the world. The relative importance of alternative preventive strategies concerning water supply, sanitation and health education was studied by Dr. Feachem of the London School of Hygiene and Tropical Medicine. Summing up his observation, a rough guide to the oral relative importance of the preventive measures considered : water quality 11, water availability 18, excreta disposal 25, excreta treatment 15, personal and domestic cleanliness 18, drainage and sullage disposal 6, food hygiene 17.

The health impact of supplying clean water alone is limited. However, carefully designed programmes which combine water quality with improvements in water availability, sanitation and hygiene education have the potential to be successful. It is no wonder that diarrhoeal

diseases were responsible for highest mortality amongst all causes as reported by the Ministry of Health, Government of India during 1985-86. The bucket or dry latrines breed flies and the washings from these discharge the human excreta into open drains, causing health hazard and environmental pollution.

The UNDP/World Bank carried out a house-to-house survey in 1979-82 of one and a half million households occupied by 10 million people spread over 21 States of our country. The survey concluded that in urban areas, nearly 10% of the households are connected to sewers, 20% (6 million) have bucket privies while 45% do not have toilet facilities in their homes. The last category of households either defecate in the open or use public toilets, if available and usable. The Planning Commission, Government of India has estimated that there are 7.5 million bucket privies in the country in urban and rural areas.

Pourflush latrine is most appropriate for replacing bucket privies : The three alternatives by which bucket latrines could be replaced are:-

- off-site sanitation providing complete sewerage system with treatment process;
- on-site sanitation
- having septic tanks with soakage pits, or
- pourflush toilets with leach-pits.

Out of the above alternatives, the first i.e. sewerage costs about 12 times as much as the pourflush toilet with leaching pits. The second alternative i.e. septic tank with soakage pits, besides the de-sludging of the former being fraught with health risk, costs about four times as much as the pourflush toilet with leaching pits. The last alternatives also conserve water as only 2 to 2.5 litres of water is required for flushing.

## IMPROVEMENT OF ENVIRONMENT

An important step for the

improvement of environment and the health of the nation would be by converting nearly 7.8 million bucket latrines into water flushed toilets and to provide individual or community latrines for those households which do not have any latrine in their houses. Since nineteen forties sanitary engineers, experts and scientists in India grappled for an affordable, acceptable and easily available alternative solution for replacement of bucket/dry privies and to prevent open air defecation, but could not succeed due to various constraints. Sewerage and septic tanks were considered to be the only solution to the problem. Sewerage is a high cost technology which the governments, local authorities or the community in this country cannot afford. It was Dr. Bindeshwar Pathak, who showed that a low-cost pourflush waterseal latrine with on-site disposal of human excreta in two pits to be used alternately is the most appropriate system suited to socio-cultural and economic conditions of India. These could replace the bucket/dry privies and to prevent open air defecation, leading to healthy environment.

Sulabh was actively involved in the India's prestigious project "prevention of Pollution of River Ganga" of the Ministry of Environment, Government of India. Originally the project did not include the component of pourflush latrines. The proposal was to lay sewers and tap the drains at the outfall including full treatment of sewage/sullage and making use of biogas and treated effluent for agricultural purposes. Subsequently, it was suggested by Dr. Pathak that the flow of human excreta in open drains before being trapped at the outfall or the connecting drain will continue to be a health hazard and provide unhealthy environment along the banks of river Ganga. It has been experienced that in most of the towns, cleaning operation of bucket privies is normally carried out by pouring buckets of water in the bucket chamber whereby the excreta flows along

The UNDP/World Bank carried out a house-to-house survey in 1979-82 of one and a half million households occupied by 10 million people spread over 21 States of our country. The survey concluded that in urban areas, nearly 10% of the households are connected to sewers, 20% (6 million) have bucket privies while 45% do not have toilet facilities in their homes.

roadside drains before it discharges into outfall drains or sewers. It is in this context that the Central Ganga Authority in the revised action plan made provision for pourflush latrines, wherever feasible, as it is the most inexpensive solution to the problem. Thus a better and healthier environment could be created by preventing the presence of excreta in the sullage flowing in open drains along the river banks before being trapped for disposal. This has helped in substantial environmental improvement in the stretch of river Ganga starting right from Rishikesh-Hardwar, extending to Kanpur, Mirzapur, Varanasi, Patna and covering West Bengal.

Dr. Pathak provided training facilities to youth in these fields. He is thus assisting in improving the village environment by preventing not only soil and water pollution but air pollution as well. Besides, this will also enable the trainee to remain in his or her village and not to migrate elsewhere. Dr. Pathak is assisting in improving the village environment by providing such basic amenities.

Improvement of environment through training in forestry pavements, proper drainage, hand pumps maintenance, smokeless chulhas, biogas plants and low cost sanitation :

Afforestation in and around the village and also provision of proper drainage system and pavements improve the village environment. Sizeable funds are allocated for such programmes by the state governments. The villages also need trained staff to maintain the village hand pumps and provide assistance in constructing toilets, smokeless chulhas etc. To enable a resident of the village to earn a decent livelihood by working for these programmes, Dr. Pathak provided training facilities to youth in these fields. He is thus assisting in improving the village environment by preventing not only soil and water pollution but air pollution as well. Besides, this will also enable the trainee to remain in his or her village and not to migrate elsewhere. Dr. Pathak is assisting in improving the village environment by providing such basic amenities.

He got the novel idea of providing alternative source of energy by installing biogas plants in a number of toilet complexes using human excreta. Ultimately, this would help in providing better environment by lesser dependence on fuel, wood and coal.

Dr. Bindeshwar Pathak realised that relieving the scavengers from their demeaning task of manual handling of human excreta was not the end of the problem. He not only thought of the engineering and pollution problems relating to excreta disposal but also for improving the living conditions of those who were engaged in handling the human waste to make the environment clean and free from health hazards. He has thus by the introduction of household pourflush toilets as well as "Pay and Use" Community toilets, improved the social and physical environment of 37,500 liberated scavengers enabling them to live with dignity. There is need for rehabilitating them in some socially acceptable profession.

Most of the scavengers lose their sensitivity to the dignity and social values of life. Thus there is a need for a change in their social life and mental attitudes to improve the environment of the community. Under Dr. Pathak's guidance, Sulabh International has, therefore, established a model Institute for training the scavengers, their wards and other dependents in different vocations such as electrical, mechanical, TV mechanic, motor vehicle driving, pump attendants, typing, basket making and many other arts and crafts which would enable them to live in society with dignity. He is assisting the state governments in establishing such training institutes. Sulabh is the only organisation in India which undertakes the twin responsibilities i.e. conversion or construction of pourflush toilets and train the liberated scavengers and their wards for rehabilitating them in dignified professions.

Dr. Pathak has always believed that an unclean society cannot be productive. The relation between society and environment is symbiotic. And while caring for one, we are caring for the other. Therefore it is necessary to launch environment protection measures, rightway. Tomorrow may be too late. ●

## No groundwater pollution from Sulabh toilets

**A**dequate supply of safe water and sanitation are vital for sustainable development and to improve the quality of life no less than alleviating poverty. Studies carried out in India and abroad indicate that human excreta is the cause of many enteric diseases such as cholera, dysentery, typhoid, paratyphoid, infectious hepatitis, hookworm, diarrhoea etc. Over 50 infections can be transferred from a diseased person to a healthy one by various direct or indirect routes from human excreta and causes nearly 80% sickness. Therefore appropriate human waste management should be the primary objective of improved sanitation to build a healthy nation and provide a cleaner environment.

The severity of the problem could be judged from the fact that hardly 20% of the urban population has access to flush arrangements connected to sewerage system; 14% have water-based toilets connected to septic tanks, 33% have bucket latrines and the remaining 33% do not have access to any latrine facility. The coverage in rural areas is only 3%. Nearly 89% of the population in India (about 750 million people) either defecate in the open or use bucket/dry privies or use community

toilets. Number of bucket privies has been estimated at 7.6 million, of which 5.4 million are in urban areas. The daunting problem of sanitation accompany another serious social problem; the problem of manual scavenging which is done by 4,00,000 scavengers belonging to the lowest caste which suffers from inhuman and degrading discriminations because of their profession of physically cleaning and carrying human excreta.

In developed countries, the standard solution for safe disposal of human waste is the water-borne sewerage. Due to severe financial constraints and very high capital as well as operational and maintenance cost, sewerage is not the answer to solve the problem of human waste disposal in developing countries. Septic tanks too, besides high cost, have many drawbacks and operational problems. In addition, these systems require sufficient quantity of water which is a scarce commodity. With the present economic condition, sanitation facilities cannot be provided to all in the foreseeable future, if we continue with the sewerage system. Therefore, the most appropriate technological option has to be adopted which provides the socio-culturally and environmentally acceptable level of service at economic cost.

The most appropriate technological option has to be socio-culturally and environmentally acceptable to the people. Sulabh fits the bill also because it is affordable, pollution-free and user-friendly.

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**It is now a proven fact that Sulabh toilets, built true to specification, does not cause groundwater pollution at all. Rather, the national and International agencies have found, after research, that the two-plf pourflush Sulabh toilet system is more scientific and water-saving than any human waste disposal system invented so far.**

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### **POLLUTION-FREE SULABH TOILET**

Sulabh Shauchalaya, developed by Dr. Bindeshwar Pathak, Founder, Sulabh Sanitation Movement is the most appropriate technological option to serve as an alternative to bucket privies



*A long trek for scarce water*

Studies have also been done by Sulabh near Calcutta with radio isotope tracers in collaboration with All India Institute of Hygiene and Public Health, Calcutta and Bhabha Atomic Research Centre, Bombay. Various studies have conclusively proved that with due precautions, Sulabh Shauchalaya can be safely constructed in almost all geological and hydrogeological conditions.

## GENERAL INFERENCES

Soil (unconsolidated) provides a very effective natural treatment system, having the ability to remove faecal micro-organisms and to break down or attenuate many chemical compounds. The unsaturated zone above the permanent water table affords the most important line of defence against the pollution of underlying aquifers. The nature of materials and thickness of this zone are the key factors in determining pollution risk. The key factor in reducing micro-biological pollution of groundwater is the maximisation of effluent detention time. The risk of groundwater pollution will be minimal where more than 2 metres of fine unsaturated soils are present beneath the latrine pits, provided the hydraulic loading does not exceed 50 mm/day. In saturated zone, pollutants move with the groundwater causing a pollution plume to develop from the pollution source. Microbiological pollutants are not normally found beyond the distance travelled by groundwater in around 10 days.

## STUDIES AND INVESTIGATIONS

1. The studies conducted by Klinger in 1921 concluded that pit latrines, if properly constructed, are unlikely to cause bacterial intestinal

and to stop open air defecation. It is an indigenous technology and the toilet can easily be constructed by local labour and materials. It provides all the health benefits by safe disposal of human excreta on-site, which sewerage provides. It requires only 2 litres of water for flushing, thus conserves water. However, if desired it can be cistern flush also. It has a high potential of upgradation, can be easily connected to sewers when introduced in the area. It does not need the services of scavengers to clean the pits.

The studies conducted by Klinger in 1921 concluded that pit latrines, if properly constructed, are unlikely to cause bacterial intestinal infections. There is minimal pollution risk in sandy or clayey soil provided the groundwater level did not rise higher than 3-4 metres below ground i.e. 1.5 - 2.5 metres beneath the pit bottom.

When the programme of conversion of bucket privies into Sulabh Shauchalayas launched by Dr. Pathak, in early nineteen seventies moved apace, people raised doubts about the appropriateness of the technology due to pits likely to cause soil and groundwater pollution. When the issue was referred to the Director, National Environmental Engineering Research Institute, Nagpur, he informed that studies had demonstrated that the extent of pollution flow arising out of the pit privies is very limited and the system can be adopted in most soil conditions with certain precautions. The apprehension of groundwater pollution is a deterrent factor with many in adoption of Sulabh Shauchalaya for improving the environment and health of the community. The pollution problem has been studied in great detail both in India and abroad.

infections. There is minimal pollution risk in sandy or clayey soil provided the groundwater level did not rise higher than 3-4 metres below ground i.e. 1.5 - 2.5 metres beneath the pit bottom.

2. E.L. Caldwell and L.W. Parr conducted studies on pollution travel from a variety of pit latrines during nineteen thirties in United States of America. The conclusions of those studies are summarised below :

- Clogging process was an important defence mechanisms limiting the extent of bacterial penetration. After the on-set of clogging in the soil, the diffusion of organisms was inhibited. After some time bacterial pollution was limited practically to the latrine. However, chemical contamination of the groundwater still occurred, although this was somewhat diminished.
- Groundwater contamination was reduced by providing fine sand (0.1 - 0.25 mm) envelope around the pit. No faecal coliforms were detected in any of the observation wells 3 metres away.
- In a pit latrine penetrating the water table in a medium fine sand (effective size 0.5-1.0 mm) with groundwater velocity of 0.5 m/day, faecal coliform initially penetrated 3 metres in 3-4 months before the flow from the pit was restricted by clogging.

3. The investigations on risk of pollution of water supplies from pit latrines were carried out by All-India Institute of Hygiene and Public Health, Calcutta in Singur (West Bengal) by Dr. Dyers and Dr. Bhaskaran during 1943-45. These

studies showed that in medium soil made up of sand 0.2 mm effective size and with a groundwater velocity 0.7 - 0.8 m (2.5-3.0 ft)/day, bacterial pollution did not flow more than 3 m (10 feet) distance from the latrine. Organic pollution indicated by 5 day BOD flowed to a distance of 1.60 m (5 feet) in a manner similar to bacterial pollution. Chemical pollution flowed further than bacterial pollution and was traced upto 5 m (15 feet) distance before becoming too dilute to be distinguishable in the groundwater. It was also observed that pollution takes place only during the first few months after commissioning of the latrine. When the latrine has been used for some time, the interstices in the soil get clogged and regression of pollution takes place due to effective filtration and bacterial die off.

4. The Report (1949) of the Environmental Hygiene Committee (Govt. of India), while discussing hygiene of the rural environment, mentioned : "We wish here to state that the risk of pollution of groundwater by borehole and other types of latrines has been somewhat exaggerated under conditions of use in villages, in sandy soil, warry soil or clayey soil, the risk does not extend beyond 25 feet. A radius of 25 feet gives a factor of safety".
5. Subrahmanyam and Dr. Bhaskaran (1950) reviewed the studies carried out in India and U.S.A. and concluded that

- Bacterial travel appears to mainly depends on the velocity of groundwater flow.
- The penetration of bacteria into the saturated zone is the distance covered by the groundwater in 4-7 days, which is the probable survival time for

The penetration of bacteria into the saturated zone is the distance covered by the groundwater in 4-7 days, which is the probable survival time for coliform organisms in the anaerobic groundwater.

coliform organisms in the anaerobic groundwater environment.

- The spread of pollution is reduced when a gelatinous membrane is formed on soil particles, as it acts as a physical barrier to bacteria penetration. In this condition the soil becomes a real biological filter comparable to a slow sand filter in water leaching.
- The safe distance between a borehole latrine or leaching cesspit and a well may be taken to be the distance represented by about 8 days travel of the groundwater.
- In the study areas in India where the hydraulic gradient is less than 0.01 and the soil is sandy (effective size less than 0.25 mm), the groundwater velocity is unlikely to exceed 0.9 m/day, and a horizontal distance of 7.5 m will provide an ample margin of safety against bacterial pollution.

6. While reviewing the available information on the soil and ground-water pollution arising from the on-site human excreta disposal systems, WHO publication "Excreta Disposal for Rural Areas and Small Communities by E.G. Wagner and J.N. Lanoix - 1958" mentions that after excreta are deposited on the ground or in pits, the bacteria, unable to move much by themselves, may be transported horizontally and downward into ground by leaching liquids or urine, or by rain water. The travel distance of bacteria varies with several factors, the most important of which is the porosity of the soil. Their horizontal travel through soil is usually less than 90 cm (3ft.) and the downward travel less than

3 m (10 ft.) in pits open to heavy rains, and not more than 60 cm (2 ft.) normally in porous soils. Many factors such as slope and level of groundwater and soil permeability affect bacteria removal in groundwater. As a matter of safety, it was suggested to locate the privy or cesspool downhill, or at least on some level piece of land, and to avoid, if possible, placing it directly uphill from a well. Where uphill locations cannot be avoided, a distance of 15 m (50 ft.) will prevent bacterial pollution of the well. The publication has further mentioned that :

- In sandy soil a privy may be located as close as 7.50m (25 feet) from a properly constructed household well, if it is impossible to place it at a greater distance. In the case of a higher-yielding well not less than 15m (50 ft.) should separate the well from a latrine.
- In homogeneous soils the chance of ground-water pollution is virtually nil, if the pit bottom of the latrine pit is more than 1.50m (5 ft.) above the groundwater table. The same may be said if the bottom of a cesspool is more than 3 m (10 ft.) above the ground.
- While constructing pits in areas containing fissured rocks or limestone formations, construction must be carried out after careful investigations, since pollution might be carried directly through solution channels and without natural filtration to distant wells and other sources of drinking water supplies.

7. The Indian Council of Medical Research (ICMR) carried out a Review on the work done on Rural

In soils, as in the Singur (West Bengal) experimental area made up of sand 0.2 mm effective size and 3 ft./day velocity of groundwater flow, bacterial pollution did not travel beyond 10 ft. from the latrine.

Latrines in India during 1966 and observed that:

- The extent of pollution from the pit latrines in clayey soil is very limited.
- In soils, as in the Singur (West Bengal) experimental area made up of sand 0.2 mm effective size and 3 ft./day velocity of groundwater flow, bacterial pollution did not travel beyond 10 ft. from the latrine.
- Pollution flow from latrine pits takes place only during the first few months. When the latrine has been in use for sometime, the interfaces of the soil get filled up, resulting regression of pollution.

## INTERNATIONAL AND NATIONAL EFFORTS

1. The National Seminar on Conversion of Bucket Privies into Pour-Flush Waterseal Latrines organised by Government of India, WHO and UNICEF at Patna in May, 1978 concluded that the extent of pollution flow arising out of the pit privies is very limited. On-site sanitation systems could be adopted in most soil conditions provided certain precautions are taken in locating the pits.
2. International Reference Centre for Waste Disposal (IRCWD), WHO and UNDP/World Bank Project on Low Cost Sanitation brought out a Report (IRCWD Report No. 0/82) after reviewing the available literature on the risk of groundwater pollution by on-site sanitation. Besides reiterating the important conclusions, the report suggested following measures for restricting microbial groundwater pollution :
  - minimising latrine hydraulic

loading by increasing the soakway area and excluding additions of any household waste water,

- maximising the thickness of the unsaturated zone available for purification by constructing raised latrine,
  - including longer saturated flow time by deepening (with grouting) of water supply borehole solid lining tubes, wherever feasible.
3. The Technology Advisory Group (TAG-India) of the UNDP/World Bank Project on Low-Cost Water Supply and Sanitation carried out studies on likely pollution risk of groundwater sources from on-site sanitation systems in 1980-81. The TAG in the Master Plan and Feasibility Report on Low-Cost Sanitation provided guidelines for the implementation of on-site sanitation programme with minimum risk of pollution of groundwater and water supply distribution system. Based upon the studies carried out in India, USA and elsewhere, the TAG reiterated that in alluvial soil (with predominance of soil mixed with clay and fine sand) where the pits are located in the unsaturated zone, the risk of bacterial pollution is minimal provided the pit bottom is at least 2 m above the maximum ground level and the hydraulic loading in the pits does not exceed 50 mm/day; where the pit extends in the saturated zone, the pollution travel depends mainly on the velocity of groundwater. In alluvial soil, the distance of pollution travel is equivalent to about 10 days travel of groundwater. With the continued usage of the pit, clogging of soil around the pit takes place resulting in regression of pollution flume which ultimately stabilizes at about

In alluvial soil, the distance of pollution travel is equivalent to about 10 days travel of groundwater. With the continued usage of the pit, clogging of soil around the pit takes place resulting in regression of pollution flume which ultimately stabilizes at about 1m distance.

1 m distance. It was also reported that very little field work had so far been done regarding travel of viral pollution of groundwater. However, it was indicated that viral pollution is reduced, if adequate interposing soil layer exists and hydraulic loading is limited to 50 mm/day.

4. "Manual on the Design, Construction and Maintenance of Pour-Flush Water Seal Latrines in India" (1984) - (TAG Technical Note No. 10) brought out by UNDP/World Bank Project has given guidelines and prescribed safe distances for locating leach pits in various geological and hydrogeological situations to minimise possible risk of pollution of groundwater and distribution mains for siting leach pits.

5. The Committee of Experts constituted by Government of India, UNICEF/UNDP Project on Rural Sanitation with the World Bank as executing agency, after reviewing the research and studies carried out by various institutions and organisations like AIH&PH, IRCWD, UNDP - World Bank in India and abroad in the field of on-site sanitation, formulated design criteria for pour-flush water-seal latrines for the rural communities in India. The design criteria which include details of pollution aspects also arising out from on-site sanitation, suggested guidelines for locating leach pits and prescribed precautions to check pollution of drinking water sources and water supply mains.

