



# SWACHHATA SANSKRITI

*From the Historic to the Holy:  
India's Swachhata Legacy*



THIS PUBLICATION IS DEDICATED TO  
OUR ESTEEMED PRIME MINISTER,  
SHRI NARENDRA MODIJI,  
FOR SERVING AS A SHINING LIGHT  
FOR A SWACHH BHARAT  
AND A SWACHH WORLD

© Global Interfaith WASH Alliance India  
September, 2019, All Rights Reserved

**Report Prepared Under Guidance and Inspiration of:**

HH Pujya Swami Chidanand Saraswatiji

President, Parmarth Niketan, Founder/Chair, Global Interfaith WASH Alliance

**With Special Thanks to:**

Respected Shri Parameswaran Iyer

Secretary, Dept of Drinking Water and Sanitation, Ministry of Jal Shakti

Respected Shri Yugal Joshi

Director, Ministry of Jal Shakti

**Written and Designed By:**

Swamini Adityananda Saraswati

Director, Programmes, Policy, Partnerships and Development, Global Interfaith WASH Alliance

**Research Assistance By:**

Professor Shri Prakash Singh, Professor, Department of Political Science, University of Delhi

Joan Krawitz, Instructor of History, College of DuPage

Prashant Barthwal, University of Delhi, Dept. of Political Science, Faculty of Social Science

# SWACHHATA SANSKRITI

*From the Historic to the Holy:  
India's Swachhata Legacy*

# CONTENTS

<b>Section Name</b>	<b>Page</b>
Introduction	05
The Ancient rise of a Swachhta Sanskriti	6
A Swachh life in the Indus Valley	7
The World's first flushing toilets	9
The toilets and Sewage Systems of the Indus Valley Civilisation compared to the Exploding Toilets of Ancient Rome	10
Cleanliness of the Body and Soul Bathing, Worshipping and Water Engineering in the Indus Valley Civilisation	12
Ancient Yogis of the Clean Waters	13
India's Ancient Swachhata Sanskriti extends to Trash Management	14
After the Fall of the Indus Valley Civilisation	14
The Vedic Era –Cleanliness becomes Holy	14
Instructions in Cleanliness by the Vedic Rishis and Texts	15
From Toilet Mantras to Purification: The Vedic Injunctions on Swachhata	17
Chanakya's Directions for a Swachh Mauryan Empire	20

Vision for Swachh Societies across the Empires	21
Buddhist Sanitation and Hygiene	22
Monastic Sanitation and Etiquette	23
Then fell the Global Dark Ages of Sanitation	24
What happened to Sanitation in Europe	24
Sanitation during the Mughal Empire	27
Improved Water Resources for a Clean and Green India during Sultan and Mughal Rule	30
India under Colonial Rule	31
Colonial Cities Rise- Sanitation Fails	34
Manual Scavenging Across Continents and Cultures	35
Swami Vivekananda as a Sanitation Hero	38
How Tragic Floods changed Hyderabad	39
The Wisdom of the Mahatma	40
An Independent Nation Rises for a Swachhata Sanskriti	43
Conclusion	45
End Notes	47

## INTRODUCTION

Like the waves of an ocean, time ebbs and flows, yet is always constant. From one era to the next, waters may appear calm and clean, until new winds blow forth alternate tidings with each successive current.

Yet the sea is always the sea.

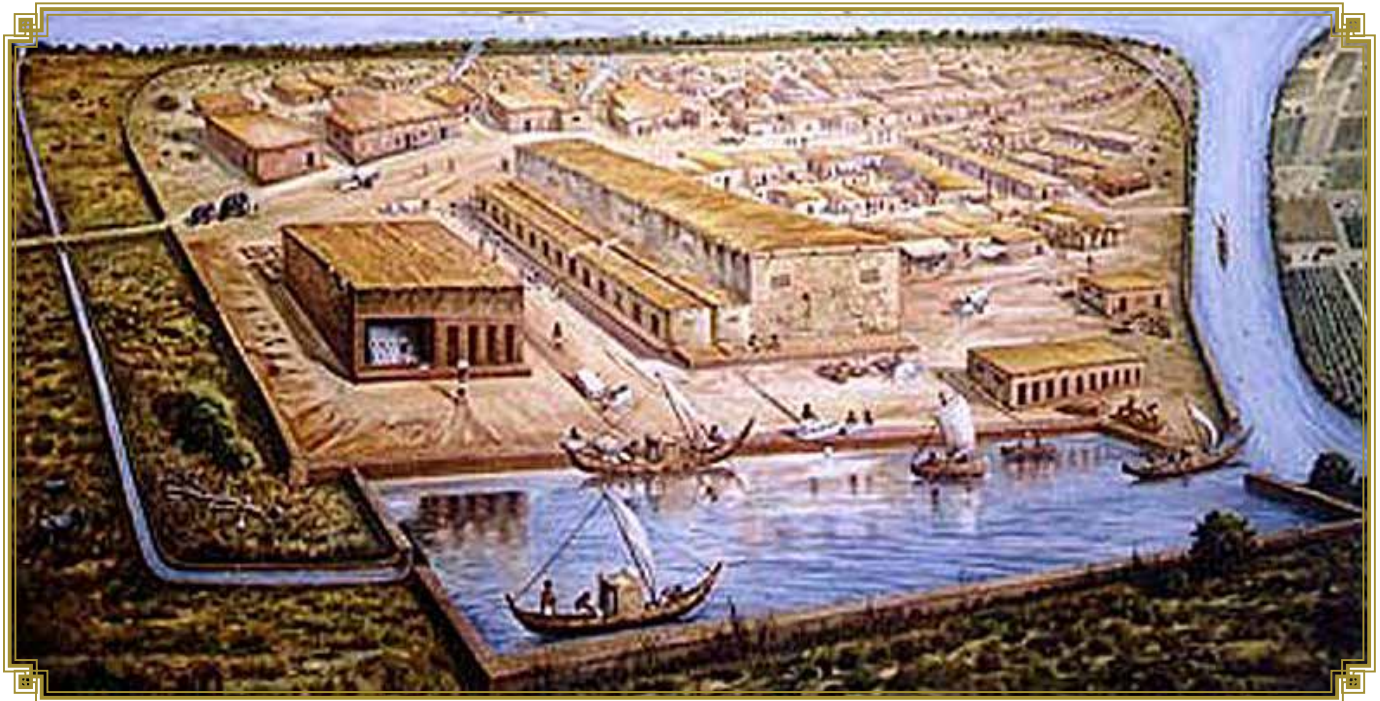
So it is that India, akin to the maritime depths, remains a constant. One out of many, and many out of One.