6. **The Indian Standard Code of Practice : Bureau of Indian Standards**

Indian Code of Practice for Sanitation with Leaching Pits for Rural Communities (IS : 12314-1987) has prescribed safe distances and precautions to be taken in

various geological and hydrogeological situations to guard against risk of pollution of drinking water sources and water supply mains from on-site sanitation. These are :

(A) Safe distance from drinking water sources

i) In unsaturated soil conditions, that is, where the distance between the bottom of the pit and the maximum ground-water level throughout the year is 2m and more :

a) The pits can be located at a minimum distance of 3m from the drinking water sources such as tubewells and dugwells, if the effective size (ES) of the soil is 0.2mm or less; and

b) For coarser soils (with ES more than 0.2 mm), the same distance can be maintained if the pit is sealed off by an impervious material, such as puddle clay or plastic sheet, and a 500 mm thick envelope of fine sand of 0.2 mm effective size is provided all round the pit.

ii) In wet pit or saturated soil conditions, that is, where the distance between the bottom of the pit and the maximum ground-water level during any part of the year is less than 2 m :

a) The pits can be located at a minimum distance of 10 m from the drinking water sources, such as tubewells and dugwells if the ES of the soil is 0.2 mm or less; and

b) For coarser soils (with ES more than 0.2mm), minimum distance of 10 m should be maintained if the pit is sealed off by an impervious material, such as puddle clay or plastic sheet, and a 500 mm thick envelope of fine sand of 0.2 mm effective size is provided all around the pit.

iii) In both the above cases (i) (b) and (ii) (b) :

a) The sand envelope should be taken at least upto 2m above the possible highest maximum water level and edges chamfered to see that no water stagnates on top of the sand filling.

b) Where the bottom of the pit is submerged below the maximum ground-water level :

i) The top of the pits should be raised above the ground level, if necessary, so that the inlet pipe into the pit is at least 0.75m above the maximum groundwater level;

ii) The sand envelope is taken upto 0.3 m above the top of the inlet and confined suitably to exclude any surface drainage including rain water directly entering the sand envelope;

iii) In mound type latrines, one m high earth filling should be provided for at least 0.25 m beyond the sand envelope with the edges chamfered to lead away the rain or surface water; and

iv) The honey-comb brick work for the pit lining should be substituted by brick work in cement mortar 1:6 with open vertical joints, that is, without mortar.

(B) Safe distance from water supply mains.

Lateral distance between the leaching pit and the water main should be at least 3 m provided the water table does not rise during any part of the year above the pit bottom and the inlet of pipe or drain to the leach pit is below the level of water main. If the water table rises above the bottom of the pit, the safe lateral distance should be kept as 8m. If this cannot be achieved, the pipes

should be completely encased to a length of at least 3m on either side of the pit.

When the pits are located either under the foot-path or under the road, or the water supply main is within a distance of 3m from the pits, the invert of the inlet should be kept at least 1m below the existing sewer mains. This would ensure that the liquid level in the pits does not reach the level of the water main.

The water pipe should not cut across the pit but where this is unavoidable, the water pipe should be completely encased for a length of 3 m on either side of pit including the portion across the pit to prevent infiltration or exfiltration. No joint of water main should be permitted in the pit.

## TECHNICAL GUIDELINES

The Ministry of Urban Development, Government of India and Regional Water and Sanitation Group - South Asia - UNDP/World Bank Water and Sanitation program brought out 'Technical Guidelines on Twin-Pit Four-Flush Latrines' in 1992. These guidelines have been prepared in a very systematic and objective manner for ready reference of field staff on design, construction and maintenance of pour flush latrines under the massive programme of liberation of scavengers launched by Government of India. The guidelines prescribed there in for pollution safeguards are the same as given in the Manual (TAG Technical Note No. 10), as suggested by the Committee of Experts constituted to frame design criteria for rural sanitation and the Indian Standard Code of Practice. These indicate that the Sulabh technology prevents groundwater pollution. ●

The guidelines prescribed there in for pollution safeguards are the same as given in the Manual (TAG Technical Note No. 10), as suggested by the Committee of Experts constituted to frame design criteria for rural sanitation and the Indian Standard Code of Practice.

## Areas of research & development

The Sulabh International Institute of Technical Research and Training (SIITRAT), founded in 1984 by Dr. Bindeshwar Pathak provides technical back-up to Sulabh International Social Service Organisation in the fields of low-cost on-site sanitation system, biogas generation from human waste (public toilets) and vegetable wastes, etc. In 1989, the Institute was shifted from Patna to New Delhi. It got its own registration under the Societies Registration Act in the year 1993 and permanent permission of Foreign Contribution Regulation Act in 1997 by the Ministry of Home Affairs, Govt. of India. The Institute is engaged in the development of new and sustainable technologies, their implementation, demonstration and dissemination, training and consultancy in the fields of low-cost sanitation, low maintenance waste water treatment, solid waste management, environment and pollution, etc. The followings are some of the activities/achievements of the Institute:

### DUCKWEED BASED WASTE WATER TREATMENT SYSTEM

The major problem with waste water on-site treatment method is that no viable technology is available. The sewerage technology is unaffordable due to high implementation and maintenance costs. This is the reason why India has hardly 230 towns/cities having such technology out of about 4,800 towns and cities. Sulabh has taken up research-cum-demonstration project on duckweed based low-cost waste water treatment in rural as well as urban areas with good income from pisciculture. Although duckweed is

found in abundance, due to absence of know-how of any such technology in the country, capacity and potential of duckweed for the waste water treatment, its nutrient value and economic benefits have not been exploited.

Duckweed - a small free floating and fast-growing aquatic plant has enormous ability to reduce BOD, COD, suspended solids, heavy metals and even toxic elements and bacterial and other pathogens from the waste water. It is a complete feed for fish and due to high content of proteins and vitamins A & C, is highly nutritious for poultry and animals. The yields of fish increases two to three times when fed with duckweed than that of natural feeds in ponds. Sulabh has demonstrated in collaboration with the All India Institute of Hygiene and Public Health, Calcutta, and Institute of Public Health Engineers, Calcutta, three such projects one each funded by the Central Pollution Control Board, Delhi, Ministry of Rural Areas and Employment, Govt. of India and the Danish International Development Association (DANIDA). The study would help provide a low-cost technology which would not only treat waste water but also give good return on investment. It would encourage small and medium towns to take up waste water treatment and improve the environment and health status of the people. Besides, it would provide good employment avenues in rural as well as urban areas.

### SULABH THERMOPHILIC AEROBIC COMPOSTER

During recent years, disposal of solid wastes has been ever an increasing problem causing serious health hazards and environmental pollution. Composting

Sulabh is engaged in the development of new and sustainable technologies, their implementation, demonstration and dissemination, training and consultancy in the fields of low-cost sanitation, low maintenance waste water treatment, solid waste management, environment and pollution, etc.

is an important method of biodegradable solid waste management having good return by way of manure and soil conditioner. One of the important limitations with the composting technology is that it requires not less 35 days, making it difficult to implement in towns where large amount of garbage is produced every day. Further manual handling during composting to turn garbage, makes it unhygienic and cumbersome. Sulabh International Institute of Technical Research and Training has developed a new technology under the guidance of Dr. P.K. Jha, Advisor Technical, which requires only 5-6 days to make compost from any biodegradable wastes without manual handling during composting. The technology is based on thermophilic and aerobic method. During composting the temperature inside composter rises upto 65-70°C. At high temperature degradation of wastes by thermophilic bacteria takes place quickly and pathogens are eliminated from the wastes. The practical utilities of this technology are: i) organic solid waste will be efficiently converted into manure and soil conditioner having direct/indirect economic return, ii) it will control diseases transmitted from wastes as at high temperature pathogens are eliminated from the wastes, iii) the dumping fee of wastes will be drastically reduced, iv) it will extend life of landfills and v) it will control weed spread from wastes.

### LOW-MAINTENANCE WASTE-WATER TREATMENT SYSTEM

There is a technological gap between simple waste water treatment like septic tanks and large-scale often highly mechanised and sophisticated waste water treatment system. There is need for decentralised and low capital and low maintenance waste water treatment. The low-maintenance waste water treatment system comprises sedimentation,

anaerobic fermentation, aerobic degradation, percolation and absorption by plants. SIITRAT has been working to construct and monitor the efficacy of pilot domestic waste water treatment plants from housing colonies, hospitals, schools and other institutions. This R&D-cum-demonstration of LOMWATS project is funded by the European Union Commission and executed in collaboration with i) Bremen Overseas Research and Development Association (BORDA), Germany. ii) Chengdu Energy Environment International Corporation (CEEIC), China. iii) Hangzhou Research Institute of Energy and Environment (HRIEE), China. iv) Group Energies Renouvelables et Environment (GERES), France.

### BIOGAS FROM HUMAN-EXCRETA

The Institute has been the pioneer in the field of generation and utilisation of biogas from public toilet complexes. After a series of experiments, under the following projects funded by the Ministry of Non-Conventional Energy Sources, Govt. of India, the Institute developed a new and effective design of biogas plant which has been approved by the same Ministry for implementation through its State nodal agencies with subsidy from the Ministry. (1) Techno-economic evaluation of human excreta-based biogas plants for community use and evaluation of plant designs, process control and pretreatment of feed stock for optimisation of and standardisation for mixed feed. (2) Demonstration and evaluation of slurry effluent as manure from large size human excreta biogas plants for agricultural purpose.

Based on this design, 68 of biogas plants have been constructed in different states of the country so far. Per day biogas production capacity of these digesters varies from 30 to 60 cum. Human excreta based-biogas technology remained unnoticed for long due to the fact that

Duckweed - a small free floating and fast-growing aquatic plant has enormous ability to reduce BOD, COD, suspended solids, heavy metals and even toxic elements and bacterial and other pathogens from the waste water. It is a complete feed for fish and due to high content of proteins and vitamins A & C, is highly nutritious for poultry and animals. The yields of fish increases two to three times when fed with duckweed than that of natural feeds in ponds.

Biogas is utilised for cooking, lighting through mantle lamps, electricity generation and body warming during winter etc. Cooking is the most efficient use of biogas. Biogas burners are available in a wide range of capacity ranging from 8 cft to 100 cft biogas consumption per hour. Biogas mantle lamp consumes 4-5 cft equivalent to 40W electric bulb and 220 volt.

available technology was not socially acceptable as it required manual handling of human excreta which contains a full spectrum of pathogens. The design developed by *Sulabh International Institute of Technical Research and Training* does not require manual handling of human excreta and there is complete recycling and resource recovery from the wastes. Digester is made underground into which excreta from public toilets flows under gravity. Inside digester biogas is produced due to anaerobic fermentation by the help of methanogenic bacteria. The biogas, thus produced, is collected over water in a separate gas holder or inside digester itself depending upon the design of the digester. Per user per day one cft biogas is produced. Human excreta based biogas contains 65-66% methane 32-34% carbon dioxide and rest hydrogen sulphide and other gases in trace amounts.

Biogas is utilised for cooking, lighting through mantle lamps, electricity generation and body warming during winter etc. Cooking is the most efficient use of biogas. Biogas burners are available in a wide range of capacity ranging from 8 cft to 100 cft biogas consumption per hour. Biogas mantle lamp consumes 4-5 cft equivalent to 40W electric bulb and 220 volt. Motive power can be generated by using biogas in dual fuel internal combustion (IC) engine. Air mixed with biogas is aspirated into the engine and mixture is then compressed, raising its temperature to about 350°C which is self ignition temperature of diesel. Biogas has high (600°C) ignition temperature.

Therefore, in order to initiate combustion of the charge, a small quantity of diesel is injected into the cylinder just before the end of compression. The charge is thus ignited and the process is continued smoothly. At optimum condition only 20% diesel is required, rest (80%) is substituted by biogas. Biogas consumption by engine is 15 cft/BHP/hour. A public convenience used by about 2,000 persons per day would produce approximately 60 cum of

biogas which can run a 10 KVA genset for 8 hours a day, producing 65 units of power. Such electricity is being supplied from dawn to dusk around the famous Gandhi Maidan Patna (Bihar). Similarly, at the bus stand Ranchi (Bihar) electricity from biogas is being used to illuminate this public place.

### REDUCTION OF PATHOGENS AND OTHER POLLUTION PARAMETERS

Human excreta contains a full spectrum of bacterial and other pathogens transmitting more than 50 types of diseases causing over 80% sickness in a developing country. Some of the commonly found bacterial pathogens are *Escherichia coli*, *Salmonella* sps, *Shigella* sps *Vibrio cholerae*, *Streptococcus* sps etc. Reduction of bacterial pathogens during anaerobic fermentation of human excreta has been studied by this Institute. The studies have revealed that depending upon the bacterial species up to 90-100% pathogens are eliminated in the effluent at 30 days HRT (hydraulic retention time) of the digester. Similarly, protozoa and helminths are also eliminated.

Biogas plant helps to reduce pollution load significantly. Physico-chemical characteristics of effluent shows substantial reduction in the total solid, volatile solid, COD and BOD over these values in feed material.

### BIOGAS FROM DRIED WATER-HYACINTH AND OTHER MIXED FEEDS

Water hyacinth is an aquatic, seasonal and problematic weed of national concern. However, it has an advantage that it is a good substrate for biogas generation. The Govt. of India formulated a Task Force to get rid of this weed. Since this weed is seasonal, biogas plant based on this feed becomes non-functional during summer

due to unavailability of this weed. This organisation has successfully demonstrated that biogas can be produced from this weed throughout year after harvesting it, drying and pulverising. The pulverised weed can be easily transported and used for biogas generation throughout year. The Institute has also carried out a series of experiments on biogas generation from vegetables/fruit wastes and house-hold kitchen wastes with or without using human wastes. Better results were obtained when human waste and vegetable waste were fed in combination. It showed an additive effect.

### POURFLUSH WATERSEAL TWIN PIT LATRINES

Although the concept of pour flush water-seal twin pit latrine popularly now known as Sulabh Shauchalaya was developed much before by Dr. Bindeshwar Pathak, Founder, Sulabh International Social Service Organisation, than the Institute (SIITRAT) was established. However, this Institute developed a number of models of Sulabh Shauchalayas based on locally available materials and to suit people of different economic strata. The Institute carried out experiments on migration of different pathogens from pit in soil. The studies conducted in collaboration with the All India Institute of Hygiene and Public Health, Calcutta, revealed that there is no chance of ground water pollution from Sulabh Shauchalaya if hydraulic load of the pit is kept for two to three litres of water per use. The pan and water-seal are so designed that this much amount of water is sufficient to flush out excreta. In conventional pan and trap about 10 litres of water is required to flush. There is slight modification of the design of Sulabh Shauchalaya especially in case of rectangular pits that prevents flows of water from the pit in-use to the next pit. The Institute has also carried out a series of experiments on the percentage viability of different pathogens in the pits with

respect to retention time of human wastes. The studies have revealed that there is near complete absence of pathogens from digested sludge of the pit when taken out after two years of resting period. Sometimes cysts of helminths persist at this period. When the sludge is sun-dried for 2-3 weeks it becomes free from all these pathogens. The dried and granulated manure is odourless and completely free from pathogens.

The Institute under takes the construction of household Sulabh Shauchalayas in Delhi and adjoining states, through its well trained staff. The major difficulty in use of human excreta as manure is the presence of bacterial and other pathogens. Human excreta contains a full spectrum of pathogens causing various infections. It should be free from pathogens before being used as manure.

### MANURE FROM HUMAN EXCRETA

Another problem is psychological and religious taboos. The studies carried out by this Institute have revealed that contents (excreta) of Sulabh Shauchalaya pit is almost free from pathogens when taken out after two years of resting period. To make it completely pathogen free digested sludge is sun dried for 2 to 3 weeks. During drying, sludge forms big lump like making it difficult to mix in soil homogeneously. The Institute has developed a technology to granulate such dried lumps into small size graded granules which look like processed tea leaves. Before granulating, it is processed in a ball mill to break into small pieces. Then it is passed through the mass mixer where moisture content of manure is regulated by adding water. Such manure has good percentage of plant nutrients. Besides, it increases humus and water holding capacity of the soil. The institute has carried out experiments to see its manurial effects on different vegetables and flowering plants. In all the cases tested, effect of manure was much

This organisation has successfully demonstrated that biogas can be produced from this weed throughout year after harvesting it, drying and pulverising. The pulverised weed can be easily transported and used for biogas generation throughout year.

encouraging.

## VERMI-COMPOSTING

Vermi-composting is an important method for composting vegetable wastes. The method is more suitable for rural areas. This institute has successfully demonstrated the technology. Vermicompost has comparatively higher nitrogen content. One of the important drawbacks of this system is slow process. The institute is engaged in minimising the time requirement by enhancing the growth rate of vermiworms.

## CONSULTANCY SERVICES

Dr. Bindeshwar Pathak established a Consultancy Division at Delhi in the year 1986. This unit is now a part of the Sulabh International Institute of Technical Research & Training.

In order to assist the State governments, local authorities, other organisations and institutes in drawing up project reports for implementation of low cost sanitation, water supply and biogas production from human waste in rural as well as urban areas and to give technical guidance and advice to various state offices of Sulabh International Social Service Organisation, its founder Dr. Bindeshwar Pathak established a Consultancy Division at Delhi in the year 1986. This unit is now a part of the Sulabh International Institute of Technical Research & Training. For the preparation of detailed project reports on low cost sanitation following steps are taken :

- Study the existing sanitation facilities and the plan proposals of the local government for introduction of sewerage; population and area served;
- Study the existing and planned water supply system, population served and water use pattern;
- Evaluation of the on-going latrine programmes;
- Selection of most appropriate and cost effective low-cost technological option depending on
  - geological and hydrogeological features;
  - physical features of the area,

land use, density and number of persons in the household;

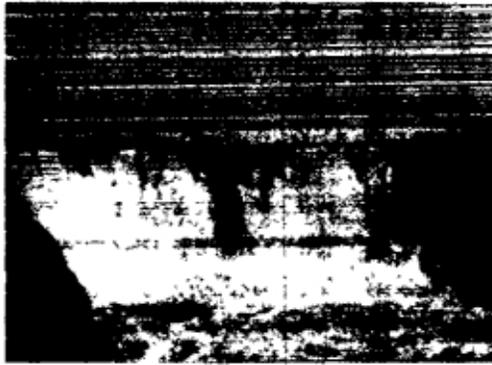
- demographic features of the area;
- socio-cultural habits and customs, behaviours, beliefs and attitude relating to sanitation;
- house-to-house survey to study the present sanitation status in the households and to know the family size, drinking water source, availability of electricity, type of latrine/no latrine in the household, availability of space for construction of latrine and leach pits (within the premises and outside the premises), income/expenditure of the household and willingness to pay for the construction of toilet in the household;
- assessing the need and site selection for community toilets.
- Study of affordability, acceptability, availability and awareness; based on this study the communication support activities are designed;
- Preparation of designs, drawings and cost estimates;
- Suggesting measures and precautions for pollution control;
- Suggesting an appropriate methodology for construction of Sulabh Shauchalayas (twin pit pour-flush toilets) and Sulabh Shauchalaya Complexes (community toilets with bath, laundry and urinal facilities)
- Identification of suitable institution for implementation : study of the availability, capability and capacity of local institutions-governmental, non-governmental and private to implement low-cost sanitation; suggesting a proper marketing and delivery system including assessing training and monitoring needs and suggestions to give legal support to the programme; assessing the staff requirement for the operation and maintenance of community toilets;
- Discussion on financial issues

including funding of the project, financing pattern, loan/grant administration; loan recovery and merits of operating the community toilets on pay & use system;

- Operation and maintenance;
- Suggesting an appropriate implementation plan;
- Training and rehabilitation of liberated scavengers and their wards;
- While designing the Sulabh Shauchalaya complexes, architectural features are closely examined. Traditional architectural features of the town are adopted and efforts are made to blend them with the surrounding area;
- Landscape is done to make the complexes aesthetically attractive. Plantation of ever green trees and shrubs are proposed to create shade for the users and to act as a buffer zone between the complex and surroundings.

## GANGA ACTION PLAN

Sulabh International Institute of Technical Research & Training was involved in the prestigious project - Ganga Action Plan for prevention of pollution of river Ganga. It has prepared project reports for constructing Sulabh Shauchalayas and Sulabh Complexes for the cities of Allahabad, Kanpur and Varanasi etc. in U.P., Patna and Bhagalpur and few other towns in Bihar. The total value of works for which the projects were prepared under Ganga Action Plan comes to about Rs. 14 crores. The implementation of these projects was done by Sulabh. The Institute is at present actively engaged in the National River Conservation Project of Government of India. For the Government of the Netherlands assisted environmental improvement project of Kanpur and Mirzapur under the *Ganga Action Plan*, the Institute had collaborated with the Netherlands based consulting firms (*Haskoning and Euroconsult*) in preparing



SPLENDID BEAUTY :  
*Leave it undisturbed*

project reports on low-cost sanitation.