From this rises our *Sanskriti*. Our Culture. Our Heritage.

Drill down into the streets of ancient cities such as Delhi, and one will find layer upon layer of languages, styles, hopes, and desires, once brilliantly brought to stage, before taking final bows that form strata upon strata over which new dreams are forged.

There was a time, 5,000 years ago that great cities rose, shining, clean, beautiful, advanced beyond imagination. And then, in a blink of the eyes of the universe, all vanished, and the sages rose. Another blink, and kingdom upon kingdom ascended. Another blink, and Empires emerged. Another blink, and India is independent and unified.

Yet the soul of India has remained the same, heralding forth visions of serene waters, green vistas, and cleanliness all around. We find allusions to it in our ancient texts; we write about it in our love stories.... It is the dream that is India. A *Sanskriti* that is clean. A heritage that is ours.



## THE ANCIENT RISE OF A SWACHHATA SANSKRITI

Britain, 3000 BCE. It's the late stone age, and the region's first settlements—small groupings of dung and thatch huts—have begun to sprout like forlorn trees in otherwise untouched fields. Farming of rudimentary crops had relatively-recently replaced hunting and gathering here, finally freeing local humanity from the bonds of nomadism. Rooted in the rather new concept of permanent homesteads, culture slowly began to rise. <sup>1</sup>

Meanwhile, some 4,000 miles away, the expansive city of Rakhighari had begun its ascent hundreds of years earlier. On first view, the metropolis must have seemed to the visitor to be akin to a celestial vision,

rising from the lands of what would become today's Haryana. Here, architecture and engineering took on astonishing qualities as the city spread its wings to eventually become nearly 4 kilometres long<sup>2</sup>... making it the largest Indian city of its period yet discovered. <sup>3</sup>

While the Neolithic British were still mastering the rudiments of farming, the dwellings of Rakhighari—and other important Indus Valley cities of the time—more closely resembled those that the modern city dweller might recognize today. Family homes have been found that contained several rooms, with walls made of sturdy brick, decorated with tiles, adorned with pottery that had been skilfully crafted on wheels. On the soft wrists of the genteel gleamed bangles of glistening metal; adorning their

necks, shining beadwork containing the carnelian of Mesopotamia and the turquoise of Persia (Doshi, n.d.). As such, the Indus Valley civilization, in and of itself, could be considered nothing less than a miraculous testimony to the ingenuity, intelligence and fortitude of the people who laid the historic foundations of Incredible India.

### A SWACHH LIFE IN THE INDUS VALLEY

Imagine now, a tour through the ancient Indus Valley Civilization, which covered approximately one million kilometres of the Indian Sub-Continent, including modern-day Gujarat, Rajasthan, Punjab, Haryana and Delhi.

That many of its cities boasted civic infrastructure somewhat similar to the layout of today's municipalities might come quickly to the mind of the time traveller. Said Notre Dame University (USA) historian, Dr. Matthew A. Fitzsimons, "The major cities are a utilitarian city-planner's delight... The streets and houses are equipped with a sewage system, more extensive than the systems of Crete."

One of the most remarkable achievements of the Indus Civilization was its sophisticated city planning. The cities of the early Mesopotamians were a jumble of buildings connected by a maze of winding streets. In contrast, the ancients of the Indus

Valley laid out their cities on a precise grid system. Cities featured a fortified area called a citadel, which contained the major buildings of the city. Buildings were constructed of oven baked bricks cut in standard sizes, unlike the simpler, irregular, sun-dried mud bricks of the Mesopotamians. Early Indus Valley engineers also created sophisticated plumbing and sewage systems. These systems could rival any urban drainage systems built before the 19th century. (Wright, 2010).<sup>4</sup>

In light of the importance of cleanliness to this ancient civilization, it is only fitting that it would be the first to develop such wonders as water-flushed toilets and sewage systems. Today, as scholars begin to recognise the importance of studying toilets and sanitation as vital ways of glimpsing ancient societies, it is being revealed that the sanitation works of the Indus Civilization outshone the famed sanitation of the ancient Romans, and, as we will learn later, Rome's exploding toilets.

Excavations in the civilization's cities are finding that most households were fitted with their own clean and private toilets. Interestingly, archaeologists found that the citizens of these areas had their choice of what we now call "Western" (sitting) and "Indian" squatting toilets, meaning that so-called "Western" toilets, from the beginning, were never



just “Western” at all. In many homes, people sat on a comfortable wooden seat, rather than squatting. Others chose squat toilets with foot supports akin to the ones we see today.

In some cities, it was found that toilets flushed similarly to today’s “pour-flush” toilets, with users flushing with a container of water. The waste would then travel through terra cotta piping to soak pits or to covered street drains, which would both keep the streets free of stench, and also provide a safety net against water-borne and vector-borne diseases such as Cholera and Malaria respectively. At the same time, safeguards were built in by the Indus Valley engineers in order to ensure proper maintenance. As Fitzsimmons noted, “*Slits are made in covered drainage trenches to permit inspection.*”<sup>5</sup>

The drainage trenches led to city sewage systems that were engineered to keep the population and the environment clean and free from the waste and disease.

“In Lothal, the most unique aspect of planning during the Indus Valley civilization was the system of underground drainage. The main sewer, 1.5 meters deep and 91 cm across, connected to many north-south and east-west sewers. It was made from bricks smoothed and

joined together seamlessly. The expert masonry kept the sewer watertight. Drops at regular intervals acted like an automatic cleaning device.