## LOW-COST SANITATION PROJECTS

The Institute has prepared detailed project reports on low cost sanitation for a number of towns to make them scavenging free by conversion of bucket privies to Sulabh Shauchalayas and construction of new ones in houses where there were no latrines. The projects also included construction of Sulabh Shauchalaya Complexes for commuters, floating population, rickshaw pullers, pavement dwellers and for such households which do not have space for individual latrines or can not afford to have them. Schemes for training and rehabilitation of liberated scavengers and their wards formed an integral part of these projects. It has also prepared projects for establishing training facilities for the liberated scavengers and their wards in Assam, Rajasthan, Madhya Pradesh, Maharashtra, Tamil Nadu, Manipur, Tripura, Punjab, Arunachal Pradesh and Uttar Pradesh.

The Institute has prepared a number of projects for construction, operation and maintenance of community toilets with bath, laundry and urinal facilities for various authorities like municipal corporations, municipalities cantonment boards, railways etc.

## WORLD BANK STUDIES AND PROJECTS

The World Bank sought the assistance of

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Sulabh International Institute of Technical Research & Training to collect data and information on the status of rural water supply and sanitation development sector in seven states in India.

At the request of Government of Uttar Pradesh, the Institute prepared a report to lay down criteria and guidance for selecting villages and districts to be included in the Integrated Rural Water Supply and Environmental Sanitation Project of Uttar Pradesh for the World Bank assistance.

The Sulabh International Institute of Technical Research & Training was associated with Consulting Engineering Services (India) Pvt. Ltd. (i) in identification of low-cost sanitation alternatives for Madras city, (ii) in providing Consultancy to Government of Kerala for the World Bank assisted Trivandrum Sewerage and Sanitation Improvement Project; (iii) on "Low Cost Sanitation under the Environmental Sanitation Programme in the City of Madras and Adjacent Urban Areas"; (iv) "Community Awareness, Environment and Health Education Studies Under the Environmental Sanitation Programme in the city of Madras" and (v) "Low Cost Sanitation in the city of Kozhikode (Kerala) and the Adjacent Panchayat Areas".

At the request of the Royal Government of Bhutan, the Institute prepared detailed project reports for construction, operation and maintenance of community toilets with bathing and urinal facilities on 'pay and use' system at Thimphu (capital of Bhutan) and Phuntsholing. Similarly a project for construction, operation and maintenance of community toilets at Kathmandu, Nepal was also prepared.

### EVALUATION & STUDY

At the request of the HUDCO, the Institute carried out evaluation study of

low cost sanitation programme in Madhya Pradesh. The Human Settlement Management Institute (HSMI) of HUDCO in collaboration with the Institute of Housing and Urban Development Studies (IHS), Rotterdam took up a Government of Netherlands assisted collaborative project, "Capacity Building for the Urban Environment : A Comparative Research, Training and Experience Exchange". Experiences obtained through the research study on the operational strategies of best practices for urban environmental management was presented in Habitat II - the Second U.N. Conference held at Istanbul in June 1996. At the request of HSMI, Sulabh International Institute of Technical Research and Training carried out a research-cum-case study on "Integrated Low-Cost Sanitation : Indian Experiences" to provide insight on Capacity Building into environmental management examples of best practices with potential of its scaling up and wider replication.

### TRAINING AND EDUCATION

In order to inculcate job skills to implement, operate and maintain various low cost water supply and sanitation schemes and human waste fed biogas plants, the Sulabh International Institute of Technical Research & Training runs refresher/training courses for those who are working or intend to work in these fields. In the courses due stress is given on the importance and need of software inputs viz. awareness, health and sanitation education, personal hygiene, motivation, publicity etc. which are crucial for the success of social programmes of this nature. Training modules and literature are prepared. Experts in different disciplines available with the Institute as well as invited from outside are engaged for training. ●

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In this century, more people died of sanitation - related diseases than in global conflicts - WHO

## Magnitude of sanitation problem

Of the estimated 3.5 million children who die from diarrhoeal diseases each year in developing countries, almost 600,000 die from the sanitation-related ailments alone. This disease is endemic throughout the world. Refugee population and children suffering from malnutrition are among the badly affected. During 1994, dysentery was the leading cause of death in the Rwandan refugee camps in Burundi, Tanzania, and Zaire. Elsewhere in Africa, 11 countries were hit by water related epidemics in 1994 in Asia. There are four clinically important species of *Shigellae* (dysentery) but most life-threatening diseases are caused by just two species - *S. dysenteriae* and *S. flexneri* - and by 5 serotypes. *S. sonnei* is the leading cause of endemic disease in industrialised countries. In 1993 it was responsible for over 90 per cent of cases of dysentery reported in the United States. And, all of them are caused in unclean areas.

*Vibrio cholerae* - one of the oldest scourges known to men - causes about 5.5 million cases of cholera every year and about 120,000 deaths. Over a fifth of those deaths occur among children under five and a quarter in children aged 5 to 14. Most cholera deaths occur in Africa and Asia. Without treatment (rehydration therapy and antibiotics) it is one of the most dangerous infectious diseases - leading to fatality rates as high as 40 per cent. The disease is associated with poverty, poor sanitation, lack of hygiene and unsafe drinking water. It is spread by contaminated water or food and by person-to-person contact.

In 1991, there were more cases of cholera and more countries were affected by the disease than in any other year on record. Both Latin America and Africa were hit by explosive epidemics. The first outbreak occurred in Peru and rapidly spread throughout south and Central

America - sparing only seven countries. More than 4,000 people died. In the same year, a major epidemic swept across Africa killing 14,000 people in over 20 countries. In India and Bangladesh the emergence of a new strain of *V. cholerae* was reported in the 1992 following an initial outbreak in Chennai followed by another among fishermen on remote islands in the Bay of Bengal. The new strain spread rapidly to China, Malaysia, Myanmar, Nepal and Pakistan involving thousands of deaths - mainly among adults. This is the report of the World Health Organisation 1996.

As a matter of fact, the survival and well-being of a nation depend on sustainable development. It is a process of social and economic growth that satisfies the needs and values of all interest groups. Water supply and sanitation are essential requirements for sustainable development. The former World Bank, Chairman, Robert MacNamara, had remarked that for better economic growth rate and higher productivity, emphasis has to be given to the health of the people for which provision of public utilities like water supply and sanitation is necessary. Benefits of safe water are limited without sanitation. Due to insanitation water courses get polluted, incidence of diseases rises, labour force is affected, productivity of industry and agriculture falls putting stresses on budgetary resources needed for development and to strengthen the economy. Invariably people who are unserved with basic facilities of water supply and sanitation are the poor ones. They lack not only the means to have such facilities but also information on how to minimise the ill effects of insanitary conditions in which they live.

Due to rapid and uncontrolled urban growth, nearly half of the population in cities in developing countries live in slums, pavements and shanty towns. Their health

Human excreta is the cause of many enteric diseases such as cholera, dysentery, typhoid, paratyphoid, infectious hepatitis, hookworm, diarrhoea etc. Studies reveal that over 50 infections can be transferred from a diseased person to a healthy one by various direct or indirect routes from excreta and cause nearly 80% sickness in developing countries.

and physical well-being are jeopardised by inadequate sanitation and garbage dumped in the adjoining places of habitation. The debilitating effects of insanitary living conditions and deteriorating environment lower the productive potential of the very people who can least afford it. Among the poor, the women and children suffer the most.

Sanitation is a broad term and includes water supply, disposal of human waste, waste water and solid waste, control of vectors of diseases, domestic and personal hygiene, food sanitation, housing etc. The scope of sanitation may vary and emphasis may shift with the need and communities, but in developing countries, safe disposal of human waste is very vital for improving the health and environment. Human excreta is the cause of many enteric diseases such as cholera, dysentery, typhoid, paratyphoid, infectious hepatitis, hookworm, diarrhoea etc. Studies reveal that over 50 infections can be transferred from a diseased person to a healthy one by various direct or indirect routes from excreta and cause nearly 80% sickness in developing countries. In India, about 4 to 5 hundred thousand children die of diarrhoeal diseases every year.

Considerable progress has been made in the country in the field of safe water supply but sanitation sector has remained neglected. The people are not aware of the health and environmental benefits of sanitation and it is still not a felt need for most of them. This is evident from the fact that even after several projects undertaken during the International Drinking Water Supply and Sanitation Decade (1981-91) and there after hardly 20% of the urban population have access to flush arrangements connected to sewerage system, 14% have access to water-borne toilets connected to septic tanks, 33% (13 million household) have bucket or dry privies and the remaining 33% do not have any latrines in their houses, they resort to open air defecation. In rural areas the situation is worse, only 3% of the rural population i.e. 3.4 million out of 112

million households have access to sanitary toilets.

In India, the major cause of concern is the existence of millions of bucket and dry latrines. The Task Force for tackling the problems of scavengers and their rehabilitation constituted by the Planning Commission, Government of India in its report (1990-91) had assessed that the number of bucket/dry privies in India is about 76.4 lakhs, of which 54.2 lakhs exist in urban areas. In towns and cities, human excreta from the buckets is often spilled in the vicinity during transportation to the disposal site. It is a common sight to find excreta flowing in open drains due to defecation by children as well as many a time by adults. Washing from the bucket privies and the hazardous septic tank effluent also find their way into the drains flowing in front of the houses. Age-old unhealthy practice of open air defecation and use of bucket/dry privies are a potential hazard to health and hygiene and expose the entire community to foul environment and pollute the rivers and other water courses.

From the above it is evident that the situation of safe disposal of human waste is very appalling in the country. Nearly 89% of the total population or 135 million households (about 750 million people) either defecate in the open or use bucket/dry privies or use community toilets, if available. Various studies carried out in India and abroad have revealed that the impact of safe disposal of human waste has been particularly significant in reducing morbidity and mortality from gastro enteric diseases and helminthic infection. The existence of bucket privies has led to the demeaning practice of manual handling of human waste by humans which stigmatised a particular caste called "scavenger". Apart from being a degrading inhuman practice manual scavenging of bucket/dry privies posed many health hazards and is a blot on our civilisation. The greatest weakness in the scavenging system is the employment of scavengers which is a human rights question. ●

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## Sulabh and Sanitation

Fifteen billion years ago, the earth hiccupped and NASA scientists heard the echo the other day. The *Big Bang* theory may or may not be proved by the US National Aeronautics and Space Administration's Cosmic Background Explorer's satellite (COBE), but it is evident that man has been plundering the good old earth since Adam and Eve decided to wear clothes and make love. The 5.5 billion people living on the earth above water have been recklessly proliferating and consuming avidly the gifts of nature. It has been continuing since time began and the largest and the oldest of structures took shape for humans to live and breathe. But, it seems, the limit to growth has reached now when the earth may split to end in deluge and begin things all over again. The rich countries of the world are so frightened that they called together 50,000 persons from over 100 countries on June 1992 year at Rio de Janeiro in Brazil to find ways of averting this disaster.

To keep the earth clean and livable is a major human responsibility towards the earth. Sanitation, therefore, continues to be a critical component of environment. The talk of hygiene, health and sanitation etc., in the same breath as depletion of the ozone layer, global warming, etc., may appear somewhat out of place, but the degradation of the immediate surroundings in which we live should be as important to us as the problem of *global environmental deficit*. There is no other person whom we can blame for the filth and degradation in our micro-environment and if we do not become conscious of our responsibilities in these matters, the consequences to public health and quality of life can be disastrous.

The garbage-disposal practices

prevalent in villages and towns of Indian sub-continent are another indicator of our lack of concern for the cleanliness of the surroundings we live in. Even in areas inhabited by relatively affluent and educated people, dumping rubbish on the streets and sidewalks is a normal practice. The public roads, they seem to think, belong to nobody and should be treated as garbage bins. If there are garbage receptacles, the places where they are kept soon become the filthiest parts of the street because of lack of concern on the part of those using them, and lack of attention on the part of those who are responsible for maintaining them. Worse, the constant raids on garbage bins by armies of ragpickers, whose numbers seem to be growing unchecked, have made garbage bins more of a health hazard than an aid to cleanliness.

Lack of hygiene and sanitation in our households, villages and towns has been identified as one of the major causes of the high incidence of maternal and infant mortality in India. It should be a matter of serious concern to us that out of 5,000,000 women who die every year from pregnancy and child-birth related causes, 25% belong to India. Infant mortality rate has been universally accepted as a reliable index to judge the standards of the health of the people and the cleanliness, or lack of it, in the dwelling places has been recognised as one of the important factors influencing infant mortality rate. It has been calculated that out of 40,000 children who die everyday in the world, 10,000 are Indian and in most cases the deaths are due to lack of proper standards of hygiene and sanitation.

The main component of sanitation is the safe and hygienic disposal of human excreta. An estimated three billion people

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In the developing countries defecate in the open or use insanitary latrines, - 700 million in India alone. The pollution thus caused is more than can be measured in understandable indices. A large number of diseases, including diarrhoea, gastro-enteritis, jaundice, hepatitis and yellow fever are caused by open defecation. WHO says that 80% of the diseases in the Third World are caused by contaminated water and insanitary conditions. Therefore, the pollution caused by open defecation is the major concern of the Third World countries.

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Environment came on the world's agenda after it was discovered that the growth, and a very reckless one at that; has taken place at the cost of nature whose capacity to meet man's needs is limited. Since growth is resource-based, the higher the growth in terms of human consumption, the thinner the support-line to sustain it. Population, mostly in the Third World countries, doubled during the last thirty years and the frightful technologies to exploit nature's resources diminished the possibility of human civilization lasting forever.

The population in developing countries is increasing at a very fast rate. The infrastructural facilities like water supply, safe disposal of human waste, solid waste and waste water disposal are not able to keep pace with the growth of population. Due to rapid urbanisation, nearly half the population in towns live in slums, pavements and shanty townships. Their health and physical well-being are threatened by inadequate sanitation. They are the ones who suffer most from the vicious cycle of ill-health, lowered productive capacity and hardships in a deteriorating environment. The women and children are the worst sufferers.

Sanitation has many linkages, most important among them being water supply and safe and hygienic disposal of human waste. Sanitation is not only keeping clean but protecting those sources of environment which support sustainable

development. Sanitation broadly covers human excreta, waste water, solid waste and even personal hygiene, housing etc. The scope of sanitation may vary and emphasis may shift with the needs of the communities; but in a developing country like India, safe disposal of human excreta is the most challenging problem, both in rural and urban areas.

Safe water supply and sanitation are vital for protecting the environment, improving health, alleviating poverty and improving quality of life. The developing programmes, however innovative, are not likely to yield desired results unless environmental sanitation and ecology are improved and protected. Nearly two billion people (about a third of world's population) are without adequate basic sanitation facilities and by the year 2000 the number may increase to 3 billion. In India, more than 750 million people out of 950 million population either defecate in the open or use insanitary bucket/dry privies cleaned manually or community facilities.

Insanitation has wide-spread effects; water sources get polluted, incidence of diseases rises, affecting billions of people all over the world, labour force is affected, productivity of industry and agriculture falls putting stresses on budgetary resources needed for development and strengthening the economy. Invariably people who are unserved with basic facilities of water supply and sanitation are the poor ones. They lack not only the means to have such facilities but also information on how to minimise the ill-effects of insanitary conditions in which they live. Poverty breeds disease and disease breeds poverty. High rate of child mortality encourages couples to have more children, resulting in increase in population.

Human excreta is the cause of many enteric diseases such as cholera, dysentery, typhoid, paratyphoid, infectious hepatitis, hookworm, diarrhoea etc. Over 50 infections can be transferred from a diseased person to a healthy one by

various direct or indirect routes from human excreta. Appropriate human waste management should be the primary objective of improved sanitation to build a healthier nation and provide a cleaner environment.

## IMPACT OF GOOD SANITATION

The impact of improved sanitation on health has been particularly significant in reducing morbidity and mortality from gastro-enteric disease and helminthic infection. Such studies from various parts of the world were also conducted by Dr. Feachem of London School of Health and Tropical Medicine. The study indicated the relative importance of alternative preventive strategies concerning water supply, sanitation and health education. It gave a rough guide to the over-all relative importance of the preventive measures considered;

Excreta disposal 25; Excreta treatment 15; Personal and domestic cleanliness 18; Water quality 11; Drainage and sullage disposal 6; and Food hygiene 17;

It can, therefore, be concluded that health impact of supply of clean water alone is limited. However, carefully designed programmes which combine water quality with improvements in water availability, sanitation and hygiene education have the potential to be successful.

## SANITATION STATUS IN INDIA

Open defecation in India has been a matter of habit and convenience. This habit became a tradition which has now urbanization and population explosion, the problem has taken a catastrophic dimension. In India the existence of millions of bucket and dry latrines is a major cause of concern. 76.4 lakh bucket/dry privies exist of which 54.2 lakhs are

in urban areas. These are a potential hazard to health environment and hygiene and expose the entire community to foul environment and pollute the rivers and other water sources. Since excreta is not properly, collected and disposed of, it is likely to get access to water supply, contaminate food through flies and cause hookworms related diseases. Consumption of polluted water and contaminated food and exposure of people to polluted environment transmit pathogenic micro-organisms from sick persons to healthy ones. The diminished work-capacity is a source of poverty.

Hardly 20% of the urban population have access to flush arrangements connected to sewerage system; 14% have access to water-borne toilets connected to septic tanks, 33% have bucket or dry privies and the remaining 33% do not have any latrines in their houses. In rural areas the situation is worse, only 10% of the rural population has access to toilets. From the above it is evident that the situation of safe disposal of human waste is appalling in the country. Bringing about a change in the centuries old sub-human and unhygienic traditional practice of open air defecation and use of bucket or dry privies cleaned manually by a particular class of people called scavengers are the challenging problems.

Provision of Sulabh Shauchalayas in individual households as well as community places prevents indiscriminate open-air defecation and improves the health and hygiene of the community, so also the environment. Women and children especially benefit because they are the worst sufferers. The Sulabh toilet complexes restore human dignity by providing facilities for defecation and bathing in privacy to those who are deprived of these amenities. A better quality of life follows, making the family conscious of the need for better health and environment within and outside their dwelling house. About one crore (ten million) people in India use the facilities provided by Sulabh daily in over 700,000

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individual households and at nearly 3,000 Sulabh toilet complexes. This indicates the popularity and acceptability of the system.

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## HEALTH AND SANITATION EDUCATION

Sulabh realised that along with improvement of sanitation, elementary health education is necessary. Most people, especially the poor, are not aware of health and environmental benefits of improved sanitation. Their priorities are different. Latrine is not a felt-need for them. They are also not aware of the availability of affordable technological options. General awareness and community's involvement in the social programmes develop self-reliance and confidence in the community. Sulabh has set up primary healthcare centres at some of the community toilets where health and hygiene education is given to slum-dwellers.

## ROLE OF WOMEN ORGANISATIONS

Women are the worst sufferers due to non-availability of these facilities. Because of absence of latrines in their houses, women have to go out in the open either before sunrise or after sunset to defecate in darkness. Hence, toilets are of great priority for them for reasons of privacy and safety. Women have by far the most important influence in determining household hygiene and in



Urban slum is where Sulabh work starts

forming habits of children. Motivating people to use latrines by itself is not sufficient to promote sanitation. Health and hygiene education has to be sustained over a long period of time. It is in this area that voluntary organisations with involvement of women as facilitators and catalysts can play a crucial role. They will be better equipped to ensure community participation for providing benefits to the people than are possible in other set-ups. Sulabh has trained a large number of women in urban slums.

India faces a formidable task of meeting the health and sanitation needs of 950 million people. The Government alone cannot handle the situation. The NGOs can work as a link and catalytic agents in bringing about a harmonious interaction between the Government and community by mobilising people's participation. As an NGO and a non-profit social service organisation, Sulabh has set up a successful model in India for human waste management for improving the quality of life. ●

The limits of a country are determined  
by ecology and the intelligence of  
a society - Homer Dixon

## Sanitation and health status report

We are inheritors of the great Indus Valley Civilisation which existed some four thousand years ago. It was characterised by meticulous town planning and high standards of public sanitation. Its covered drainage system remained unsurpassed till modern times. *Charaka Samhita* and *Susruta Samhita*, the famous medical treatises which were compiled about two thousand years later, also laid great stress on personal and general hygiene. However, we witness a dismal situation if we take a look at the present state of public sanitation in the country.

Losses in working days due to diarrhoeal and respiratory diseases and tuberculosis work out to millions every year. According to the World Health Organisation (1992), every year about eight million new cases of tuberculosis are added globally, with India contributing 1.2 million to this number; 5 per cent of our population carry the *hepatitis B virus* which causes jaundice, a potentially fatal disease if left untreated; and annually about 2.11 per cent of people are infected with malaria. Approximately, the same number of births occur in China and India, but the death rate among children is three times higher in India.