A wooden screen at the end of the drains held back solid wastes. Liquids entered a cess pool made of radial bricks. Tunnels carried the waste liquids to the main channel connecting the dockyard with the river estuary. Commoners’ houses had baths and drains that emptied into underground soakage jars.<sup>6</sup>”

According to another study,

“In Lothal, in 2500 BCE, the people had water-born toilets in each house, which was linked with the drains covered with burnt clay bricks. To facilitate the operation and maintenance, it had manhole covers, chambers etc. After the sewage drained to the main street, it ran out of the city and was washed away during the rainy season. It was the finest form of sanitary engineering.”<sup>7</sup>

In some cases, toilets drained,

“to pits made of clay bricks (Jansen, 1989; Wright, 2010). When these pits were three-quarter filled, the outflow ran into the drains of the streets (Mackay, 1936, p. 51). These pits were probably emptied, and the sludge was sent to sites dedicated to that purpose, as it has been suggested about solid wastes (Jansen, 1989).

To prevent the drainage systems from getting clogged, pits were located at the junction of several drains, or in certain places where the drains extended over a long distance. These pits had the function of manholes. Downstream of these manholes, a wider drain was implemented (Wright, 2010), receiving water partially treated through these pits (sedimentation). To reduce the friction of the water on the walls, bends were curved using key-bricks (Mackay, 1936, p. 52), the same characteristic was used for the sewer system in Lothal (Rao, 1979, p. 78).”

## THE WORLD’S FIRST FLUSHING TOILETS

Besides the brilliance of its sewage systems, the Indus Civilization can also be credited for the world’s first automatic flushing toilets. These used flowing water from rainwater, rivers or wells that safely sent waste into household terra cotta piping and, more often than not, to the covered drains and sewer systems of the cities. The risk of disease, foul odours and threats from insects and vermin were swept away below.

As scholars in the Journal of Multidisciplinary Studies in Archaeology noted: “India has a glorious past as the earliest flushed toilet system was reported during archaeological studies from Indus Civilization.”<sup>8</sup>

According to the multinational collaboration, the Historical Development of Sewers Worldwide, “Civilization (ca. 3200–1900 BCE) in the Indus Valley developed sophisticated, comfortable, and hygienic lifestyle, as manifested from long term very efficient sewerage systems, bathrooms and flushing toilets, which can only be compared to the techniques developed in Europe and North America a century and half ago.”<sup>9</sup> (bolding added by this author).

Remarkably, researchers are now postulating that the availability of the highly-sophisticated toilets and sewage systems of the Indus Civilization were dependent, from city to township, not by size of the municipality, but by the politics. This pattern that would be continued under other civilizations and occupations until the Swachh Bharat Mission, under India’s Hon’ble Prime Minister Sri Narendra Modi, would serve to level the playing field, making toilets universally available today.

For example, according to scholars, the city of Dholavira, which was considered quite large for its time at 100 hectares, used soak pits and earthenware jars instead of any kind of central sewage system. There, drainage was only provided to channel rainwater from city streets and structures. At the same time, the much smaller village of Chanhu-Daro, which was less than a tenth of the size of



Dholavira, was equipped with sewage drains and systems throughout. To the scholars, this signified the major roles that local politics played in civic sanitation design.<sup>10</sup>

### THE TOILETS AND SEWAGE SYSTEMS OF THE INDUS VALLEY CIVILIZATION COMPARED WITH THE “EXPLODING TOILETS” OF ANCIENT ROME

In a report by scholars from eight nations, it was stated that,

“The toilets of Indus valley civilization were different than the Roman and Greek

Civilizations. This difference is the main evidence of the cultural difference between them”<sup>11</sup>

For centuries, the Roman Empire (27 BCE – 476 CE) has been remembered for its aqueducts, sewer systems, and baths, which marked the height of European sanitation<sup>12</sup> until the middle of the 19<sup>th</sup> Century. It seems, however, that ancient Rome’s reputation for cleanliness may be exaggerated. Professor Ann Olga Koloski-Ostrow (Brandeis University), the author of *The Archaeology of Sanitation in Roman Italy: Toilets, Sewers, and Water Systems*<sup>13</sup>, explored the sewers of ancient Rome, Pompeii and Herculaneum, and found that:

“The archaeological evidence suggests that their finely constructed sewer systems were more about drainage of standing water than the removal of dirty debris. And Romans’ sense of cleanliness and privacy around bathroom matters was quite different from our tender modern sensibilities.”<sup>14</sup>

Rather than serving as part of a master plan to sanitize the city, Rome’s main sewer, the mile-long Cloaca Maxima in Rome, was intended to drain water from the Rome’s streets and the areas of the city that were prone to flooding when the River Tiber overflowed its banks. Then *“it drained ran right back into Rome’s major drinking supply before the aqueducts, the Tiber”*<sup>15</sup>. As a result, countless people fell sick and perished from drinking from the contaminated river, forcing the Romans to extend their aqueducts-- at what must have been great cost-- to bring the city’s drinking water from the River Arno.<sup>16</sup>

Public and private toilets were abundant, but almost none of them were connected to a sewer. Because of this, they became a force to be feared. “One reason may be that Roman sewer openings had no traps. *One never could be sure what might climb out of an open sewer pipe and into your house.*”<sup>17</sup>

Public toilets also had the rather frightening habit

of bursting into flames when noxious gases in the cesspits located directly under the unwitting user’s seats spontaneously combusted.

To the wary Roman toilet user, there was also “the perceived threat of demons that the Romans believed inhabited these black holes leading to the mysterious underbelly of the city.”<sup>18</sup> Perhaps it is for this reason that the Goddess, Fortuna, was also prayed to as a protector of the toilet user, with Her image delicately painted on some Roman public toilet walls to warn the common user about the vermin below (see top of Page 9), and hopefully, to protect him.

Although Rome’s sanitation infrastructure surpassed that of any European culture until England’s Victorian period (1837-1901), unlike the elegant sanitation systems of the Indus Valley Civilisation, it seems not to have improved public health. The public baths, which left Romans of all social classes clean and sweet smelling, were also hotbeds of bacteria and parasites like tapeworm. Latrines and rivers bred germs that caused cholera, dysentery and other water-borne diseases.<sup>19</sup>

As the Empire expanded, during the 3rd and 4th centuries CE, “a crisis in the maintenance of the sewers of Roman cities” seems to have occurred.<sup>20</sup>

The Romans may have been planning to upgrade their sanitary systems, but they ran out of time in 476 CE, when the Western Roman Empire fell to what seems to have been the combined onslaught of foreign invaders, internal decay, climate change and a series of plagues.<sup>21</sup>

## CLEANLINESS OF THE BODY AND SOUL: BATHING, WORSHIPPING AND WATER ENGINEERING IN THE INDUS VALLEY CIVILIZATION

From home to hamlet, village to city, without clean and healthy water, civilization cannot be sustained. For the ancients of the Indus Valley, water was not only essential for agriculture, cooking and bathing, but also for religious purposes. It was thus likely with reverence that the great water and sanitation engineers of the civilization brought forth what are said to be the largest public baths, reservoirs, and step wells of the time, some of which have been identified as special places of worship.

Public bathing pools were a mainstay of the civilization. Beautifully reflecting the hallowed shades of the sun and sky, they were kept clean and sanitary through advanced indigenous engineering. Raised and sloped bathing platforms were common

in most homes, demonstrating the culture's reverence for personal cleanliness as essential for their well-being. These feats of innovation incorporated raised elevations, planned slopes and piping that ensured drainage away from the household and bather and into civic drains or other clean and hygienic areas.

The household washrooms were complimented by public baths, which were likely visited by family, friends, citizens and visitors alike, not only for cleanliness, but for socializing, peaceful relaxation and children's play. Like swimming pools in today's resorts, archaeologists have discovered that drain pipes from these baths sometimes contained little terra cotta children's toys, akin to the plastic float toys used today. These clay toys likely found themselves wedged into the pipes after being discarded by bored toddlers or swept out of the hands of children in play, as happens today.

Archaeologists are still awed by the "Great Baths" of these great cities. These were reservoirs and pools considered to this day to be among ancient humanity's greatest innovations. It is widely-supported that many of these were used as places of worshipful reverence, perhaps similar to the tanks fronting today's Hindu temples, the pool of nectar at Amritsar or the bathing *ghats* of the River Ganga.

The largest of these currently on record was recently

discovered in Dholavira, in modern day Gujarat. The 5,000-year-old marvel<sup>22</sup> outshines both the Great Bath of the Indus Civilization city of Mohenjo Dharo (in modern-day Pakistan), and the reservoir of *Rani Ki Vav* in Patan, Gujarat, which wouldn't be built until thousands of years later. Dholavira was located in a drier area, most likely dominated by brackish waters, but it also benefitted from streams which were channelled through engineering into large reservoirs. These provided water for the 15,000 – 20,000 inhabitants<sup>23</sup>, as well as for the agricultural and horticultural fields which surrounded the ancient city, and kept its population fed. The largest of the pools combined could contain an astonishing 30 crore litres of water, enabling a civilization to survive and thrive. It has been said that the techniques used by this civilization, if implemented today, could potentially stave off the impacts of water scarcity triggered by climate change, deforestation and over-extraction.<sup>24</sup>

Lothal, in the southernmost reaches of the Indus Valley Civilization, was the home of what was likely to have been the world's first boat docking system. It used sophisticated technologies to connect this city of art, craft and industry to the Sabarmati River and what was then the Arabian Sea (now claimed by the expansive Kutch Desert). The docking system is seen by many as a shining example of the prodigious

talents demonstrated by the ancient aquatic engineers of the Indus Valley in controlling water for the betterment of its citizens and trade partners from near and far.

## ANCIENT YOGIS OF THE CLEAN WATERS

Little is known of the religious practises of the ancients of the Indus Valley. It is one line of thought by scholars such as Sir John Marshall that they may have been worshippers of Lord Shiva in these pre-Vedic times (Possehl, 2002). It has also been theorized that the iconography clearly depicts that the ancient people of the Indus Valley practiced forms of yoga associated with the Mother Goddess, who was represented in beautiful Terra Cotta idols, and whose yogic techniques (as scholars postulate were inscribed in the indigenous art) were practiced by its citizens (as well as by certain advanced yogic practitioners to this day).<sup>25</sup>

Yogic practices in and of themselves can do much to bring about deeper feelings of connections with nature, as well as greater compassion and altruism for society itself (Fiori, Aglioti, & David, 2016). Its probable incorporation into daily life could be a reason why the Indus Civilization was considered just, clean and peaceful, with no findings of slavery,

and a well-ordered society where citizens worked hand-in-hand, not only with each other, but with trade partners from across their known world.

To the citizens, clean and prolific water was of crucial importance. Rivers, such as the holy Saraswati, provided nourishment and trade routes. The great ocean similarly provided the substance of life and commerce. It can be hypothesized that through such interdependence must have come considerable wisdom and inspiration as the society developed.

### INDIA'S ANCIENT SWACHHATA SANSKRITI EXTENDS TO TRASH MANAGEMENT

The population of the Indus Valley was likely quite proud of its beautiful cities, and keeping them clean seems to have been a key civic duty. Homes came equipped with built-in trash chutes, similar in concept to those found in today's high-rise buildings. Household waste fell through the chute into dustbins below. Archaeologists have also found public trash bins located throughout the metropolises, thereby sparking the beginning of a Swachhata Sanskriti for India.<sup>26</sup>

### AFTER THE FALL OF THE INDUS VALLEY CIVILIZATION

It took only about 200 years for the shining civilization of the Indus Valley to sadly disappear, and with it, its cities, toilets, baths and sewers. To this day, the ancient script of the time has not been deciphered, leaving scholars to make educated guesses as to why the civilisation fell. It would seem several factors played a role, including climate change, the drying or course changes of important rivers, and the collapse of the trade networks of Mesopotamia, the key trade partner of the time. Natural disaster may have also played a role in some areas. Regardless, it wasn't long before the cities were swept beneath the sands of time, as populations migrated away to rural areas. Sophisticated technologies would be lost, but India's Swachhata Sanskriti survived.