The survival and well being of a nation depend on sustainable development. It is a process of social and economic development that satisfies the needs and values of all interest groups. Water supply and sanitation are essential requirements for sustainable development. The former World Bank Chairman, Robert MacNamara, had remarked that for better economic growth rate and higher productivity, emphasis has to be given to the health of the people for which provision of public utilities like water

supply and sanitation is necessary. Benefits of safe water are limited without sanitation. Due to insanitation water courses get polluted, incidence of diseases rises, labour force is affected, productivity of industry and agriculture falls putting stresses on budgetary resources needed for development and to strengthen the economy. Invariably people who are unserved with basic facilities of water supply and sanitation are the poor ones. They lack not only the means to have such facilities but also information on how to minimise the ill effects of insanitary conditions in which they live.

Due to rapid and uncontrolled urban growth, nearly half of the population in cities in developing countries live in slums, pavements and shanty towns. Their health and physical well being are jeopardised by inadequate sanitation and garbage dumped adjoining the places of habitation. The debilitating effects of insanitary living conditions and deteriorating environment lower the productive potential of the very people who can least afford it. Among the poor, the women and children suffer the most.

Sanitation is a broad term and includes water supply, disposal of human waste, waste water and solid waste, control of vectors of diseases, domestic and personal hygiene, food sanitation, housing etc. The scope of sanitation may vary and emphasis may shift with the need and communities, but in developing countries, safe disposal of human waste is very vital for improving the health and environment. Human excreta is the cause of many enteric diseases such as cholera, dysentery, typhoid, paratyphoid, infectious hepatitis, hookworm, diarrhoea etc. Studies reveal that over 50 infections can be transferred from a diseased person to a healthy one

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by various direct or indirect routes from excreta and cause nearly 80% of diseases in developing countries. In India, about 4 to 5 hundred thousand children die of diarrhoeal diseases every year.

The people are not aware of the health and environmental benefits of sanitation and it is still not a felt need for most of them. This is evident from the fact that even after several projects undertaken during the International Drinking Water Supply and Sanitation Decade (1981-91) and thereafter hardly 20% of the urban population have access to flush arrangements connected to sewerage system, 14% have access to water borne toilets connected to septic tanks, 33% (13 million household) have bucket or dry privies and the remaining 33% do not have any latrines in their houses and, they resort to open air defecation. In rural areas the situation is worse, only 3% of the rural population i.e. 3.4 million out of 112 million households have access to sanitary toilets.

In India, the major cause of concern is the existence of millions of bucket and dry latrines. The Task Force for tackling the problems of scavengers and their rehabilitation constituted by the Planning Commission, Government of India in its report (1990-91) had assessed that the number of bucket/dry privies in India is about 76.4 lakhs, of which 54.2 lakhs exist in urban areas. In towns and cities, human excreta from the buckets is often spilled onto the vicinity during transportation to the disposal site. It is a common sight to find excreta flowing in open drains due to defecation by children as well as many a time by adults. Washing from the bucket privies and the hazardous septic tank effluent also find their way into the drains flowing in front of the houses. Ageold unhealthy practice of open air defecation and use of bucket/dry privies are a potential hazard to health and hygiene and expose the entire community to foul environment and pollute the rivers and other water courses.

The situation of safe disposal of human waste is very appalling in the country. Nearly 89% of the total population or 135 million households (about 750 million people) either defecate in the open or use bucket/dry privies or use community toilets, if available. Various studies carried out in India and abroad have revealed that the impact of safe disposal of human waste has been particularly significant in reducing morbidity and mortality from gastro enteric diseases and helminthic infection. The existence of bucket privies has led to the demeaning practice of manual handling of human waste by humans which stigmatised a particular caste called "scavenger". Apart from being a degrading inhuman practice manual scavenging of bucket/dry privies posed many health hazards and is a blot on our civilisation. The greatest weakness in the scavenging system is the employment of scavengers in the humiliating job which is a human rights question.

Mahatma Gandhi was one of the very few leaders of India in recent times who emphasised the importance of public sanitation. However, our present record in this important area of public hygiene and in control of infectious diseases is rather poor, even in Asia. The incidence of these diseases is four times higher in India compared to China, despite our higher per capita expenditure on health. They lead to considerable loss of life and working time with resultant low economic activity and poor quality of life. The current situation urgently demands that people be made aware of microbes and the role they play in causing diseases so that the right measures to control infectious diseases are taken. One has then to devise strategies to limit the breeding grounds of microbes, take steps to avoid their spread, instill good hygienic habits in the masses and also provide facilities such as those which are part of the Sulabh Movement. Sensitizing the masses about the close connection between microbes and diseases by

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providing proper information and understanding is another important task in this fight against infectious diseases.

The scientific basis of the connection between lack of sanitation and infectious diseases was provided by Louis Pasteur, Robert Koch, Elie Metchnikoff and other 'microbe hunters' who established that these diseases are caused by micro-organisms, viz. *bacteria*, *fungi* and *viruses*. Antoni van Leeuwenhoek was the first person to work on microbes by peering through microscopes of his own making. The work of these and several other scientists resulted in mankind's biggest advance in fighting diseases. Ronald Ross's work on malaria carried out at Calcutta and that of Valdeemar Haffkine on plague at Bombay are some other exciting episodes in the same pursuit of tracking deadly microbes.

The work of these and several other scientists led to the development of three concepts which play an important role in the control of infectious diseases. These are : (a) infectious diseases are caused when we come in contact with pathogens; (b) these pathogens are present in several environmental reservoirs, which include drinking water, food, garbage heaps, sewage and *human excreta*; (c) one can protect oneself from these diseases by avoiding contact with the pathogenic micro-organisms. The most effective way to do this is to eliminate the environmental reservoirs of these microbes; the second best alternative is to keep ourselves away from these reservoirs. As the links between microbes and diseases became clear, people understood the reasons why simple measures, especially involving personal and public hygiene, protected them from infectious diseases. Advances in immunology (vaccination) and antibiotics soon followed, and the global health situation improved still further.

India has an unenviable record of high incidence of several infectious (and

non-infectious) diseases. The 1993 World Development Report, *Investing in Health*, ranks India next only to sub-Saharan African countries (all countries south of the Sahara, excluding Mauritius, and Seychelles) and some countries in the Middle East, in the number of people afflicted with infectious diseases. In Sub-Saharan Africa, infectious diseases account for 71 per cent of all diseases. The corresponding percentages are 50.5 per cent, 25.3 per cent, 8.6 per cent and 9.7 per cent for India, China, the former socialist economies of Europe and the more developed countries, respectively.

China with a population of 1,134 million and nearly comparable incomes (in 1990) has achieved a marked improvement in health and sanitation status of its people during the past 15 years, especially with reference to infectious diseases. In any given year, an average Indian loses at least four times more healthy days due to infectious diseases than does an average Chinese. This is not due to lower expenditure on healthcare but lack of concern for health and sanitation. Indeed, India spends more funds per person (\$ 21/annum) on healthcare than China (\$ 11/annum) only to be behind it in the race.

However, the significant difference lies in the fact that China has spent a considerable amount in the public sector on specific public health measures, rather than on setting up hospitals and other facilities for treatment of diseases as is done in India. Public health programmes which have a direct bearing on promoting a healthy environment include provision of clean and adequate quantities of water, and sanitation, sewerage and solid-waste collection and disposal. Direct investment in the development of these programmes leads to removal of reservoirs of pathogens and, in turn, to reduction in the incidence of infectious diseases. And, a healthy and growing society. ●

Public health programmes which have a direct bearing on promoting a healthy environment include provision of clean and adequate quantities of water, and sanitation, sewerage and solid-waste collection and disposal. Direct investment in the development of these programmes leads to removal of reservoirs of pathogens and, in turn, to reduction in the incidence of infectious diseases.

By treating our planet as a community,  
we can save our natural riches for  
future generations - Rio Declaration

## On ecology, turns survival of human civilisation

In history, we have instances when civilisations vanished because man became too aggressive on the environment. The oldest and the glorious civilisation of Assyria and Babylonia (modern Iraq) vanished when people cut trees and river Euphrates silted and changed its course in anger.

One is always intrigued by the power of simple ideas that sometimes reshape the world. It may be "discovery" of zero and decimal by Aryabhatta or the invention of the wheels by Assyrians. They have changed the world like nothing else did before. A similar idea took root 22 years ago in America when a handful of concerned citizens raised their voice against pollution that was ruining the quality of life. The outrage led on April 22, 1970, to the *Earth Day* which became the annual event later, involving some 20 million Americans who turn out in large numbers throughout the country to protect the environment. In earlier times, it was the empire which used to be chief obsession of strong nations; later, it was the new idea which caused many revolutions in the 18th and 19th centuries and, still later, it was the technology and the weapons system which determined the strength and the greatness of a country. And now, it is ecology, the degradation of which is causing concern to the rich and the poor alike.

Ecology, or the environment, is the aggregation of all living and non-living things which provide the life support system on this planet and the absence of which has made other planets uninhabitable. It is, therefore, necessary for man to preserve the ecological system which is now threatened by rapid industrialisation, urbanisation, population explosion and increasing consumerism. And, hence, the global concern over the man-nature disequilibrium. Environment came on the World's agenda after it was discovered that the growth, and a very one reckless one at that, was taking at the cost of the environment. Since growth is resources-

based, the higher the growth in terms of human consumption, the thinner the support-line to sustain it. Nor are all resources renewable; water, air, land are limited. Population, mostly in the poor countries, doubled during the last thirty years and the frightful technologies to exploit nature's resources diminished the possibility of the human civilisation lasting forever.

Between 7,000 and 8,000 BC, when glaciers were melting, Mesopotamia saw the creation of agricultural surpluses. And the trading of those surpluses is believed



*Only one earth, care and share*

to have been responsible for the invention of money; they were first communities to use brick and stone. Jericho, for example, the oldest known city, was founded in this period, when Europe was beginning to recover from the Ice Age. Some historians believe that the first appearance of highly organised societies in the fertile river valleys of the Tigris, the Euphrates, and the Nile was stimulated by a major climate change 3,000 years ago. A new climate pattern - characterised by drought and floods - forced communities to cluster in the river valleys. The challenge of containing and distributing the

floodwaters for irrigation, storing the annual harvests, and distributing food supplies required many basic mechanisms and that created human civilisation.

Where is the ancient Phoenician city of Carthage? It is buried in the sand dunes of northern Africa. In a series of wars between Romans and Greeks, joined by many other regional powers, forests were cut, dykes dismantled and river Tunis again silted to change its course 16 km east to what is modern capital of Tunisia today. And, Carthage vanished into the thin air. Let us not forget that Carthage was the city where Caesar met Cleopatra on the sight of whose nose, the Roman emperor launched a thousand ships and conquered the known world for her. This all happened because man did not learn to live in peace with nature.

The effect of ecology on civilisation has been considerable on Europe. The proximate cause of the suffering and social unrest after Napoleonic wars (1800 to 1815) was a change in the global atmosphere following an unusually large series of eruptions on the islands of Indonesia. Scientists estimate that 10,000 people were killed in the initial eruption and 82,000 more died of starvation and disease. From Ireland to England to the Baltics, rain fell almost continuously from May to October, in 1915 which destroyed crops, caused food riots, and the near-collapse of society throughout the British Isles and Europe. The historian John D. Post has called it "the last great subsistence crisis in the Western world".

Small climate changes caused by volcanic eruptions may also have played a major role in one of the modern era's seminal events, the *French Revolution*. In his groundbreaking study of the history of climate, *Times of Feast, Times of Famine*, Emmanuel Le Roy Ladurie describes in meticulous detail the disastrous crop failures and poor harvest in France during the six years immediately preceding the Revolution of 1789, culminating in the bitter winter of 1899-89 and one of the



coldest Mays. The effects of climate change on the political and social stability are powerful. Now, humankind is now changing the climate of the entire globe to a degree far greater - and faster - than anything that had caused havoc before.

One of the most dramatic effects of climate change on civilisation has been massive migration from one geographic area to another. In fact, one of the greatest migrations in history - the one that introduced human beings into North America and South America - came about as a direct result of climate change. During the last Ice Age, 20,000 years ago, when vast amounts of seawater was frozen into ice, sea-level was about three hundred feet lower than it is today. Large areas of those parts of the ocean bottom (we call the *continental shelf*) were exposed as dry land, and shallow ocean straits, like the Bering Strait and the Gulf of Carpentaria, were instead land bridges. These bridges served as the migratory routes for the people now known as aborigines. As the glaciers retreated, the sea level rose again some 10,000 years ago, stranding the Native Americans and aborigines on their new continents. At the same time, as temperatures climbed, the global climate settled into the pattern that it has roughly maintained ever since.

But it's now becoming clear that climate is even more basic to the development of humankind. Anthropologists, evolutionary biologists, and climate specialists - including Elisabeth S. Vrba, Frederic E. Grine, Richard G. Klein, and David Pilbeam - have recently combined the history of climate changes with the anthropological

If we are to protect and preserve our environment on a global scale, we all must do our part, as nations, as families and as individuals. The need for awareness has never been greater, and the opportunity for us to make a difference is just as great. If we practice and teach the right kind of care and commitment for our environment, it will continue not only to bring us its natural gifts, but also to bring us together.

- US Vice-President  
Mr. Al Gore

evidence to produce a new consensus - that human evolution itself was shaped by dramatic transitions in global climate patterns during the last 6 million years. The science writer William K. Stevens describes "an outpouring of analysis" and says that "scientists are sketching out the influential roles played by climate and ecology in shaping human evolution".

Historically, climate tragedies like the one that caused the potato famine have led to massive migrations toward wealthier countries, especially the United States. Three decades earlier, the great subsistence crisis of 1816-17 had also stimulated a flood of migration, not only from Europe to the United States but - because the effects of the climate change were felt well beyond Europe - also within the United States. For example, historical accounts of the westward migrations from Maine indicate that after "the uncommonly cold and unpropitious" springs of 1816 and 1817, a terrible fear of famine lent "a fresh impulse to the enchanting spirit of emigration. Hundreds who had homes, sold them for small considerations, and lost no time in hastening away into a far country".

About 10 million residents of Bangladesh will lose their homes and means of sustenance because of the rising sea level, due to global warming, in the next few decades. Where will they go? Whom will they displace? What political conflicts will result? That is only one example. According to some predictions, not long after Bangladesh feels the impact, up to 60 per cent of its present population may have to be relocated. The pressure of the population at the foothills of the Himalayas has led in the last few decades to such extensive deforestation that the rains now rush wildly down the slopes, across Bangladesh and eastern India, carrying an enormous tonnage of topsoil to silt up the Ganges River system, causing floods. The Bay of Bengal is almost perpetually brown with the soil that ought to be growing crops. We are

consuming larger and larger quantities every year of coal, oil, fresh air and water, trees, topsoil, and the thousand other substances we take out from the earth, transforming them into huge quantities of pollution, canoing products for which we spend billions on advertising to convince ourselves that we want massive surpluses of products to waste. We seem increasingly eager to lose ourselves in the name of culture, society, technology, and the rituals of production and consumption, and we pay heavily.

The word "ecosystem" is a contraction of ecological system. Ecology, in turn, is derived from the Greek word meaning "house". Persons all over the world, seizing on the root meaning of ecology, have broadened its scope from the former narrow academic confine and refer it to the study of the totality of man and environment or to the whole "environment house", as it were.



*The parched land and withering tree  
We should not leave behind this ecology  
for our children. Should we?*

Let us examine what is the ecosystem as a whole whose protection is necessary for our survival. To understand the meaning of the word "ecosystem" and to appreciate the role that it plays in communicating man's increasing concern about his environment, one should consider the holistic concept that underlines the term. Holism is a concept based on the history that living components (organisms including man) function together as a whole according to well-defined physical and biological laws.

Also fundamental to this concept is a generalisation theory of integrative level or the theory of hierarchical control. By this it is meant that as components are added to create larger functional units, additional attributes come into focus; the attributes that are not present nor evident

from the behaviour of separate components. When hydrogen is combined with oxygen in a certain manner, for example, water, which is distinct from both of its components, is formed.

Similarly, when trees evolve together, they form forests with an entirely new set of attributes. To understand water and forest, therefore, knowledge about the functional wholes as well as the parts is required. The importance of the ecosystem concept is its emphasis on the overriding necessity for understanding the large units of nature in which man, his domestic organisms, and his energy demanding machines are interdependent components along with other essential units that maintain the total life support system.

The word "ecosystem" is a contraction of ecological system. Ecology, in turn, is derived from the Greek word meaning "house". Persons all over the world, seizing on the root meaning of ecology, have broadened its scope from the former narrow academic confine and refer it to the study of the totality of man and environment or to the whole "environment house", as it were. The word ecosystem has been defined as regularly interacting and interdependent components forming a unified whole.

An anthropocentric, or human-centered, definition of ecosystem, therefore, could be; a life-support system composed of the air, water, minerals, soil, plants, animals, and micro-organisms, all of which function together and maintain the whole. A formal definition is; any unit,

including all organisms, biological factors interacting with the environment (physical factor) so that flow of energy within a system leads to a clearly defined trophic (nutrient requiring) structure, to biotic diversity and to an exchange of materials, between living on non-living sectors.

There is no size limit implied into the definition of the ecosystem; it may be a square km of jungle, a square meter of desert, a pond, a woodlot, a city, a farm or closed container of small organism (eg. an aquarium or a vivarium). The largest ecosystem is biosphere, the entire world of life and its associated geosphere, the inanimate earth; because of its magnitude. This ecosystem is often referred to as the ecosphere. Only in man-made ecosystem are the boundaries clear; natural ecosystems blend together at overlap areas called ecotones, as at the end of a forest or at seashore.

In sum, the term ecosystem indicates the unity of organisms and environment as well as the oneness of man and nature. An ecosystem has two components that are partially separated in space and time (1) an autotrophic, or self, nourishing component (large green planets) in which light energy is used to build up complex organic substance from simpler inorganic one and (2) a hetero-trophic or other nourishing component in which complex organic substances are utilised, rearranged and ultimately de-composed. This being the composite nature of environment, we have to have a holistic approach to the problem. ●

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Man is born free but he  
is in chains - Rousseau

## Human rights - principle and practice

At the state and national levels human rights were sought to be ensured through the laws drawn up by the governments; and at the international levels through treaties, conventions and protocols. Undoubtedly, international jurists, lawyers, judges, statesmen and philosophers have also planted the roots from which they hoped would sprout forth a new social order.



**LOST CHILDHOOD: This is where the human rights question is raised**

Human rights are certain fundamental rights that are essential for any human being to lead a normal life. Whatever be the theory on which human rights are based, their ultimate aim is to grant the individual, the necessary freedoms to make his life on this earth worth living with reasonably just comfort and happiness in harmony with others in the society.

The founders of the United Nations were aware of the extent the denial of human rights was responsible for the outbreak of World War II. There was a firm conviction that a peaceful world could not be built without the effective guarantee of international protection for human rights. Hence the *Universal*

*Declaration on Human Rights* was adopted by the world body. There is a direct relationship between human rights and peace. It is impossible to have true and lasting peace, when the human rights of even a section of society are unrecognised and violated. It is for this reason that since early times national and international attempts were made to recognise and protect certain valuable fundamental human rights that every individual ought to enjoy in any civilised and just society. At the state and national levels this was sought to be ensured through the laws drawn up by the governments; and at the international levels through treaties, conventions and protocols. Undoubtedly, international jurists, lawyers, judges, statesmen and philosophers have also planted the roots from which they hoped would sprout forth a new social order that would promote and protect human rights, and preserve the dignity and well-being of all human persons.

The special feature of the struggle in modern times for the preservation of human rights is that it is now a universal movement and the violations at any place cannot be hidden from others for long. For the first time in the international sphere, the Charter of the United Nations has made the issue of human rights binding on member countries who are required to safeguard them. The Charter makes it obligatory on the part of member states to cooperate with the United Nations in promoting universal respect for, and observance of, human rights and fundamental freedoms for all, without distinctions of race, sex, language or religion. The rights of the human persons are based on mankind's increasing demand for a decent civilised life in which the inherent dignity of each individual would receive respect and protection.



...but still he is in chains

India in 1979 ratified the International Covenant on Civil and Political Rights that came into force in 1976. This Covenant, and the covenant on Economic Social and Cultural Rights, which constitute a detailed codification on human rights, have legal force as treaties between the parties thereto.

Article 7 of the International Covenant on Civil and Political Rights prohibits acts of torture and of cruel, inhuman or degrading treatment or punishment. Article 10, instead, provides that 'All persons deprived of their liberty shall be treated with humanity and with respect for the inherent dignity of the human persons'. Article 5 of the UN Declaration of Human Rights, 1948, also lays down that, 'No one shall be subjected to torture or to cruel, inhuman or degrading treatment or punishment'.

In 1975 the United Nations General Assembly again adopted by consensus a declaration on the Protection of All Persons from being subjected to torture and other cruel, inhuman or degrading treatment or punishment (Resolution 3452 (XXX) 9 December 1975). According to Article 1 of this Declaration, torture means "any act by which severe pain or suffering, whether physical or mental, is intentionally inflicted by or at the instigation of a public official on a person for such purposes as *obtaining from him or a third person information or confession, or punishing him for an act he has committed or is suspected of having committed or intimidating him or other persons....*" (emphasis added).

Article 2 of this Declaration states that "any act of torture or other cruel, inhuman or degrading treatment or

punishment is an offence to human dignity and shall be condemned as a violation of the human rights and fundamental freedoms proclaimed in the Universal Declaration of Human Rights". On June 1979 the Government of India deposited with the United Nations a Universal Declaration Against Torture, in which it stated that it would comply with the rules for the prohibition of torture laid down in the Declaration and implement its provisions through legislative and other effective measures. India's commitment to prohibit acts of torture and of cruel, inhuman or degrading treatment or punishment in accordance with the guidelines laid down in International covenants and declarations is so evident, it would seem it will readily comply with the norms prescribed by the UN General Assembly Declaration, 3452.

Everywhere on the planet, human beings make claims to a range of values that cumulatively amount to human dignity. But in too many places, human dignity is under assault. For too many of our fellow human beings, life is nasty, brutish, and brief. This, despite an evolving international human rights system, which in no small measure continues to alleviate human suffering.

Years ago, it has been assumed that what a government did to its own people was its own business. That changed after 1945, following the Holocaust and Nazi denials of basic human rights. Nations decided that the promotion of human rights ought to be a principal purpose of new United Nations Organisation. Distinctive prescriptions and institutional arrangements for the invocation and the application of human rights norms were developed. These amount to a restraint on the use of a government's power. The basic proposition of the international law of human rights is that a government can no longer utilize any means against its own people even though it is acting against its own citizens and in its own territory.

In January 1947, the United Nations

In too many places, human dignity is under assault. For too many of our fellow human beings, life is nasty, brutish, and brief. This, despite an evolving international human rights system, which in no small measure continues to alleviate human suffering.

Human Rights Commission held its first plenary session. The Commission comprised 18 nations and its chairperson was Eleanor Roosevelt. The task was to draft an international bill of human rights. When finally drafted a year later, the Universal Declaration of Human Rights was presented to 55 member states of the United Nations and adopted. It was a historic achievement, and an important moment in the development of international human rights.

Most agree that we are now facing the challenge of applying those standards. But what if there is sharp disagreement on the standards presumed for so many years to be universal? This is *the challenge of universality*. This challenge claims that there are regional and cultural particularities to human rights. That certain norms form what is known as the International Bill of Human Rights must be consonant with local standards.

In appraising the current state of human rights it is, of course, difficult to ignore the conditions that characterise our international environment, generally. My Yale University colleague, Paul Kennedy, a historian, asserts that "the forces that challenge and test our human condition - the forces of technology, demography, political disintegration, cultural animosities, ecological damage - are severe and in many respects increasing." Indeed these are at the root of the challenges which our human family now faces in efforts to hold human dignity.

Our Post-Cold War order is characterised by disorder and the international system by a diffusion of power, and by collapsed and disintegrating states. Our planet is less characterised by interdependence than it is by inter-determination. Our world is one of overwhelming volatility and immediacy as segments of our societies function at hyperspeed. This means that human rights abuses, thanks to the media, are conveyed about the planet. They are conveyed to elites and to the masses.

Our post-Cold War international system is yielding new humanitarian crises, patterns of human rights violations on a massive scale, the denial of self-determination, environmental destruction, and, increasingly, compassion fatigue. This is a perplexing age - but as a famous American journalist once observed, "Anyone who isn't confused, doesn't understand the situation." Some of the human rights challenges of the post-Cold War age run deep. First, there is the *challenge of*

*respect*. This is the beginning and the end of human rights. The very first article of the Universal Declaration of Human Rights is about "respect".

"All human beings are born free and equal in dignity and rights. They are endowed with reason and conscience and should act towards one another in a spirit of brotherhood".

This demand for respect is so intensely held that it became the foundation of contemporary human rights standards. Respect means ensuring the fulfillment of the full range of human values. It means every human should be respected, regardless of gender, age, race, creed, or the social status. Respect includes the opportunity to determine one's place and that of one's community in the civil-political order. Article 21 of the Universal Declaration of human Rights asserts the right of everyone to participate in his or her government and that the will of the people is the only basis for governmental authority, and that this will must be expressed through periodic and genuine elections. This is, of course, a matter of respect. For even if one's spiritual journey in this life and others is preordained - one's civil - political journey is not.

Second, there is *the challenge of well-being*. The international human rights community has worked to ensure well-being - understood as the right to life and security, in combating torture and slavery, arbitrary arrests and extra judicial executions. And these challenges will still be with us. But we now must reformulate the challenge of well-being to include poverty and a basic right to food, to health of cleanliness, and to shelter. In a world of 5,500 million people, 1,500 million live in absolute poverty. That a child dies of starvation is as much a denial of human rights as when an adult is tortured or forced to suffer the indignity of carrying human excreta on the head. Our notion of well-being in the human rights context must include, in the words of the Irish writer James Joyce, "*out-castes from life's feast*" scavengers are one such outcastes.

Our post-Cold War international system is characterised by an increasing number of failed and failing states. And this is a *third challenge* for human rights. There are growing numbers of bordered territories having the external characteristics of "states," yet which have ceased to fulfill any criteria normally associated with a state. How will the human rights system protect human dignity in these situations of increasingly confined chaos?

The human rights system has just completed an important era of standard-setting. Most agree that we are now facing the challenge of applying those standards. But what if there is sharp disagreement on the standards presumed for so many years to be universal? This is *the challenge of universality*: This challenge claims that there are regional and cultural particularities to human rights. That certain norms form what is known as the International Bill of Human Rights must be consonant with local standards. But the particularisation of human rights can lead to the termination of prescriptions designed to ensure a modicum of dignity for everyone, regardless of culture, religion, age, or gender.

This challenge is forcing the international community to confront and to clarify its common interests. "The banal fact of the earth's roundness," this challenge to universality is driving us all toward commonality on the basis of values enshrined in the Universal Declaration of Human Rights. More than ever before, humankind is confronted with the sphericity of the human environment. Humanity's civilisational cleavages are inter-thinking, and becoming more so. And this is the womb from which an *optimum* public order of human dignity is emerging. Authoritatively protected social processes increasingly maximize the shaping and sharing of all human values. At the level of human awareness there exists, in varying degrees, a planetary unification. Regardless of differentiation in institutional practices by which values are pursued, and irrespective of individual

expectations, at least the demands for the fulfillment of human rights appear to be commonly shared. The language of human rights, if not yet universal, is universalising. It is wedded to three human commonalities - impending mortality, the power of self-reflection, and dignity. And this is a *hopeful development*.

The *final challenge* on my list has to do with the distribution of power in our international system. This is challenge at the macro level, but its repercussions are far-reaching. Our international system is increasingly polycentric. We are undergoing one of the deepest rearrangements of global power since the birth of industrial civilisation. There are territorial centres of power and there are new, non-territorial centres of power, based on technology, computation, and high finance. We must ask ourselves, in this rearrangement of power, who will be included and who will be left out? We will all increasingly face the challenge of inclusion.

The greatest innovation in the international human rights system has been participants other than states, and this is a *hopeful development*. If the behaviours of states was appraised of in the international milieu, it was inevitable that non-state actors would emerge. These were the non-governmental organisations, or NGOs. At the World Conference of Human Rights in Vienna (Austria) in 1993, governments and a plethora of NGOs reasserted a commitment to the goals embodied in the International Bill of Human Rights. But the most significant development of that world conference was the participation of thousands of new NGOs represented human rights advocates all throughout the world, working on the front lines of the struggle for human dignity. They are the future of human rights movement and we in the North and the West must ensure that our brothers and sisters in South and the East have the means to participate fully in the system.

In addition to my university responsibilities I serve as executive

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We need a plan born of the claims and demands of everyone of us in our mutual common interests that will address the challenges I have outlined, while serving as a human rights road map in our still uncertain post-Cold War international system.

director of the oldest continually functioning human rights non-governmental organisation, the International League for Human Rights. The International League for Human Rights utilizes its full consultative status at the United Nations in working to prevent torture, extra judicial executions, arbitrary detention, religious intolerance, and disappearances while defending freedom of expression, of conscience, of thought, and the rights of women and children. One of our primary objectives is to help NGOs from the developing world gain access to the international human rights system. We at the International League know that our future efficacy as human rights advocates will depend on collaboration with developing world advocates.

Non-state participants (NGOs, advocates, and scholars) in the international human rights system are constantly appraising and clarifying the common interests of our ever-changing community. While necessarily drawing upon history, they have forced us all to look to new constitutive and institutional arrangement to apply those standards to which we are all committed. A result of this appraising and promoting is the recently created United Nations High Commissioner for Human Rights. This is a *hopeful development* for human dignity in our post-Cold War international system.

Perhaps the most hopeful trend is the growing number of human rights monitors. The International League for Human Rights provides technical assistance in the field to those monitoring and reporting human rights abuses. This takes a special kind of courage. The late Robert F. Kennedy observed at Capetown, South Africa, in 1963.

*"It is from numberless acts of courage and belief that human history is shaped. Each time a man stands up for an ideal, or acts to improve the lot of others, or strikes out against injustice, he sends out a tiny*

*ripple of hope, and crossing each other from a million different centres of energy and darting, those ripples build a current which can sweep down the mightiest walls of oppression and resistance".*

That human rights monitors and advocates have the courage to continue their work at great personal risk, is most hopeful for all of us. But with our human rights standards, advocates, challenges, and a few hopeful trends, where does this leave human rights and our species at the cusp of the 21st century? We are left with a specification of human dignity that is partial at best, unfulfilled at most, partially shared at least, and better than any alternative at worse.

The writer Thomas Mann observed that "...man lives not only his personal life as an individual, but also consciously or unconsciously, the life of his epoch and his contemporaries". We have to clarify our goals, examine those trends relentlessly driving us to the future. We must ask ourselves if we like that future. If not, we must consider alternatives and identify those factors that will get us to a preferred future.

We are entering a phase of the psycho-social evolution of our species in which human rights must be viewed as being at stake in every interaction and decision. That must be made clear. It must be made clear to national elites by everyone of us concerned for human dignity. Not long ago, the Secretary-General of the United Nations issued an *Agenda for Peace*. It underscored the importance of peacekeeping to the international community, along with a plan for peacekeeping operations in the future. What we need now, is an *Agenda for Dignity*. We need a plan born of the claims and demands of everyone of us in our mutual common interests that will address the challenges I have outlined, while serving as a human rights road map in our still uncertain post-Cold War international system. ●

No one shall be subjected to torture or to cruel, inhuman or degrading treatment or discrimination - *Universal Declaration of Human Rights*, Dec. 10, 1948

# Sulabh promotes human rights

Scavengers go about practising their profession of carrying human excreta on the head, generation after generation, without protest and representation to the power that be. They have no forum, no union nor any caste leader to plead for their salvation. These are the defenceless people, almost perpetually waiting for a redeemer who doesn't seem to be coming, now that Gandhiji is dead and his dream of Bhangi Mukti (salvation of scavengers) lies broken in heaps.

Scavengers need not be introduced; we know them but refuse to mention their names. We quietly dismiss them at the backdoors after flinging at them the day's leftovers of the kitchen. In small towns, these mysterious figures materialise in dark shadows early in the morning, stealthily scurrying between lanes and by-lanes, cleaning dry-latrines and collecting human excreta on the head to the tankers which cart it away to disposal spots.

And, such people are about half a million in the country who service some 600,000 dry-latrines, about five lakh of them in Delhi alone. Of the total 3,245 urban settlements in the country, only 217 have sewerage system which serves a mere one-fifth of the people there. The estimated five crore people who use dry-latrines are more than the total number of such people in the 25 countries of the Third World where service latrines are in use. No wonder, India has the largest number of scavengers in the world; in China, family members themselves clean latrines.

And worse still, many such latrines are in knock-down conditions, as a consequence of which these hapless people carry night-soil on the head in leaking

buckets after manually hauling it from the pit. The social degradation of scavengers is revolting to the conscience of any civilised society which is set wondering if in the past there had been any cruelty more hurting to the dignity of man than scavenging which is practised in India without flinch or apology.

Relieving these scavengers from the cruel and inhuman task of manually cleaning human excreta is the commitment of Sulabh. And, thus, promote human rights.

## WHO ARE SCAVENGERS?

Scavengers started in India during *Puran* period when people are divided into 15 castes and one of the castes called Chandal was allotted the work of cleaning and carrying human excreta. The number of dry-latrines increased during the Mughal period when women in *Purdah* were provided with this indoor facility. Later, it spread to other communities as well because of increasing insecurity to women. Warriors who were made captives in wars, were also forced to clean latrines and, later, there emerged a class of scavengers who belonged to different castes and social background only to unite in the work of scavenging which became an institution and a running sore on India's social structure. Ironically persons from all the religions, viz. Hindu, Sikh, Muslim and Christian, are scavengers today.

Once a scavenger, always a scavenger. The people, who were pushed into this profession by compulsions of war or joblessness, never came out of it. They became untouchables forever. Their number grew steadily as marginal people

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without jobs joined ranks. Thus, once the defenders of our land and religion became scavengers of today. Surnames like Chauhan, Bisen, Bhadwaria, Thakur, Rout and Bundela are clan names of scavengers and as well as of Rajput warriors who fought and fell for the country and its glory.

The law (Article 17 and 42 of the Constitution and the Protection of Civil Rights Act, 1955) does not help in this respect at all. The sporadic attempts of private persons, or social organisations have not changed the situation either. The question of social acceptability is not a matter of law; it is an attitudinal problem which has to be solved differently.

Gandhiji had made mandatory for the inmates of his *ashram* to clean these places, (Mrs. Indira Gandhi had done that). All the Prime Ministers had tried to help scavengers. Mr. Rajiv Gandhi revised the 20-point programme to include plans to end scavenging. Recently, the Planning Commission had set up a "Task Force" on scavengers and their rehabilitation. (Dr. Bindeshwar Pathak is also the member of the Task Force).

Uptil now roughly Rs. 100 crores has been spent and about one million dry-latrines have been converted into Sulabh pourflush toilets but this is just about 10% of the total need identified so far, yet, we have to cover a long distance. In the sixth and seventh plans a provision of Rs. 4,690 crore was made for urban water supply, of which only Rs. 938 crore was spent on expanding or reinforcing the sewerage system. The Govt. also made efforts to that end but those did not go very far. Scavenging has many linkages social, economic, historical and attitudinal. These have to be snapped one

by one before last of the scavengers is freed and rehabilitated in other professions.

Scavengers, as professionals, have been growing in number, first, because of the general growth in population, and, second, because of the rising demand for their services in fast-growing urban and semi-urban settlements, most of which are unplanned and, hence, unsewered. This situation has also produced ready jobs for them which are hard to come for other untouchables, equally poor, illiterate and outcast. Socially, scavengers are untouchables among untouchables. They are completely sealed off from the mainstream of social life. The law (Article 17 and 42 of the Constitution and the Protection of Civil Rights Act, 1955) does not help in this respect at all. The sporadic attempts of private persons, or social organisations have not changed the situation either. The question of social acceptability is not a matter of law; it is an attitudinal problem which has to be solved differently.

Hence, the first step towards solving this problem is the total ban on scavenging and setting a final deadline (many had been set before) when this practice will be declared unlawful. All civic bodies should warn scavengers that they should equip themselves for other vocations by that deadline and for so doing civic bodies and voluntary agencies should play a leading role. The second most important step should be to make the conversion of dry-latrines into leach-pit, waterseal and flush latrine mandatory and house-to-house search should be conducted to ensure that none exists there. Mr. Narasimha Rao, former Prime Minister had set 1997 end as the deadline to abolish scavenging. But, this does not seem to be possible.

As Mrs. Indira Gandhi said in 1983 that scavenging could not be abolished without providing an alternative to it. Now, we have Sulabh Technology which



SLAVERY OF WORST  
KIND: Does he or does  
not have any right to  
freedom?

works independent of the sewerage system and is hundred per cent pollution-free. UNICEF, UNDP and the World Bank, so also the Government of India have recognised this technology which is working well in 20 states and outside the country as well. The Sulabh system does not need scavenging; is fail-safe, appropriate to Indian conditions and affordable to all.

Once dry privies are converted, scavengers will have to give up scavenging. They can be absorbed in other sanitation work. Having done this, extensive programme for their education and rehabilitation should be launched with full publicity in the manner of a movement in all cities and towns of the country. Adequate money should be spent on such programme for scavengers who should be persuaded and pressured to change over to these professions. Some attempts have been made by the Central Govt., State Govts. and voluntary organisations for the liberation of scavengers.

However, these efforts and inadequate and sporadic. The diffused thrust with inadequate support of appropriate alternative technology and funds have succeeded only in very small measure. The problem of liberating scavengers is too big to be solved just like that. It is the time to organise our national efforts and energy in order to abolish scavenging once and for all. The nation must pool all its resources and borrow, if necessary, from international leading agencies to obliterate this stigma from Indian society which hurts our claim

to civility and culture.

And, in so doing, at least for once we will be borrowing money on interest to restore human rights and solve a great social problem of human slavery which caused in the past many wars in the world, including one in the US which President Lincoln had to fight in 1862 and fall eventually to an assassin's bullets. This attempt will also help in achieving the mission of "Good Sanitation is the Need of the Nation". Ministry of Welfare, Ministry of Urban Development, HUDCO and now the Planning Commission have started their efforts in the direction of the liberation of the scavengers and the rehabilitation of their wards and hopefully, this sub-human practice may be removed by the end of the century which will coincide with the target of WHO "Health for all by 2000 AD".

Gandhiji had said: "If I were to be born again, I would like to be born in the family scavengers so that I may relieve them of the inhuman, unhealthy and hateful practice of carrying nightsoil". According to Hindu belief, a pious soul gets the birth of his or her choice. In which event, Gandhiji should have been a 49 year-old scavengers carrying human excreta on the head. So, let's search for our lost Gandhi among scavengers where he must be waiting to be liberated by his people. We have made him wait far too long.

In bending all its efforts to help scavengers, Sulabh prevents human rights abuse and promote a new social order, fair and just. ●

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## For want of toilets, battles were lost

Toilet is a critical link between order and disorder, between good and bad environment. India is faced with the formidable task of cleaning 900 million litres of urine and 135 million kg. of faecal matter per day with totally inadequate system of their collection and disposal. As many as 750 out of 950 million people in India do open defecation.

In a survey conducted recently by *Focus* magazine (March 1997 as reported by William Harston in the *Independent*, London), toilet was found to be the greatest invention of modern times, more important than fire, the wheel, steam power, microwave, computer and, *lo and behold*, atomic weapons!! Toilet topped the list of all inventions in the survey conducted by 1,000 researchers, science writers and members of the public. Disposable nappies (in 95th place) would probably have earned more votes had it not been for contraception (in 12th). Computers, in second place, have pushed the printing press down to third, but the overall winner was "the toilet system".

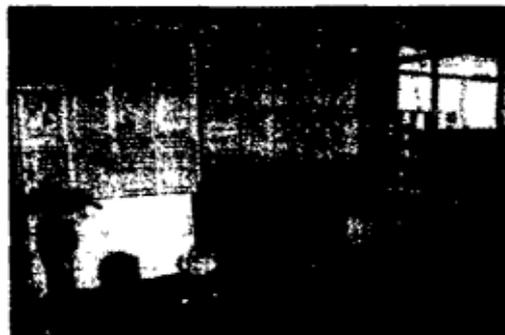
Now there can be little doubt that proper sewerage system, drainage and lavatory paper have been responsible for greater improvements in the quality of life than anything else one can name. Describing "the toilet system", as the single most important invention, suggests how times have changed.

The Chinese had primitive flush lavatory 4,000 years ago; the first modern water closet was invented by Sir John Harington in 1596, yet nobody could have considered "the toilet system" worthy of first place in the roll of man's ingenuity before

Mr. A. Ashwell of Herne Hill patented the *Vacant/Engaged* sign in 1883!! Surely, Dome Perignon's invention of the cork, which aided the secondary fermentation needed to produce the *fizz* in bubbly, was worth a mention. Instant coffee squeezed in at 100 place while teabags are absent? There is no arguing with *Da Vinci's* genius in inventing scissors (72), but we see no mention of Issac Newton's greatest contribution of all: the cat flat. And can anyone really claim that the brassiere (88) has done more for civilisation than the wet T-Shirt? Taken altogether, this compilation of the "100 Greatest Inventions" is seen as the best achievements of mankind. Toilet tops it all!!

To be true, toilet has always been a critical area of man's concern. Cynic historians say that Pompey the Great (106-48) lost the war on the bank of the Rubicon, the mythical river that once divided Rome from Cisalpine Gaul (France), to Caesar not because of the "cackle of the geese" that woke up the sleeping Roman army but because Pompey's army had diarrhoea which had made them too weak to fight Roman soldiers. The Greeks lost the Peloponnesian War (378 AD) to Sparta because the huge Greek army had no place for toilet and cholera broke out, creating panic and causing defeat after which Greeks could never recover again.