### THE VEDIC ERA: CLEANLINESS BECOMES HOLY

*Do not disturb the sky and do not pollute the atmosphere... Yajur Veda,5:43*

In a forest, when an ancient tree falls, a fertile ecosystem is created, from which countless species spring. So too does this occur in the cycles of civilization, as new cultures rise, rich in promise and

nourished by the fading memories of cultures past.

So it was, as the ancient wonders of the Indus Valley Civilization were reclaimed by the sands of time, that an era of piousness, truth and cleanliness arose: The Vedic Era (c. 1500 – c. 500 BCE).

For the first half of the era, before kingdoms started to rise, people enjoyed more pastoral lives in wide-open spaces. The proverbial and actual falling of walls brought forth clear vistas of sun and sky, sparkling waters and fertile Earth. These became the temples of humanity, where ancient sages realized great knowledge through eyes wide shut.

“The basis of Vedic civilisation was totally different from Indus Civilization as this was rural in nature compared to the urban civilisation of Indus Civilization... They understood that one’s personal and spiritual upliftment could be possible only after being pure, heart and body”.<sup>27</sup>

Living close to the Earth enabled humanity to revere our planet, waters, species and stars as intrinsic, indivisible elements of a great divinity that composes all. Worship was primarily in the form of meditation and yoga, the sciences of inner vision for outer wisdom.

From these times of quiet came the scriptures of the *Vedas*, *Upanishads*, *Smritis*, *Puranas*, *Dharmashastras* and more. In these, rituals and

wisdom for cleanliness were instilled.

## INSTRUCTIONS IN CLEANLINESS BY THE VEDIC RISHIS AND TEXTS

Cleanliness of body, mind and soul was paramount in Vedic times. The sages of yore realized that without clean surroundings and healthy bodies, worship and meditation were extremely difficult. Therefore, it became perfunctory that healthy, sanitary methods were practiced, in order to keep the environment healthy, drinking waters clean, and the air fresh.

The ancient *Rishis* first taught that the world-- and all that is within it--is composed of Divinity itself. In that light, they inspired the masses to respect, and even worship that Divinity through clean thoughts, habits and actions.

In the *Athar Veda*, it says,

“By whom has this earth been made? By whom has the heaven been placed over it? By whom has this expansion of atmosphere been raised upon high and stretched across?” AV 10-2-24

“The Earth has been made by Brahma – The Supreme Being and it is Brahma again who has placed the heaven above it. It is Brahma by whom has the atmosphere been raised upon high



and stretched across” (AV 10-2-25)

In the *Chandogya Upanishad*, the *Rishis* remind us, “The universe comes forth from Brahmin and returns to Brahmin. Verily, all is Brahmin.” (CU 14.2)

The philosophies of the ancient sages also extended to the care of the human body, our habits, and our modes of life. From this philosophy, there emerged the concept of a revolving cycle of care of body, mind, soul and care for the world we call “home.”

“In the Vedas, we learn that the whole world is our family: *Vasudhaiva Kutumbakam*. This means not just all people, but the stars above, the sands below, and the seas that quench our thirst,” said revered faith leader, Pujya Swami Chidanand Saraswati, President of Parmarth Niketan and Founder/Chair of the Global Interfaith WASH Alliance. “The animals, the plants, even the smallest of insects, are all of Divinity, as are we ourselves. Nature, in Her intrinsic form realizes this. The Sun shines on all, not just some. Our rivers, such as the holy Ganga, care not for differences between faiths, nationalities, genders, cultures, creeds or castes, they just give to all, without hesitation, vacation or discrimination.”

To this day, students of the Yogic sciences East and West, North and South, are bound to, at one point

or another in their lives, have in their hands a copy of the *Yoga Sutras of Patanjali*. The ancient text, which remains as relevant today as it did thousands of years ago, mentions *śauca*, or cleanliness as one of the foremost injunctions for the spiritual aspirant. Among what may be deemed by some as its “Commandments Towards Self-Realization” or the *Yamas* and *Niyamas*, it is said,

“Purity, contentment, austerity, self-study, and self-surrender constitute the vows of observances.” (YS 2<sup>nd</sup> Pada, V. 32)

We witness similar themes in the *Manu Smriti*:

Non-Violence, Truth, Non-Stealing, Cleanliness/ Purity and Sense-Control are the duties that are common for all four classes, so declares Manu. (10.63)

The ancient and revered sage, Veda Vyasa, described cleanliness as that which is having to do with our bodies and surroundings, as well as within our minds. He thus related in his commentary of the *Yoga Sutra* that,

“Cleanliness, Contentment, Purificatory Action, Study and making *Ishvara [God]* the motive of all actions, are observances. Of these, Cleanliness is external when brought about by earth and water etc., and consists in the eating of

pure things, etc. It is internal when it consists in the washing away of impurities of the mind.”<sup>28</sup>

Says Vedic scholar and faith leader, Paramahansa Prajnanananda Giri in his commentary of the *Yoga Sutras*,

“The purity in cleanliness is the steppingstone to spiritual life. It is divided into two groups: external and internal purity. External purity includes purity in environment. To live in peaceful surroundings and a clean house, wearing clean clothes, and eating healthy, pure food helps promote a joyful and peaceful living. It also includes having clean water, clean air, clean earth, and other such cleanliness. External purity also implies cleaning the body with water. Inner purity implies cleaning inner dirtiness, such as anger, ego, pride, and other such states. External purity and inner purity are closely connected.”<sup>29</sup>

We can also realize a correlation to the words of Lord Krishna, who in the *Srimad Bhagavatam* says,