As long as man did not have an established home, he did not have a toilet. He excreted wherever he felt like doing so. When he learnt to have a fixed house, he moved toilet to courtyard and then within his home. Once this was done, it became a challenge to deal with the smell and the need was felt to have a toilet



**Sulabh International  
Museum of Toilets,  
New Delhi**

## PERCEPTION & COMMENTS

which can intake human wastes and dispose them out of the house instantly and, thus, help maintain cleanliness. Man tried various ways to do so i.e. chamber pots, which were cleaned manually by the servants or slaves; toilets protruding out of top floor of the house or the castle and disposal of wastes into the river below, or common toilets with holes on the top and flowing river or stream below. While the rich used luxurious toilet chairs or cross-stools, the poor defecated along roads, in the jungle or straight into the river. It was only in the 16th century that a technological breakthrough came about which helped the human beings have a clean toilet in the house.

Sitting type toilets in human history appeared quite early. In the remains of Harrappa civilisation in India, at a place called Lothar (62 km from Ahmedabad) and in 2500 BC, the people had water-borne toilets in each house which was linked with drains covered with burnt clay bricks. To facilitate operation and maintenance, it has what we call today man-hole covers and inspection chambers etc. It was the finest form of sanitary engineering. But with the decline of Indus Valley Civilisation, the science of sanitary engineering disappeared from India. From then on, the toilets in India remained primitive and open defecation became a common practice. The archaeological excavations confirm existence of sitting type toilets in Egypt (2100 BC). Though we have been able to mechanise the working of these toilets, the form and basic format of the toilet system remains unchanged.

In Rome also, public bath-cum-toilets were well developed. There were holes in the floor and beneath was flowing water. When the Roman travelled, they constructed the toilets for their use. The stools were key-hole type so that these



*A model of decorated stoneware bath used in early Britain which was a critical stage in the evolution of human civilisation*

could be used for defecation as well as urination. Excavations in Sri Lanka and Thailand too have brought out a contraption in which urine was separated and allowed to flow while the other portion was used at the same time for defecation. Historical evidence exists that Greeks relieved themselves out of house. There was no shyness in use of toilet. It was frequent to see at dinner parties in Rome slaves bringing in urine pots made of silver. Members of the royalty defecated and played at the same time. This practice of covering waste with earth in India continued till the Mughal era. The period between 500 and 1500 AD was a dark age from the point of view of hygiene. It was an era of cess-pools and human excreta all around. Rich man's houses and forts in India had extended part from which defecation was done and the excrements fell into the open ground or the river below. The forts of Jaisalmer in India and big houses on the banks of rivers bear testimony to this fact. In Europe, it was an era of chamber pots, cess-pools and cross-stools.

Based on this rudimentary

To be true, water and sanitation put together is a factor of production which should be studied along with land, labour and capital while making plans for national growth. Water and sanitation is not only a health problem but a great economic area where investment is woefully inadequate.

Scavengers are the people who are hated even by those whose excreta they carry on the head, generation after generation, without protest and with total resignation. They have no lobby, no political platform, nor any caste leader to defend their interests and seek their salvation from this demeaning practice.

information, one can say that development in civilisation and sanitation systems have been co-terminus. The more developed a society, the more sanitised it was and vice versa. Toilet is part of history of human hygiene which is a critical chapter in the history of human civilisation. Toilet is a critical link between order and disorder, between good and bad environment. India is faced with the formidable task of cleaning 900 million litres of urine and 135 million kg. of faecal matter per day with totally inadequate system of their collection and disposal. As many as 700 out of 950 million people in India do open defecation. Sewerage facilities are available to not more than 30 per cent of population in urban areas and only three per cent of rural population has access to pour flush latrines.

The excreta related diseases had great past and, unfortunately, great "future" in the Third World countries where they are major killers. These diseases killed those who could not be conquered in the battlefield. The excreta related enteric diseases are invidious invaders which quietly upset the body mechanism and destroy men and nations without anybody knowing much about them. Poverty and backwardness of the countries, mostly in the tropical and desert zones of Africa and Asia, suffer badly from these sanitation-related diseases which incapacitate man, diminishes his ability to think and work, resulting in low productivity, and, finally, in grinding poverty as is reflected in defeat and destitution of civilization.

Strangely enough enteric diseases are not often timely spotted, and the damage they cause is not adequately recognised even today. The Press ignores stories on water supply and sanitation, because they don't make hot news and their reading is dull and soporific. Nor can many reporters put the information and knowledge about them in attractive news package to sell

them hot to readers. No wonder, sanitation is never high on the agenda of the developing countries where it is single most potent source of poverty, bad health, low productivity and much else besides. To be true, water and sanitation put together is a factor of production which should be studied along with land, labour and capital while making plans for national growth. Water and sanitation is not only a health problem but a great economic area where investment is woefully inadequate.

According to the UNDP, India's total expenditure on health is about 6 percent of its GDP-less, than in Algeria and Nicaragua. More important, as much as 80 per cent of this expenditure is incurred in urban areas where most Indians do not live. In other words, most of Indians, especially the poorest, have little or no access to any form of healthcare and sanitation.

Sanitation is not only the problem of keeping clean; it is a development issue without which a healthy society is not possible. It is an economic problem of raising production and productivity. Due to lack of proper sanitation, about 105 million children below five years of age die each year which is about one-third of the total such deaths in the world. As many as 50 diseases are caused for lack of proper sanitation. And, over 80 per cent of population are affected by them. The most widespread diseases in the poor countries are transmitted by human faeces, the most common of intestinal parasitic infectious diarrhoea, typhoid and cholera. Experts say that whip-worms and roundworm infection rate in pre-school-children may be as high as 40 percent. Apart from other things, these diseases cripple man and make them unproductive. Open defecation defiles ecology, fouls water resources and causes stink in inhabited areas. Man is exposed to nakedness, a wholly unacceptable situation in a civilised society.

Sanitation involves waste disposal

systems, water supply, sewerage networks and preserving ecology. And, on all these counts, India is very deficient. Our cities and towns are among the dirtiest in the world. The stinking uncleaned garbage heaps, a large number of people defecating in the open or urinating up the walls even in the so-called posh areas, degraded land and destroyed forests, -all these indicate bad health of the people living in a decaying society. There are still more than six lakh scavengers in the country who physically clean and carry human excreta, working on 60 lakh service latrines. Scavengers are the people who are hated even by those whose excreta they carry on the head, generation after generation, without protest and with total resignation. They have no lobby, no political platform, nor any caste leader to defend their interests and seek their salvation from this demeaning practice. Modern civilisation has deepened, rather than lessened the problem of scavenging and open defecation. As population grew so also the number of scavengers in towns and cities. The increased application of technology has created wealth centers, touching off migration of people far beyond the capacity of cities and towns to support them.

Large and festering city slums where lumpen and sexually productive people live in varying state of deprivation are the victims of our age. With expansion in inhabitable areas, scope for open defecation in cities have shrunk. No wonder, people are seen easing themselves along roads, railway tracks and in parks-a humiliating sight. The sewerage networks are for too inadequate and expensive to carry waste and sillage. Consequently, more bucket latrines came up in unauthorised colonies

and the number of scavengers grew. According to the 1981 census, only half a percent of rural population in India have access to sanitary latrines. And about 522 million people defecate in the open. It is like the entire European population sitting on their haunches in open defecation from the Elbe, in the East, to the Pyreness, in the West. In an UNDP - assisted survey of 210 towns in 11 states and three Union Territories, it was found that only 27 percent of people have flush latrines, 40 percent have bucket (or dry) latrines in 12.78 million households and a whopping 33 percent (or 10.43 million households) have no toilet facilities of any variety at all. These are the people seen along the railway tracks.

Politicians, captains of industry and economic pundits who gather to chant the fashionable mantra of economic reform seldom mention that such reform is incomplete without reforms in education, health and sanitation status. Industrial growth in countries like China, Malaysia and Thailand is, in considerable measure, due to heavy investment in primary healthcare, sanitation and education. And the population conference in Cairo has only reconfirmed that the best way to combat fertility rates to providing the primary healthcare to mothers and children and primary education to girl children.

Of the many things that will make a sizeable difference in the pace of development and raise production, clean living condition is very important. Sanitation is a basic condition for development, an input to raise production. Or all that is sought to be gained through economic reform will be lost for want of toilets. ●

Modern civilisation has deepened, rather than lessened the problem of scavenging and open defecation. As population grew so also the number of scavengers in towns and cities. The increased application of technology has created wealth centers, touching off migration of people far beyond the capacity of cities and towns to support them.

"I could see people easing themselves in the streets", Sir David Gore-Booth, British High Commissioner in India during the Queen's visit to Delhi in October 1997

## Towards a cleaner society

It should not take the Queen of Britain to say that Delhi is not a clean city nor was the British High Commissioner, Sir David Gore-Booth, first to notice "people easing themselves on the streets" during their visit to the Capital the other day. About 750 million people (out of 950 million population) defecate in the open along railway tracks and in open park. It is like the entire European population sitting on their haunches from the Elbe in the East, to the Pyreness in the West.

When the Queen of Britain made uncharitable remarks on sanitation the other day, she was only speaking the truth. Of the many things that can make a sizeable difference in life-style, clean living condition is very important.

The severity of the problem can be judged from the fact that hardly 20% of the urban population has access to flush arrangements connected to sewerage system; 14% have water-based toilets connected to septic tanks, 33% have bucket latrines and the remaining 33% do not have access to any latrine facility. The coverage in rural areas is only 3%. Nearly 89% of the population in India (about 750 million people) either defecate in the open or use bucket/dry privies or use community toilets. Number of bucket privies has been estimated at 7.6 million, of which 5.4 million are in urban areas. Loss in working days due to diarrhoeal and respiratory diseases and tuberculosis work out to millions every year. According to the World Health Organisation (1992), every year about eight million new cases of tuberculosis are added globally, with India accounting for 1.2 million of this number; 5 per cent of our population carry the *hepatitis B virus* which causes jaundice, a potentially fatal disease if left untreated; and annually about 2.11 per cent of people are infected with malaria. Approximately, the same number of births occur in China and India, but the death rate among children is three times higher in India.

The survival and well being of a nation depend on sustainable development

which is a process of social and economic development that satisfies the needs and values of all interest groups. Water supply and sanitation are essential requirements for sustainable development. The former



The British Queen and the Prime Minister Mr. I.K. Gujral

World Bank Chairman, Robert MacNamara, had remarked that for better economic growth rate and higher productivity, emphasis has to be given to the health of the people for which provision of public utilities like water supply and sanitation is necessary. Benefits of safe water are limited without sanitation. Due to insanitation water courses get polluted, incidence of diseases rises, labour force is affected, productivity of industry and agriculture falls putting stresses on budgetary resources needed for development and to strengthen the economy. Invariably people who are unserved with basic facilities like water supply and sanitation are the poor ones. They lack not only the means to have such facilities but also information on how to minimise the ill effects of insanitary conditions in which they live. Due to rapid and uncontrolled urban growth, nearly half of the population in cities in developing countries live in slums, pavements and shanty towns. Their health and physical well being are jeopardised by inadequate sanitation and garbage dumped

adjoining the places of habitation. The debilitating effects of insanitary living conditions and deteriorating environment lower the productive potential of the people.

Sanitation is a broad term and includes water supply, disposal of human waste, waste water and solid waste, control of vectors of diseases, domestic and personal hygiene, food sanitation, housing etc. The scope of sanitation may vary and emphasis may shift with the need and communities, but in developing countries, safe disposal of human waste is very vital for improving the health and environment. Studies carried out in India and abroad indicate that human excreta is the cause of many enteric diseases such as cholera, dysentery, typhoid, paratyphoid, infectious hepatitis, hookworm, diarrhoea etc. Over 50 infections can be transferred from a diseased person to a healthy one by various direct or indirect routes from human excreta and causes nearly 80% sickness. Therefore appropriate human waste management should be the primary objective of improved sanitation to build a healthy nation and provide a cleaner environment.

Sanitation is not only the problem of keeping clean; it is a development issue without which a healthy society is not possible. It is an economic problem of raising production and productivity. Due to lack of proper sanitation, about .5 million children below five years of age die each year which is about one-fifth of the total such deaths in the world. As many as 50 diseases can be caused in the absence of proper sanitation facilities. And, over 80 percent of sickness in India is due to insanitation. Sanitation involves waste disposal systems, water supply, sewerage and preserving ecology, a rich heritage of man. And, on all these counts, the country is deficient. Our cities and towns are among the dirtiest in the world. The stinking uncleaned garbage heaps, a large number of people defecating in the open or urinating up the walls even in the so-called posh areas, degraded land and destroyed forest -- all these indicate

bad health of the people living in a decaying society.

These are still more than four hundred thousand scavengers in the country who physically clean and carry human excreta manually, working on 7.5 million service latrines. Scavengers are the people who are hated even by those whose excreta they physically carry, generation after generation, without protest and with total resignation. They have no lobby, no political platform, nor any caste leader to defend their interests and seek their salvation from this demeaning practice. The Father of the Nation had promised to liberate them but his promise lies broken in heaps for all to see and wonder how times have changed.

Modern civilisation has deepened, rather than lessened the problem of sanitation. As population grew, so also

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**Most ancient wars were fought over money, land, power or women. But, the future conflicts, fears the *Stockholm Environment Institute*, will break out over water which is fast becoming a scarce commodity because of its increased use for household and industrial purposes. In which case, it is necessary to conserve water. The Sulabh two-litre toilet system is a major step towards saving water, maintaining cleanliness and, thus, averting future conflicts. So cleanliness is a must for preserving peace.**

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did the towns and cities. The increased application of technology has created wealth centres, touching off migration of people far beyond the capacity of cities and towns to support them. Large and festering city slums where lumpen and sexually highly productive people live in varying state of deprivation are the victims of this unclean age. With expansion in living areas, scope for open defecation in cities have shrunk. No wonder, people are seen squatting along roads, railway

Sanitation is not a fashionable concept; it is a basic condition for a civilised society, an input to raise production and productivity. Or else, what is sought to be gained by good economic management will be lost in uncleaned garbage, slothful workers and lazy work style. After all, it is man, and not the machine, that moves the mountains.

tracks and in public parks -- a humiliating sight at that. The sewerage networks are so far too inadequate to carry wastes and sullage. Consequently, more bucket latrines came up in unauthorised colonies and the number of scavengers grew.

Poverty, marked by rapidly increasing population, inadequate nutrition and crowded living conditions, are behind health problems. The most widespread diseases in the poor countries are transmitted by human faeces, the most common of which are intestinal parasitic, infections diarrhoeal diseases, typhoid, cholera, and poliomyelitis. These are caused in the areas without community water supply and sanitation facilities. Their incidence is very high in poor countries. One out of every four persons in India has roundworms, according to a survey. Experts say that whip-worms and roundworm infection rate in pre-school children may be as high as 40 per cent. Apart from other things, these diseases cripple man and make them unproductive. Open defecation defiles ecology, fouls water resources and causes stink in inhabited areas. Man is exposed to nakedness, a wholly unacceptable situation in a civilised society. Open defecation is partly a cultural problem also, for Indians are privately clean but not in public. When it comes to using public facilities, we are reckless. We just throw things without caring about cleanliness.

There should be law also, making it mandatory on every large building complex to set up common toilet facilities to be run on the pay-and-use basis. City administrators, voluntary organisations (including Rotary Club) should have toilet complexes set up at easy distances with arrows pointing to them. However, setting up toilet complexes is not as difficult as maintaining them. That is possible only if they are run on the pay-and-use basis

as is done in the West. The state governments have asked Sulabh to set up such facilities at bus stops and public places also, where they are kept absolutely clean and run on the pay-and-use basis.

Municipal toilets are there for all to see and one wonders at the failure of public agencies in the area of basic sanitation. Perhaps it is unavoidable as these complexes are set up from the annual allocation given once, and later, there is no money to maintain them on the daily basis. The pay-and-use will provide funds for their maintenance. It is self-sustaining. In France, for instance, one has to pay three francs (or Rs.12) to use a toilet once. There is a revolving cabin; when the coin is put in, it opens for use. It is almost the same all over Europe. Hence cities are clean. To pay 50 paise for toilet facilities in India should not be difficult even for the poor if they are assured of cleanliness. Such pay and use toilets should be set up all over the country. Those who are found defecating in the open or urinating up the walls should be punished. What is wanting is adequate awareness about sanitation problems in India. We spend large amounts of money on beautification but when it comes to spending on toilets, we balk. A society which cannot provide a clean and sheltered toilets & bath, specially for its women and children, cannot forever endure.

The famous Peloponnesian war between Greeks and Spartans was lost in 378 because Greeks had no toilets for their army and epidemic broke out. A great civilization was, thus, destroyed for a small thing - the toilet. The obvious fact is that the future of the country depends on sanitation which is the most important thing, next to population control. We have to accept this fact in order to raise production and create a clean and civilised society which India has always been. ●

To pay 50 paise for toilet facilities in India should not be difficult even for the poor if they are assured of cleanliness. Such pay and use toilets should be set up all over the country. Those who are found defecating in the open or urinating up the walls should be punished. What is wanting is adequate awareness about sanitation problems in India.

## Mars mania grips 'toiletless' world



*Sojourner on Mars*



*Toilet in home*

Man has reached the Moon, landed remote-controlled instruments on Mars and on planets farther away, compressed knowledge spanning several centuries onto a tiny chip, cracked genetic codes and cloned life. Yet for all that impressive achievement, half the world's people have no access to a toilet or a decent latrine and must therefore remain susceptible to epidemics like cholera and other water-borne diseases. What is worse, the numbers of those denied sanitation facilities have increased from 2.6 billion in 1990 to 2.9 billion in 1996.

Highlighting the absence of rudimentary sanitation facilities in half the world, a UNICEF report has pointed out that about 2.2 million children die annually of diseases caused by unhygienic conditions. At issue is waste matter contaminating water supplies, polluting open areas and breeding vermin, the report has said and underlined that the problem is most acute in rural areas where only 18 per cent of the people worldwide have access to a toilet or a latrine. In urban areas of developing countries, over 37 per cent lack such facilities. And even there, according to country. Uganda, for example, claims adequate sanitation in about 80 per cent of households, but the figure shrinks to just three per cent if pit latrines are excluded. Considering that the cost of providing adequate toilet or latrines ranges from five to 60 dollars, the UN agency estimates that the problem can be solved in ten years if an amount equal to ten per cent of an year's global military spending is set aside for toilet construction programmes.

But as WHO's rural health chief Dennis Warner notes, sanitation is not a sexy issue and governments either do not have a political commitment or do not like to provide services to 'squatters'. They hope the problem will go away, but it doesn't; and lack of funds only aggravates it further. Most pertinently, the UNICEF report points out, the World Bank-IMF inspired structural adjustment programmes have forced several development nations to cut basic services like sanitation construction. ●

The wanderer boy from Vatshall asked for the moon and very nearly got it - A correspondent

# One man's passion

**Date of Birth**  
April 2, 1943.

**Place of Birth**  
Village Rampur Baghel, District, Vatshall, Bihar, INDIA

**Education**

- 1964 Graduation in Sociology.
- 1980 Master's degree in Sociology, topping the list from Patna University, Patna
- 1985 Ph.D., on "Liberation of Scavengers Through Low-Cost Sanitation" from Patna University, Patna.
- 1986 Master's degree in English, topping the list from Patna University.
- 1994 D.Litt. on "Eradication of Scavenging and Environmental Sanitation in India - a Sociological Study, Patna University, Patna.

**Profession**

Founder, Sulabh Sanitation Movement.

Indifferent to fame and fortune, Dr. Bindeshwar Pathak works to rescue scavengers from the tyranny of the social system in which one man's excreta is another man's headload.

Kings, captains and politicians make headlines by winning war or making peace. But, nothing is older (and colder) than yesterday's headlines and those who make them are forgotten like bad dreams. There are other people who miss the headlines but make history. US President Bill Clinton is making headlines while Dr. David Ho is making history. Dr. Ho, a Taiwanese graduate at the California Institute of Technology and a TIME's *Man of the Year* (1996) Award winner, just asked the right questions

and he is close to finding a cure for AIDS, the most appalling curse for mankind. Similarly, Dr. Bindeshwar Pathak, working away from media



blitz to improve environmental sanitation, health and hygiene, is close to solving a great social problem by abolishing scavenging and, in the process, making a history which will be remembered much after everything is lost in the silence of time.