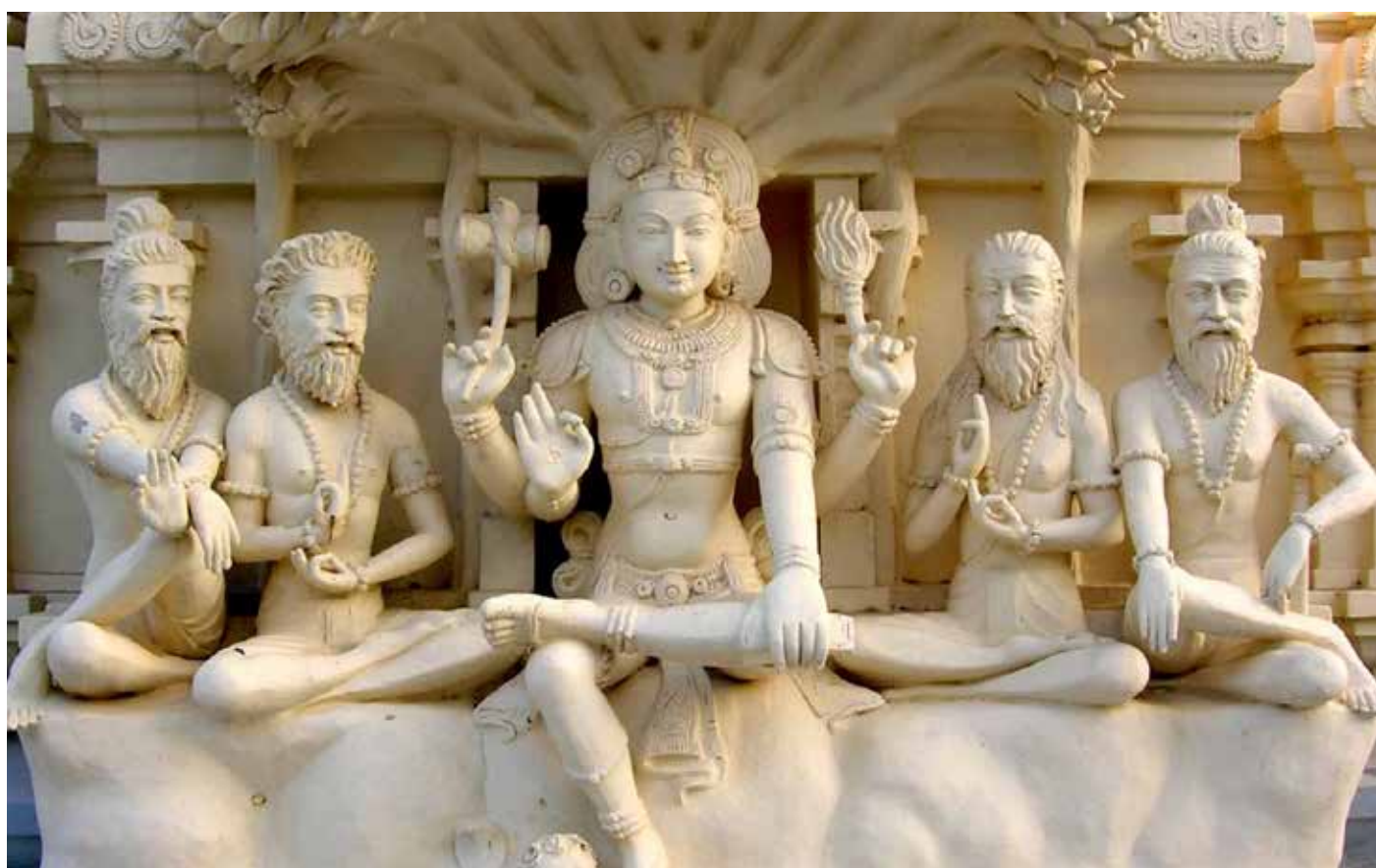
“The self can be cleansed by bathing, charity, austerity, age, personal strength, purificatory rituals, prescribed duties and, above all, by remembrance of Me. The *brāhmaṇa* and other twice-born men should be duly purified before performing their specific activities.” (11.21.14)

Thus, it starts to become clear that from these extremely early days, a thought-based revolution was taking place, motivating civilization to embrace the importance of clean and healthy water, sanitation and hygiene—as well as clean thoughts and clean living—*as an act of faith*.

## FROM TOILET MANTRAS TO PURIFICATION: THE VEDIC INJUNCTIONS ON SWACHHATA

Starting thousands of years ago, the great sages gave special instructions as to *how* we could best keep our bodies and surroundings clean when heeding the call of nature. The rationale is simple: excrement spreads disease, smells and distasteful appearances, defiling our drinking water, land and air. Understanding this, it is understandable that cleanliness formed a foundation of not just Hindu life, but also, as we will learn, also in other great faiths such as Islam, Buddhism, Sikhism, Jainism, Judaism, and Christianity.

During Vedic times, there were relatively few people roaming the Earth, so it was possible to safely walk far from drinking water sources and homes in order to relieve oneself in the outdoors. But, in so doing, people were instructed to do so in hygienic ways, such as by digging small pits and covering



them with soil afterwards to prevent the spread of disease. A good personal clean-up was also of crucial importance. This practice is similar to the Cat Hole techniques used today worldwide by field workers, militaries on the march and educated villagers who don't have access to toilets. But the ancients took the process steps further, in efforts to best ensure the body, mind and environment remained as pure as possible.

The *Manu Smriti* instructs that,

“He may ease himself, having covered the ground with sticks, clods, leaves, grass, and the like, restraining his speech, keeping himself pure, wrapping up his body, and covering his head.”

Another ancient code, which is said to have roots in the *Manu Smriti* and the *Vishnupuran*, says that before heeding calls of nature, married couples were to recite a holy mantra from the *Narad Purana*:

*“Gachhantu Rishio Deva:  
pishachaya cha ghrihyaka:  
pitrbhutaganna surve,  
Karishye malmochnam”*

Before going for defecation, it was prescribed that the sacred thread should be rolled to a smaller size and be put on the right ear. The head was to be covered with a cloth. In the absence of cloth, the sacred thread was to be brought over the head

and hung on the left ear. Then, while observing silence and facing north in the day and south in the night, one could defecate. While defecating, one was not to touch water. After defecation, the water pot was to be held in right and left hand was to be used for cleaning.<sup>30</sup>

Another Mantra instructs:

*“Dashasthana prityay mutram kurya*

*Jalashay Shathasthan Parishartha triya nawan*

*Chaturgunam*

*Dharashauch na kurvita shauchashudh Mabhipsta*

*Chulukairaiv Kartabya Hashtatshudhi Vidhanta”*

The meaning is that one must urinate at least 5 metres from a water source (such as a well) and defecate at least 50 metres away. When near a river, one should urinate at least 20 metres away and defecate at least 200 metres away. Never should any toileting take place within a river or running water, and water used for cleansing must be washed away far from the river, lest it contaminate it.