Great movements first begin in the minds of men before they spill over the brims to bring about enormous changes in the system. Social inequality, discrimination, deep-rooted caste system and exploitation -- made worse during long colonial rule -- have made India a land divided against itself. Such a society produces reformers, crusaders, revolutionaries or killers who seek to change things by fair means or foul. These change-agents, however, had different problems or persons who agitated their minds. Jesus had Roman Procurator of Judaea Pontius Pilate; Ashoka had seen the massacre in the Battle of Kalinga; Prince Siddharth walked past a dead man to become Lord Buddha; Mr. Isaac Merrit Singer's (1811-1875) mind was agitated over his wife's struggling to sew up his torn clothes; James Watt had watched steam blowing up the kettle top, the energy which Stevenson turned into locomotives that made the world move. Lord Gibbon says all great changes have small beginnings. However, the only common factor in all great events is that right questions were asked as Dr. Ho did, so also Newton, much, much before

Dr. Pathak says :  
"It is God's world and only He has the right to destroy His creation - a right which we seek to exercise by destroying the life and future of defenceless scavengers and their families. And, this is the tragedy of our time".

## PROFILE OF DR. BINDESHWAR PATHAK

him; "Why does the apple fall?". And, the world was never the same again.

In lines with these, Dr. Bindeshwar Pathak also asked the right questions when his mother scolded him for touching a scavenger -- the man who manually cleans and carries human excreta only to be hated by all and to remain an untouchable in society. Who is this mysterious, frail and frightened man flitting between his shadows, cleaning toilets and stomping the ground to warn of his coming so that others could stay away from his touch? What do they do? Where do they live? What is their history and geographical spread? Why do people hate them while they do the most important work of keeping places clean? And, while struggling to find answers to these questions, the *Sulabh Sanitation Movement* was born, more by accident than design, and that has changed the lives of millions of scavengers and other disadvantaged and disenfranchised groups of people as seldom any other social movement did before.

Dr. Bindeshwar Pathak, Founder of the *Sulabh Sanitation Movement*, is known for his contributions in the fields of low-cost sanitation, liberation and rehabilitation of scavengers, prevention of environmental pollution, human rights promotion, creation of non-conventional sources of energy etc by combining in himself the traits of an engineer, action sociologist, planner, administrator and a social reformer. Born in a respectable Brahmin family, he inherited his passion for social service from his maternal grandfather, *Pandit Jainandan Jha*, a Gandhian and a crusader. He says he owes everything to her mother, a pious soul, who prayed for his sons. And God answered her prayer. Dr. Pathak married Amola Pathak (July 2, 1965) and joined the Bhangi-Mukti (scavengers' liberation) cell of the Bihar Gandhi Centenary Celebrations Committee in 1968 when he was intimately exposed to the problems of scavengers in India. And, that agitated his mind when he started asking right



An epic campaigner

questions. And a mighty pan-India sanitation and social reform movement was born.

Dr. Pathak never tires of telling how the conditions of scavengers had always pained him and, once, when he touched a scavenger, he was made to take cowdung and urine to 'purify' his soul. This remained a lasting scar on his conscience which finally made him work for abolition of scavenging in India. Dr. Pathak travelled all over the country, visited and lived with scavengers in their *bastis*, studied their habits and social mores (he did his Ph.D. on Scavenging), their history and geographical spread to eventually declare that scavengers were a special class (a basket case) united only in their miseries and social degradation.

After studying scriptures, Dr. Pathak found scavenging had no religious sanction either. He said those who practised untouchability committed a sin; it is unproductive and revolting to manually clean excreta and we are wasting the wealth which can be profitably used to raise farm production and generate biogas which he has demonstrated successfully. He sought to abolish scavenging not only out of sympathy for scavengers but also out of the belief that it is a primitive, expensive and unclean practice which may create an explosive situation when a highly disaffected group may turn lumpen and work to destroy the social system which we took ages to build. For that matter, the *Sulabh* is different from other social movements; it is an indigenous concept based on experience and has been tested

After leaving School, Dr. Pathak's most immediate need was to find a job because there was no money to buy food, nor many persons to lend it. Trudging in torn *khadi pyajamas* and broken chappals, he did his graduation and started looking into the future.

scientifically, combining in itself an appropriate sanitation technology, an ideology and demand for social morality.

After leaving School, Dr. Pathak's most immediate need was to find a job because there was no money to buy food, nor many persons to lend it. Trudging in torn *khadi pyajamas* and broken chappals, he did his graduation and started looking into the future. The stories of his helplessness are depressing no less than those of his later-day achievements are uplifting to hear from the people. Both of them are heard with eagerness of how a wanderer Bindeshwar became Padma Bhushan Dr. Bindeshwar Pathak, winner of Italy's Saint Francis Award for the Environment - "*Canticle of All Creatures*"; Goenka Award and a string of other national and international awards and honours in recognition of his seminal contributions in the liberation of scavengers, social reforms, promoting rural and urban sanitation and, to top it all, working to create a new social order based on fairness and justice to all, to be brought about not by violence but by persuasion and pressure. The Citation of the *International Saint Francis Prize for Environment* - "*Canticle of All Creatures*", Assisi, Italy - says: "Dr. Bindeshwar Pathak is a pioneering environmentalist, humanist, social reformer and renowned expert on the low-cost sanitation technology". Many international agencies and national

organisations have recognised his good work to liberate scavengers from the demeaning practice of manually handling of human waste in areas of high demographic density - India, Pakistan, Bangladesh, Nepal and other developing countries.

What marks Dr. Pathak out from the rest of his ranks is his grassroots *Sulabh Sanitation Movement* that aims at improving the living conditions of the poorest among the poor. The Movement is a peaceful revolt against social prejudices, a firm demand for change and personal protest of the "wanderer boy". *Sulabh Sanitation Movement* has a pan-India sweep, covering all sections of people in almost all the States of the country. Sulabh has set up an English-medium Public School, in New Delhi, for children of scavengers with a view to equipping them to be able to compete in open job market. Dr. Pathak says that job reservation cannot take any social group very far; at best, it is a short-term solution. Eventually, scavengers will have to be trained, educated and prepared to fight their own battles, instead of someone else fighting for them. He has set up training centres; opened cells in the states to help liberated scavengers get jobs; persuaded the Government to cover scavenging under the *Protection of Civil Rights Act* and declare scavenging unlawful. On his persuasion, late Prime Minister Rajiv Gandhi included abolition of scavenging in the 20-Point Programme.

What marks Dr. Pathak out from the rest of his ranks is his grassroots *Sulabh Sanitation Movement* that aims at improving the living conditions of the poorest among the poor. The Movement is a peaceful revolt against social prejudices, a firm demand for change and personal protest of the "wanderer boy".



Dr. Pathak with family

## GLOBAL IMPACT

His most important contribution is that he has dramatised sanitation to make it a national and international issue. "Toilet" is the buzzword, freely used by the Queen of England, the Prime Minister of India and the common man. He has successfully used the power of mass media to persuade the people into using scavenging-free technology and accept scavengers as equals. The impact of his

campaign has been enormous. Dr. Pathak has become a household name, much sought after by decision-makers, Govt. agencies, social activists, academicians and the scavenger for whom he is a born-again *messtah*. He succeeded in persuading Mr. Morris Strong, Secretary-General to the Rio's Earth Summit (1992), to take it on Agenda-21. At a series of the Water Supply and Collaborative Council Meetings at Rabat, Manchester, Colorado and Manila, Dr. Pathak warned of shrinking water supply and falling standard of sanitation, specially in the Third World countries where most poor

a social question but an economic challenge also because an unclean and unhealthy society cannot raise production and productivity. He has set up the first Museum of Toilets in the world to encourage study and research on toilet designs; set up various engineering, and research centres to coordinate global efforts at promoting sanitation. Scavenging is only one part of the Sulabh Sanitation Movement, the other part is to create a new sanitation order to keep the people healthy and productive. He has proved that serving the people can also be a profitable work.

## His achievements at a glance

● Scavengers liberated	40,500
● Sulabh household toilets	8,00,000
● Sulabh community toilet blocks	3,154
● Human excreta-based biogas plants	68
● Towns made scavenging free	240
● Scavengers trained & resettled	3,500
● Towns where Sulabh works	987
● Districts where Sulabh works	338
● States/Union Territory	22
● Persons using Sulabh facilities	10 million every day
● Sulabh social workers	35,000

live and suffer in various ways. For once, it was realised that geography and political systems don't divide the boundaries of nature whose capacity to meet the man's growing need is diminishing following the rise in population and the level of consumption. And, if it happens, leaders and experts of the world fear, the days of modern civilisation may be numbered.

Dr. Pathak has been travelling round the world, telling leaders and decision-makers that the growing population and the consequent urbanisation have created the sanitation problem which is not only

"Serve & earn" has been his slogan. He says any social organisation which is economically not viable cannot go very far. The aid and subsidy regime cannot endure; money will dry up and the movement will fail. Therefore, he has been pressing the Government to give NGOs service charge so that they can make a living by serving in villages and look after their families as well. These and many more are on the impressive records list of Dr. Pathak who has combined the Sulabh Sanitation Movement with the Gandhian ideology and good economics. "They mix very well: all that we have to do is to roll up our sleeves and try", he says. Dr. Pathak broadly seeks to achieve the following objectives through the *Sulabh Sanitation Movement* launched in 1970.

- To liberate scavengers from the cruel practice of carrying human excreta on the head (a dream of Gandhiji which never came true in his lifetime) and to rehabilitate them in other professions after training and education. About 50,000 scavengers have been liberated and re-settled in other professions so far.
- To prevent environmental pollution caused by open defecation by providing affordable, indigenous, scavenging-free and sustainable pour-flush toilet system in individual

Dr. Pathak is an epic campaigner for a clean, healthy and a discrimination-free society where justice will be ensured to all, most specially to women. This is his dream for which he is ready to make any sacrifice and bear any burden while travelling to the end of the world in search of a new future.

houses and at community centres. The toilet facilities set up by Dr. Pathak is now being used by about 10 million people per day.

- A large number of well-off families, including Prime Minister, Mr. I.K. Gujral and other leaders, judges and academicians, have adopted scavenger family as and part of social upgradation programme.
- To obtain biogas from human excreta for its various uses and also to obtain organic manure for raising productivity of the soil. As many as 63 such plants have been set up in India.
- Women's empowerment through education and training
- Rural development through use of indigenous technologies.

Dr. Pathak says :  
"Most miseries are caused by the human desire to rule over others. It is a matter on which history does not comment; It is assumed. And, those who sought to acquire the power to control the life of others are lost in the deeper shadows of antiquity".

### TECHNOLOGY BACK-UP

Dr. Pathak has raised a micro-level project on low-cost sanitation (starting in 1973 from Arrah, a small town in Bihar where he put up two pour-flush toilets by demonstration) to the macro-level when sanitation is globalised-V. The Sulabh technology has been widely accepted because it is effective, technically sound and sustainable at micro and macro-levels. No individual in India has raised the technology application from a small town to an international level when UNDP (World Bank) and other national and international agencies have recommended its adoption in other countries.

Technology has played a very decisive role in the Sulabh Sanitation Movement. The Sulabh technology is a very simple device, an improvement on those already developed at PRAI, Lucknow. By using this technology, there will be no need to physically clear human excreta. This was named as "*Sulabh Shauchalaya*", and could be adopted in different hydrogeological conditions with some changes. He knew that slogans alone

will not help and, hence, developed a technology which has become a credible alternative to scavenging in India. The Sulabh two-pit pourflush scavenging free technology has been adopted at Habitat-II conference at Istanbul in June 1996 as a "*Global Urban Best Practices*" recommended for use in other developing countries as a viable alternative to the sewerage system. Because of the technological underpinning, the Sulabh Sanitation Movement can be compared with the Industrial Revolution of 1848.

Dr. Pathak convinced administrators, planners and engineers about the successful functioning of the two-pit pour-flush toilet in urban areas which could be an affordable, safe and hygienic system for the disposal of the human waste. On the basis of technology, he has paved the way for the liberation of the scavengers from the centuries-old sub-human practice of carrying human excreta as headload by converting bucket latrines cleaned by scavengers into pour-flush toilet. During Mahatma Gandhi's lifetime and even after, attempts were made to develop a technology but none emerged.

Following the rapid adoption of the scavenging-free Sulabh technology of pour-flush toilet system, 240 towns have been freed from scavenging and 40,500 scavengers have been liberated and re-settled in other professions which was made possible by converting 8,00,000 bucket latrines into Sulabh toilets in 27 years. World Bank (UNDP), WHO, UNICEF, and other national and international agencies have recommended Sulabh technology use as a viable alternative to the expensive sewerage system. Sulabh has been declared as the *Best Global Practice* at Habitat-II conferences at Istanbul, June, 1996.

Dr. Pathak says most miseries are caused by the human desire to rule over others. It is a matter on which history does not comment; it is assumed. And, those who sought to acquire the power

to control the life of others are lost in the deeper shadows of antiquity. Exploitation is not modern; it is expensive, inhuman and uncivil. Idealism is also an economic concept because this alone can bring about social benefits. Democracy can accommodate many things in its people -- passion, ambition, selfishness, and even corruption. But it cannot long endure on the foundation of exploitation and social injustice of which scavengers are the worst victims. He says past, which is dead, cannot be a guide to future which is unborn. Indians must not carry the burden of the lost glory. No people has sacrificed more for this historical obsession and none has received fewer benefits from it.

### DR. PATHAK HAS A DREAM

Dr. Pathak is a loner although almost always living in the midst of multitude. His attitude to life, wealth and power is that of total resignation although he has all the three in adequate measure to make any ordinary man arrogant, self-righteous and overbearing. He loves God and religion but listens to those who deny them. His ordinary manners make him look like the man next door, doing the daily household work like reaching children to school, buying vegetables and quarrelling with wife over broken cups. He is a loving father, devoted husband and a very caring head of the family. He is early riser, he hates shabbiness (*wants zero mistake copy*) and late-coming. He sings and, like Shelly, sees supreme bliss in the "*song that tells of saddest thought*". He punishes people by forgiving them which hurts more than any other punishment.

Dr. Pathak does not forget the days of his miseries when he worked as an errand boy at a tea stall in Patna. He keeps all his friends and colleagues of those days in comfort and looks after them and their families. He remembers every man who may have done him any

small good and re-pays him many times over. If he has half the fortune of the world, his friends say, he will spend in half a day. ("*All progress is based upon an innate desire to live beyond one's income*", says Samuel Butler). His compassion is legendary, specially for scavengers. His entire life is identified to their miseries and salvation. He asks questions like a child (*a la why does apple fall!*) and answers them like a philosopher. He is mystical distant in thought and lost in emotions as if constantly in search for new frontiers.

Alexander once said: "If I were not Alexander, I would also have been Diogenes" (a Greek *fakir* and philosopher). Dr. Pathak would have been a *fakir* if he were not the founder of the largest and the most powerful social movement of the second half of this century.

The Founder has a dream -- the dream of a scavenger-free India where every house will have a toilet and every city centre will have full sanitation facilities, specially for women whose honour is the basic indicator of a civilised society. Since most scavengers are women, Dr. Pathak has made special education and training programmes for them, firm in the belief that mankind owes to women all that is best and beautiful in our civilisation. "Women are the measure of our progress and the beauty of our lives but they are the most disadvantaged group and among the poorest in society, specially scavenger women". He says that if a free society cannot help the poor, who are many, it cannot save the rich, who are a few.

Dr. Pathak is an epic campaigner for a clean, healthy and a discrimination-free society where justice will be ensured to all, most specially to women. This is his dream for which he is ready to make any sacrifice and bear any burden while travelling to the end of the world in search of a new future. This is the stuff great dreams are made of. And, that is what Dr. Pathak's life is all about. ●

Alexander once said: "If I were not Alexander, I would also have been Diogenes" (a Greek *fakir* and philosopher). Dr. Pathak would have been a *fakir* if he were not the founder of the largest and the most powerful social movement of the second half of this century.

**AWARDS AND HONOURS  
CONFERRED ON DR.  
BINDESHWAR PATHAK**

1. K.P. Goenka Memorial Award 1984
2. Prabandhak Mahan Muzzaffarpur 1990
3. Builders Information Bureau Award 1990
4. Civic Betterment Award Bombay 1990-91
5. National Citizens Award 1991
6. Padma Bhushan 1991
7. The International Saint Prize for the Environment "Canticle of All Creatures", Assisi, Italy 1992
8. Dr. Pinnamanni and Smt. Seethadevi Foundation Award, Vijayawada, Andhra Pradesh 1992
9. Bombay Citizen's Award 1992
10. Shahid Bhup Singh Award for Social Work, New Delhi 1992
11. Rotary International Spectre-93, Par Excellence Award for protection of Environment 1993
12. Ratna Shikromani Award given by India International Society for Unity 1993
13. Indira Gandhi Priyadarshini Award 1994
14. NRI Gold Award 1994
15. Manav Sewa Puraskar 1995
16. Vikas Ratna Award 1995
17. Limca Book of Records Man of the Year Award 1995
18. Babu Jagjivan Ram Award for abolishing scavenging 1997
19. Nominated Deputy Governor of American Biographical Institute Research Association, California, U.S.A. 1997
20. Michael Madhusudan Dutt Award 1997

**IMPORTANT NATIONAL  
CONFERENCES AND  
SEMINARS  
ATTENDED AND  
ORGANISED BY DR.  
BINDESHWAR PATHAK**

- *Conversion of Bucket Privies into Sanitary-seal Latrines* - Report on a National Seminar - Convened by Government of India in collaboration with WHO and UNICEF Patna - 25-27 May, 1978.
- *Regional Conference on Low-Cost Pour-flush Latrines* - Sponsored by Government of India/UNDP - at Udaipur and Udhagamandalam, (OOTY) during August - October, 1982.
- *National Conference on Low Cost Sanitation* - Sponsored by The Government of India in collaboration with the UNDP, New Delhi, May 19-20, 1984.
- *Seminar on Bio-gas from Human Excreta* - A State Level Seminar - Convened by - Sulabh Institute of Technical Research and Development, Sulabh International, Patna, Bihar on 26-27 November, 1984.
- *Seminar on Low-Cost Sanitation to eradicate scavenging and rehabilitation* - organised by Urban Development Department, Government of Uttar Pradesh in collaboration with Housing and Urban Development Corporation, Govt. of India and Sulabh International at Lucknow (U.P.) January, 1987.
- *First National Conference on Rural and Urban Water and Waste Water Management* - Organised by Institution of Public Health Engineers (India) Delhi Centre on 16-18 April, 1987.
- *Rural Sanitation and Health* - Lecture delivered at Lal Bahadur Shastri National Academy of Administration, Mussoorie - July 2, 1987.
- *Astan Regional workshop on Solar Energy Utilization and Power Generation* - September 9-11, 1987.
- *All India Seminar on Operation and Maintenance of Urban Water Supply*

- and Sewerage Services - Desirability of Adopting Low-Cost Sanitation - September 15-17, 1987.
- *Regional Workshop on Housing Actions Shelter in Asia and the Pacific - Experiences in Low-Cost Sanitation* - September 19-22, 1987.
- *Scavenging Free Scheme for Four Towns of Arunachal Pradesh* - Prepared by Sulabh International - February, 1988.
- *National Seminar and Exhibition on occasion of Visit of Mr. S.G. Pitroda* - April 11, 1988.
- *One-day Seminar on Strategic Action for Health and Sanitation*, in Delhi - Organised by - Sulabh International, New Delhi - October 12, 1988.
- *Seminar on Low-Cost Sanitation* - At Madras - October 25-26, 1988.
- *International Conference of Association of South - Central - West Asia Countries* - Indian Water Works Association, New Delhi - November 21-24, 1988.
- *Views on Integrated Scheme of the Liberation of Scavengers and Improvement in Sanitation Guidelines* Circulated by HUDCO, New Delhi - September, 1989.
- *Two-Day Workshop on Evaluative Methods Applied in Sanitation Sector* - India International Centre, New Delhi - May 23-24, 1989.
- *Task Force on the Problems of Scavengers* - Preliminary Thoughts on the Issues - August 1, 1989.
- *Indian Society of Health Administrators* - State Level Conference on Health of the Metropolis, Bangalore - September 8-9, 1989.
- *Second Conference on Building Industry*; Hotel Meridian, September 21, 1989.
- *Sulabh International Pioneer in Scavenging Eradication* - February 21, 1990.
- *Low-Cost Sanitation* - August, 1990.
- *Environment and Human Waste* - September, 1990.
- *Health and Sanitation with Special Reference to Excreta* - Disposal in Rural Areas - October 15, 1990.
- *Environment and Human Waste* - September, 1990.
- *Sulabh International - Objectives, Activities and Achievements* - September, 1990.
- *Training Proposals for Bihar State Under Nehru Rozgar Yozna* - Housing and Shelter Upgradation Scheme - December, 1990.
- *Sulabh Shauchalaya and Sulabh Complexes* - January, 1991.
- *Approaches and Strategies for Rural Sanitation in 1990s* - January, 1991.
- *Sulabh Shauchalaya and Sulabh Complexes* - IIT - February 2, 1991.
- *Programme for Eradication of Scavenging* - May 7, 1991.
- *Programme of Eradication of Scavenging* - August 27, 1991.
- *Training and Rehabilitation of Divorced Women* - Pusad District Yeotmal, Maharashtra - August, 1991.
- *Basic Sanitation in the Context of Rapid Urbanisation - Drinking Water and Sanitation Issues from the Third World Perspective* - New Delhi on November 14-16, 1991.
- *Second Congress of Toxicology in Developing Countries - Health and Sanitation* on November 24-28, 1991.
- *Lok Swaraj Sansad* - New Delhi Sulabh Experiences in Social Reform and Development on December 7-9, 1991.
- *Institution of Public Health Engineers (India)* - Sixteenth National Convention on Environmental Engineering, Shantiniketan, West Bengal - February 21-23, 1992.
- *Self-Managed Institution for Integral Development* - April, 1992.
- *Workshop on Design, Technology and Process for Primary School Building* - Organised by - Ministry of Human Resource Development, Government of India at Delhi on April 11, 1992.
- *Seminar on Environmental Protection and Developing Countries* - Prevention of Environmental Pollution and Enteric Diseases at Delhi - through Low-Cost Sanitation - May 12, 1992.
- *National Training Course on Energy for Rural Development* - Organised by - Centre for Integrated Rural Energy Planning, Bakoli, Alipur, Delhi - May 25-30, 1992.
- *NGOs Workshop on UNCED Conference*

- Improvement in the Quality of Life and Human Health through Low-Cost Sanitation, New Delhi - May 11-12, 1992.
- *Seminar on Environmental Protection and Developing Countries* - Prevention of Environmental Pollution and Enteric Diseases through Low-Cost Sanitation - May 12, 1992.
- *Seminar on Make the Earth a Source and Hospitable Home* - Organised by - Indian Federation of United Nations Associations, New Delhi - June 5, 1992.
- *Training and Rehabilitation of Liberated Scavengers and their Wards in Delhi and Adjoining Areas* at New Delhi - June, 1992.
- *Two-Day Workshop on Provision of Sulabh Shauchalaya in Delhi Homes* - Organised by - Sulabh International - June 20-21, 1992.
- *Proposals for Immediate Implantation of the Facilities for the Training and Rehabilitation of Liberated Scavengers and Their Wards in Delhi and Adjoining Areas* - August, 1992.
- *National Seminar on - The Political System - Social Diversities - Nation Formation and the Constitution* at India International Centre, New Delhi on August 28-29, 1992.
- *Workshop on - Media Mass Communication and Environment* at Patna - September, 1992.
- *Press Conference* at India International Centre, New Delhi on October 30, 1992.
- *Follow-up Workshop on Earth Summit*, New Delhi - November 13-14, 1992.
- *Dr. Pinnamaneni and Smt. Seethadevi Foundation* - Speech on Social Reforms on December 16, 1992.
- *Seminar on Social Justice Equality and Movements of Emancipation: Role and Respective of Dr. B.R. Ambedkar (1891-1956)* at Agra Institute of Social Service, Agra on December 22-23, 1992.
- *Save Earth Seminars 1993* at Patna on February 12-21, 1993.
- *State Level Workshop on Sanitation* - Organised jointly by - Madhya Pradesh, PHE Department and UNICEF at Bhopal on October 5-6, 1993.
- *Seminar on Secularism, Precept and Practice* at Patna on November 7, 1993.
- *Meeting of Experts on Biogas from Human Waste* - Institution of Engineers (India) Building, Bahadurshah Zafar Marg, New Delhi on November 8, 1993.
- *Integrated Development for Improving the Family Life in Rural Uttar Pradesh* - Organised by - Govt. of U.P. at Lucknow on December 21-22, 1993.
- *Seminar on - Basic Constructional Values and Their Implementation* - at India International Centre, New Delhi on January 8, 1994.
- *Water, Sanitation and Diarrhoea Control* at Patna on January 15, 1994.
- *Regional Seminar on Partnership in Municipal Infrastructure Services*, New Delhi on February 7-11, 1994.
- *Society for International Development, Patna Chapter - Eradication of Scavenging and Environmental Sanitation* - March 24, 1994.
- *International Conference in Shaping The Future By Law : Children, Environment and Human Health* - Organised by - The Indian Law Institute, Delhi on March 21-25, 1994.
- *International Conference on Shaping the Children by Law : Improvement in the Quality of Life*, New Delhi on April 30, 1994.
- *National Seminar on Rural Development and its Impact on Environment* - Organised by - Rural Youth Coordination, Amnour, Saran (Bihar) - June 5, 1994.
- *Seminar on Himalayan Conservation Programme - Governments - People Participation* at Vigyan Bhawan, New Delhi - Toilets in Gangotri Belt in Himalayan Region - Organised by Himalayan Environment Trust with Support of the Ministry of Environment and Forests, Govt. of India on June 27-28, 1994.
- *Training Programme on Planning and Management of Urban Services* - Organised by - National Institute of Urban Affairs, New Delhi - Low-Cost Sanitation - Sponsored by the Department of Personal and Training, Govt. of India on August 8-13, 1994.

## PROFILE OF DR. BINDESHWAR PATHAK

- *All India Maithili Conference at Darbhanga (Bihar) - Prospects of Scientific and Technical Development in Mithila on October, 1994.*
- *The First National Conservation Congress - Organised by - The World Wide Fund for Nature India, New Delhi on November 21-23, 1994.*
- *National Convention on Environment of India - Challenges for the 21st Century - Organised by - IPHE (India), Calcutta on November 23-25, 1994.*
- *United Nations Conference on Human Settlements (Habitat II) Zonal Consultation of NGOs/CBOs of Eastern Region - Hosted by - Sulabh International Social Service Organisation, Patna on - December 3-4, 1994.*
- *International Seminar on Disasters, Environment and Development - Organised by - The IGU Study Group on Development Issues in Marginal Regions in Collaboration with U.N. IDNDR Secretariat and other Agencies, Delhi on December 9-12, 1994.*
- *World Congress on vocationalisation of Environmental Congress at India International Centre, New Delhi on December 17-19, 1994.*
- *Seminar on Professionalisation of Environmental Management - World Congress on Vocationalisation of Environmental Congress at India International Centre, New Delhi on December 17-19, 1994.*
- *National Conference of NGOs on Integrated Development - Innovative Approaches Organised by - Consortium for Voluntary Action, New Delhi on January 22-23, 1995.*
- *Government and Non-Government Organisation partnership in Integrated Urban Infrastructure Development, New Delhi on February 2, 1995.*
- *Seminar on Integrated Urban Infrastructure Development - Organised by - Human Settlements Programme, New Delhi on February 1-4, 1995.*
- *Seminar on Urban Environment - Organised by - Centre for Environment Studies School of Planning and Architecture, New Delhi on February 7-10, 1995.*
- *XVI National Conference of ISSA on Dimensions of Development - Organised by - Department of Sociology Kashi Vidyapeeth, Varanasi on - February 10-12, 1995.*
- *UNDP Parliamentarians Forum for Human Development Project - on Integration - at Parliament Annexe, New Delhi on February 20, 1995.*
- *Third International Conference on Appropriate Waste Management Technologies for Developing Countries - Organised by International Association on Water Quality, London in association with National Environmental Engineering Research Institute, Nagpur on February 25 - 26, 1995.*
- *Interactive Workshop on National Programme on Sanitation and Hygiene on the Lines of A Technology Mission - Organised by - Ministry of Health and Family Welfare, Govt. of India, New Delhi - Need for a Technology Mission for Sanitation - April 10-12, 1995.*
- *8th International Congress on - Human Settlements in Developing Countries - Organised by - Centre for Human Settlement International, Calcutta on May 25-27, 1995.*
- *Eighteenth Course on Urban Plan Administration - Organised by - Indian Institute of Public Administration, New Delhi on - July 17-28, 1995.*
- *Symposium on Role of NGOs in the Conservation of Environment - Organised by - National Environmental Science Academy, New Delhi on August 19-20, 1995.*
- *Seminar on Microbes for Environmental Management - Organised by - Association of Microbiologists of India (Delhi Unit II) on August 26, 1995.*
- *Role of Non Governmental Organisation in Implementation of Urban Sanitation Programme - Organised by - Indian Institute of Public Administration, New Delhi on August 26, 1995.*
- *Seminar on Microbes for Environmental Management, JNU, New Delhi on August 29, 1995.*
- *Training Programme on Formulation and Financing of Urban Water Supply Projects - Organised by Indian*

- Institute of Public Administration, New Delhi on August 25 to September 8, 1995.
- *National Seminar on Schedule Castes : Problems and Prospects* - in Agra (U.P.) in September 23-24, 1995.
  - *Seminar on The Engineering Trends in Social Theory* - Organised by - Gobind Ballabh Pant Social Science Institute, Allahabad on September 29 - 30, 1995.
  - *Acceleration the process of Social Development in Bihar* - National Seminar on Development of Bihar - Organised by - A.N. Sinha Institute of Social Studies, Patna on November, 9-12, 1995.
  - *National Workshop on Corporate Initiatives in Public Health* - Focus : Sewage Disposal and Safe Drinking Water - Organised by - Confederation of Indian Industry, New Delhi on November 16, 1995.
  - *Second Congress* - Theme : Human Settlement - Problems and Prospects - Organised by - Indian Building Congress, New Delhi on December 7-9, 1995.
  - *An Extension Lecture to the Students and Staff of Udaipur School of Social Work* - Rajasthan Vidyapeeth, Udaipur on - December 11-12, 1995.
  - *"Women and Empowerment"* Paper read in Meeting organised by USAID on February 2, 1996.  
Key note address at seminar on "The Problems and Rehabilitation of Disabled Women" on March 24, 1996.
  - *National Rural Housing Exposition* - Organised by India Trade Promotion Organisation at Pragati Maidan - on Nov. 15, 1995, Jan, 31, 1996.
  - *29th Annual Conventions of IWWA* at Calcutta - On 2-5, 1996.
  - *Seminar on Environmental Quality of Human Settlements* - Organised by Centre for Environmental Studies School of Planning and Architecture of New Delhi - on Jan 31 to 2nd Feb., 1996.
  - *Seminar on Education for Achievements of Sustainable Human Settlements* - Organised by Centre for Environmental Studies School of Planning and Architecture at New Delhi - on 4-6 Feb., 1996.
  - *Workshop on capacity Building for Urban Environmental Management* - Organised by Human settlement Management Institute of New Delhi on 17-21 Feb., 1996.
  - *Meeting of the International Ministerial Convergence Forum (IMCF)* under the Prime Minister's integrated urban poverty Eradication Programme at Nirman Bhawan in New Delhi on Feb. 21st 1996.
  - *National Seminar on Dalit writings, movements & Dynamics of Social Change* at Warrangal-on 23-24 February, 1996.
  - *Workshop on HIV, AIDS* at Parliament House Annexe, New Delhi on - March 12, 1996.
  - *Working Group on Environment Health Education: IEC* to formulate Policy Guidelines Strategies and programme objective during with plan (constituted by Planning commission) meetings on 19.3.96, 3.4.96, 10.5.96 & 30.5.96.
  - *Seminar on Healthy cities for better life: Planning, participation and partnership* - organised by National Institute of Urban Affairs, New Delhi in collaboration with WHO at I.I.C. on April 4, 1996.
  - *Women's Political Empowerment Day celebrations Conference* Organised by The Institute of Social Sciences at New Delhi on April 24, 1996.
  - *DDA-HUDCO workshop on Decentralised Approach for urban services* at Vigyan Bhawan on 25-26 July, 1996.
  - *All India Seminar on "Challenging Problems in Environmental Management (CPEM 96)"* - on 12-14 Sept., 1996. (Organised by Nagpur Local centre of the Institute of Engineers at Nagpur)
  - *Seminar on Solid waste management: Developing Countries perspective Need for Development of waste Management Industry in India* - Organised by National Council of Development communication, New Delhi on Sept 28, 1996.
  - *All India Women's Educational Fund Association (AIWEFA) Seminar* on - 3-5 October, 1996.
  - *National Housing Seminar "Adequate*

## IMPORTANT INTERNATIONAL CONFERENCES AND SEMINARS ATTENDED BY DR. PATHAK

- *Shelter for All* Organised by - Ministry of Urban Affairs and Employment, New Delhi at Vigyan Bhawan on 7-9 October, 1996.
- *Capacity Building on day workshop on cities at Risk* International Day for Natural Reduction at Haryana Institute of Public Administration, Gurgaon on October 9, 1996.
- *Technology Summit 96* - 11-12 Oct. 1996. *Technology Platform 96* - 10-12 Oct. 1996. Jointly organised by confederation of Indian Industry and IMTMA at Hyderabad.
- *XIXth Annual conference of Indian Society of Gandhian Studies* Organised by Rani Durgawati University at Jabalpur on - 16-18 Oct. 1996.
- *National Sympostum on Youth: Sanitation and Environment* Sponsored by Department of youth Affairs and sports Ministry of Human Resources Development, Govt. of India on -
- *Meeting of National Steering Committee* on Habitat-II on - Nov. 21, 1996.
- *Seminar on Sub-Standard HABITATS in Delhi* Organised by PHD Chamber of Commerce and Industry and Govt. of NCT of Delhi on - Dec. 13, 1996.
- *Prime Minister's Integrated Urban Poverty Eradication Programme* First Meeting of the International Ministerial convergence forum at Nirman Bhawan on - Feb. 21, 1997.
- *Consultation on National Rejuvenation through Democratic restructuring* at Parliament annexe organised by Lal Bahadur Shastri Memorud Foundation on - March 8, 1997.
- *National Conference on Strategic & Human Management A Vision for 2002* Ashok Hotel, New Delhi on - 19-20 March, 1997.
- *Symposium - Organised by Development Research Group* at Parliament House Annexe, New Delhi on World Water Day on - March 22, 1997.
- *National Seminar on Lokpal Legislation* Organised by Citizenship Development Society at Indian International Centre, New Delhi on March 30, 1997.

Dr. Pathak and experts of Sulabh International Social Service Organisation have visited a number of countries to study the problems relating to sanitation particularly disposal of human excreta with a view to adopting their innovative technologies and systems in reference to socio-cultural and economic background of India. On the invitation of the Chinese Government, and National Swedish Institute for Building Research a team of senior engineers of Sulabh International and representatives of All-India Institute of Hygiene and Public Health, Calcutta led by Dr. Pathak visited China in 1987 to study the sanitation technology being adopted there, and Sweden in July, 1989 to study the research work being carried out there on low cost sanitation options (including small more sewer, cleaning of leach pits mechanically and low volume flushing water closet).

Dr. Pathak visited Karachi (Pakistan) in December, 1990 at the invitation of the Food and Agricultural Organisation to study viability of the Orangi Project conceived on self-help. Sponsored by UNICEF, Dr. Pathak visited Oslo (Norway) to attend the Global Forum of Collaborative Council Meeting on Water Supply and Sanitation in September 1991 and again at Morocco in September, 1993.

International Association for Energy Economics invited Dr. Pathak to participate in the 16th Annual International Conference at Bali during July 1993. On being nominated by Government of India, Dr. Pathak attended International conference "Partnership for change" organised by the UK Government during September, 1993. On invitation from Colorado State University, USA, Dr. Pathak delivered the keynote address and also read a paper at the International Conference on Village Based Development in September, 1993. Being invited by the Vice President of the World Bank, Dr.

Pathak attended the First Annual International Conference on Environmentally sustainable Development in September October, 1993 at Washington D.C.

Dr. Pathak has also visited UK, Japan, Bangkok (Thailand), Indonesia, Sri Lanka, Bangladesh, Nepal and Spain at the request of UNICEF, UNDP, World Bank etc. to attend seminars, conferences or to advise Governments on low cost sanitation.

- *International Seminar on lowcost techniques for Disposal of Human Waste in Urban Communities* - Sponsored by The UNDP Global Project on Low Cost Water Supply and Sanitation UNICEF, India and the Government of India in association with The Institution of Engineers (India) on the occasion of the Diamond Jubilee at Calcutta - February, 1980.
- *International Seminar on Adhoc Session on 'Action Sociology'* at the XII World Congress of Sociology, Madrid, Spain, July 1990.
- *International Drinking Water Supply and Sanitation Decade* - The Global Consultation on Safe Water and Sanitation for the 1990s - New Delhi - September 10-14, 1990.
- *Global Collaborative Council Meeting for Water Supply and Sanitation*, OSLO, Norway on September 18-20, 1991.
- *Regional Consultation on Hygiene and Sanitation Promotion* at WHO, New Delhi on May 19-21, 1993.
- *Water Supply and Sanitation Collaborative Council Meeting (WSSCC)* at Rabat, Morocco on September 7-10, 1993
- *Global forum on Environmental Development Education* - Organised by - Indian Environmental Society under the Sponsorship of UNESCO - September 24-28, 1993.
- *International Conference on Sustainable Village-Based Development* - Colorado State University, USA - Department of Civil Engineering on September 26 to October 1, 1993.
- *Seminar on Partnership for Change - Manchester* - September, 20-22, 1993
- *Seminar on Sulabh's Low-Cost Sanitation Work in South Asia* at Canada on September 22-24, 1993
- *Environmentally Sustainable Development - Washington D.C.* called by World Bank on September 30 to October 1st, 1993.
- *The Asian Conference on Diarrhoeal Diseases, Dhaka* - Hosted by Bangladesh Medical Association on September 17-19, 1994.
- *Report of the Second Meeting - Working Group on Promotion of Sanitation - Water Supply and Sanitation Collaborative Council*, Switzerland on October 3-5, 1994.
- *Workshop on Regional Cooperation in the Management of Social and Hazardous Works in Developing Countries* at Taipei, Taiwan - Convened by Pacific Basic Research Centre Harvard University on - January 13-14, 1995.
- *Seminar on NGO Forum '95* - Copenhagen, Denmark on March 3-12, 1995.
- *HUDCO MISSION to South Africa* - March 13-29, 1995.
- *Collaborative Council meeting of the Working Group on the Promotion of Sanitation* - Geneva, Switzerland, on - April 28 to May 3, 1995.
- *International Symposium on Public Toilets 1995* - Organised by - Urban Council, Hong Kong on - May 25-27, 1995.
- *NGO Forum on the World Summit for Social Development* - Helsinki - Organised by - The International Council on Social Welfare Montreal, Quebec, H2Y 3X7 Canada - Social Integration Experiment And Experiences of A Non-Governmental Organisation in India on July 7-9, 1994.
- *World Summit for Social Development: What After Copenhagen* - May 9, 1995
- *Water Supply and Sanitation Collaborative Council - Third Global Forum* in Barbados on October 30, to November 3, 1995.
- *Dubai International Conference on Best*

## PROFILE OF DR. BINDESHWAR PATHAK

*Practices* on November 19-22, 1995.

- *International Conference at Kota Rajasthan* - Organised by Bharat Vikas Parishad, New Delhi - on 30-31 December, 1995.
- *Dubai International Conference on Best Practices in Improving Living Environments*, November 19-22, 1995 organised by the UNCHS, Habitat-II.
- *City Summit, Habitat II conference at Istanbul* organised by the UNCHS, June 3-10, 1996.
- *22nd WEDC conference - Reaching the unreached challenges for the 21st century*, 9-13, September, 1996.
- *Meeting of General Assembly of the UN on Habitat Agenda*, October 29-30, 1996.
- *Outline of National capacity Building Strategies for Urban Environmental Management*-Organised by HSMI, New Delhi and Institute for Housing and Urban Development Studies, Rotterdam on 1st January, 1996.
- *Meeting at USAID to discuss issues Concerning Women's Leadership and Advocacy, Literacy Credit and Enterprise and Environmental Health* at Qutab Institutional Area, New Delhi on 8 February, 1996.
- *International conference on Environmental Strategies for Asian Cities*-Organised by United Nations Centre for Human Settlements with Madras Metropolitan Development Authority and Govt. of Tamil Nadu at Madras on 14-17 February, 1996.
- *Third International Conference on Environmental Planning and Management* - Organised by Visevesvaraya Regional College of Engineering, Nagpur on 24-26 February, 1996.
- *International Conference on promotion of Environmentally Sound and healthy cities*-Organised by Department of Geography, Delhi School of Economics, University of Delhi at New Delhi - on 12-14 March, 1997.
- *United Nations Conference on Human Settlement, Istanbul, Turkey* on 3-14 June, 1996.
- *The 27th ICSW International conference on "Role of Non Governmental Organisations in Transitional Societies (1) at convention and Exhibition Centre, Hong Kong* on July 23 - August 3, 1996.
- *Consultative Status with the Economic and Social Council of United Nations* - on 26-30 August, 1996.
- *22nd WEDC Conference on Reaching the Unreached Challenge for the 21st century* Organised by Water, Engineering and Development centre, Loughborough University of Technology, England in Collaborations with the Institute of Public Health Engineers, India. Supported by Sulabh International Social Service Organisation at New Delhi on 9-13 September, 1996.
- *United Nations Conference on Human Settlement (Habitat-II)* at New York on 29-30 October, 1996.
- *Interactive Seminar with FOCUS on Issues that need Attention* Organised by SERCON CE & C on 30-31 January, 1997.