Remarkably, the ancient mantra correlates similarly with the wisdom of India’s sanitary experts of today, who advise that a “water source should be 10-15 metres away from twin-pit toilets”<sup>31</sup> in order to ensure contamination does not occur.

Such wisdom for living ensured that the people of Vedic times and beyond practiced healthy sanitation and hygiene. Resultingly, it helped inspire a *Swachh Bharat* for thousands of years to come.

Said Pujya Swami Chidanand Saraswati, “The wisdom shared by the ancient Rishis is that meditation and sanitation must go hand-in-hand. Without proper sanitation, there can be no meditation. While temples are needed to purify our thoughts, toilets, clean water, clean surroundings and clean air are needed to purify our bodies and ensure good health.”

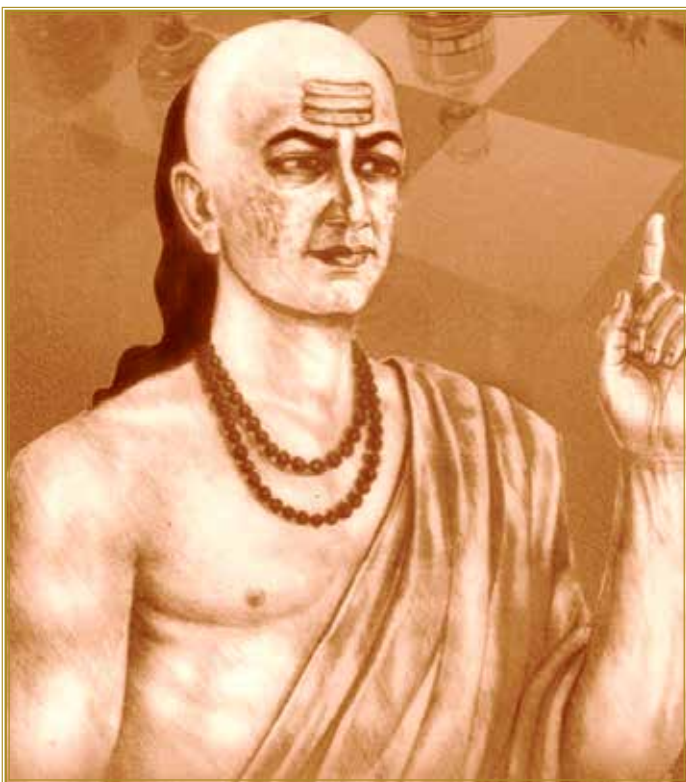
Across the world, we are now seeing rivers, lakes and seas perish as they are flooded with sewage, chemicals, trash and other impurities. As they become increasingly polluted, entire ecosystems are placed at risk, as is the health and longevity of ourselves and our children. In heeding the words of the ancient sages, a world full of pain could be reversed:

“Let him not throw urine or faeces into the water, nor saliva, nor clothes defiled by impure substances, nor any other impurity, nor blood, nor poisonous things. (Manu Smriti 4:56)

## CHANAKYA'S DIRECTIVES FOR A SWACHH MAURYAN EMPIRE

In 322 BCE, a vast empire rose through the conquests of Emperor Chandragupta Maurya and his Chief Advisor, Chanakya. Eventually, the Maurya Empire would expand over much of the Indian Sub-Continent and beyond as generations of Chandragupta's successors, including his grandson, Emperor Ashoka, took reign.

To help ensure orderly rule over vast lands, Chanakya authored the *Arthashastra*, which provides directives and frameworks concerning economics, agriculture, law, social welfare, trade, and over 170 other topics essential for good governance and successful bureaucracies.



To Chanakya, healthy water, sanitation and hygiene were vital. He thus prescribed a series of policies and punishments to ensure that a *swachh* and *swasth* empire was maintained. For example:

“The throwing of garbage and rubbish on the streets was forbidden and offenders were punished. There was no water-logging on the roads, lanes and by-lanes. It was the duty of residents to construct drains for cleaning stagnant water and any failure to do so was punishable with a fine.”<sup>32</sup>

In Chapter 8 of the *Arthashastra*, fines of 12 *panas* were prescribed for owners of homes and buildings that provided annoyances or obstructions to others, such as in the form of encroachments, water hazards or dangerous pits. But, Chanakya admonished,

“If the annoyance is due to faeces and urine, the fine shall be double the above. The watercourse or gutter shall offer free passage for water; otherwise the fine shall be 12 *panas*.<sup>33</sup>

His attitude towards enforcing cleanliness can also be found in Chapter 36, where he advises City Superintendents to fine those who are defecating in improper locations, saying:

“Whoever excretes faeces in places of pilgrimage, reservoirs of water, temples, and royal buildings shall be punished with fines

rising from one *pana* and upwards in the order of the offences.”<sup>34</sup>

## VISIONS FOR SWACHH SOCIETIES

### ACROSS THE EMPIRES

Over time, the Maurya, Gupta, Vijayanagara, and other Empires and Kingdoms of the Indian Sub-Continent maintained focus on water and sanitation, although certainly not to the extent of the Indus Valley Civilizations. Great metropolises such as Patapaliputra (ancient Patna) stood as the shining capital of six Empires as they rose and fell. The city featured a deep and wide moat that received the sewage of the city while also protecting the citizens within. Megasthenes, Greek Ambassador to the Maurya Empire reported that the moat was an impressive 600 feet wide and 60 feet deep.<sup>35</sup> Generations later, a Chinese Ambassador to Emperor Ashoka would write that the suburbs of Patapaliputra were watered by canals that also filled the deep ditches that surrounded the great city. “Beneath it flowed the great river (the Ganga).”<sup>36</sup> Also underneath the city was an elaborate drainage system fabricated from wood.<sup>37</sup>

From about 500 BCE, the city of Ujjain was endowed with an elaborate drainage and sewage system, which included pottery ring or pierced pot soak-pits for treatment of domestic wastewater. So

too, buried deep beneath the feet of those walking in the streets of today’s Delhi, can be found the remnants of ancient sanitation technologies.

In ancient Delhi, still during the 3rd century BCE, drains channelled wastewater into ‘wells, which may have functioned as soak-pits’ (Singh, 2006, p. 119)..<sup>38</sup>

According to the Archaeological Survey of India, the Vijayanagara Empire of South India was also well-aware of the importance of sanitation. Excavations in its ancient capital have uncovered private toilets that were connected to drainage and sanitation systems. Scholars say that aqueducts also supplied the city with drinking water and filled the municipality’s great pools and private baths.<sup>39, 40</sup>

Said revered South Indian faith leader, Amma Sri Karunamayi Vijayeswari Devi, “The city of Vijayanagara, with its great pools, flowing waters, clean surroundings, and spiritually-advanced culture, was incomparable. It was a society of wonderful advancements, including its musical temple, which could be played like an orchestra, and sanitation works that kept everyone healthy. Hundreds of years later, people still grieve the loss of this *shant*, *swasth* and *swachh* society.”

## BUDDHIST SANITATION AND HYGIENE

What is referred to as India's "Golden Age" came with the Gupta Empire (4th-7th Century CE). The Empire was geographically smaller than that of Maurya, yet its imprint would last forever in the heartbeat of a nation.

Across the Empire, agriculture proliferated, as new investments in irrigation and wells provided continuous sources of water. Trade flourished, and there was political peace. From this came great prosperity, expansion and luxurious living.<sup>41</sup>

In this age, as Buddhism proliferated, up would come beautiful temples, monasteries, magnificent sculptures, and the great University at Nalanda.

During the Gupta period, cleanliness must certainly have been considered a virtue, and it has been determined that indoor sanitation was practiced. Archeologists have found multiple remnants of this in Buddhist monasteries in particular, which is not a surprise, given that many inmates led more cloistered lives.

One of the more important findings in terms of sanitation was at Kutagar Shala, a Gupta-period monastery in Muzaffapur District, Bihar. At its height, it was likely of extensive importance, for it was located where Lord Buddha was said to have stayed during rainy seasons.

Archaeologists have uncovered that the 12-room monastery had "a toilet chamber attached to its southern wall. It was constructed during the Gupta



period, probably for the Nuns.”<sup>42</sup> The type of toilet, apparently had a higher pan than those used today. None like it have been discovered elsewhere.

Nearby in Manikpur Chaur, Muzaffapur District, archeologists similarly discovered a Gupta-Era public toilet. Here, the toilet pan sat upon a terracotta ring-well that resembles, to the untrained eye, ochre stacks of inner-tubes frozen for posterity. According to experts, “This finding shows the enthusiasm of the inhabitants of Manikpur about hygiene and healthy toilet practices.”<sup>43</sup>

## MONASTIC SANITATION ETIQUETTE

Lord Buddha underscored the importance of sanitation and hygiene, which was incorporated into His disciples’ daily routines. As can be witnessed in many monasteries today, renunciants would most likely have devoted parts of their days towards ensuring all was swept, washed and tidied—including toilets.

Regarding calls of nature, the *Suttavibhanga*’s monastic rules describe important observances for monks and nuns, including vows such as:

- *Not being ill, I will not defecate or urinate while standing: a training to be observed.*

- *Not being ill, I will not defecate, urinate, or spit on living crops: a training to be observed.*
- *Not being ill, I will not defecate, urinate, or spit in water: a training to be observed.*<sup>44</sup>

Wrote Buddhist leader, Venerable PKS Lom, of London’s *Buddhapadipa* Temple regarding these observances,

“If a monk is infected with cholera bacteria and passes his stools into a lake or a canal the water becomes contaminated with diseases. If people drink the water contaminated with cholera bacteria, it will soon cause a disastrous epidemic. We, Buddhist monks, often persuade our congregations to follow the Buddha’s advice at all costs.”<sup>45</sup>

In addition, certain etiquettes were prescribed for monastics regarding the use of indoor toilet facilities, including:<sup>46</sup>

- The first to arrive at the toilet facility should go first, regardless of seniority
- Outer robes should be removed and hung up before the washroom was entered
- Before entering, one should politely clear his throat or cough. If someone was already inside, he would be expected to cough back



- One should clean the toilet area if dirty, for the sake of the next person
- One should always wash-up afterwards

Most importantly, monastics were reminded that all should be done with mindfulness, turning even sanitation into an opportunity for spiritual awareness.

## THEN FELL THE GLOBAL DARK AGES OF SANITATION

As if by the will of God or some mysterious force of the stars, it would seem that innovations for sanitation would, except in scattered instances, disappear for a long global dark age. Highly-advanced achievements in plumbing, pipework and sewers were forgotten in locations that had once achieved immense engineering accomplishments across nations East and West, and cleanliness retreated throughout much of the world.

“With the fall of the Roman Empire in the 3rd century, came the dark ages of sanitation (Lofrano et al., 2010), which lasted from the Middle Ages to the 19th century. During this period, there was a generally deep sanitation regression and most of the health standards brought by the ancient cultures were lost (Hilgenkamp, 2011). In fact, the city streets themselves acted as sewers, and even

expressions like “Look out below!” became popular (Johnson, 2007).”<sup>47</sup>

Fortunately, the people of India never needed to “look out below,” but in much of the nation, toilet use took a back turn as people reverted to using fields and even streams for their daily calls of nature.<sup>48</sup>

## WHAT HAPPENED TO SANITATION IN EUROPE?

As the Roman Empire retreated and finally vanished from Western Europe, the vast lands that had once been unified under their rule – stretching from what is now England in the East to Dalmatia (the countries of the former Yugoslavia) on the Adriatic Sea in the West – split into countless warring factions.

“The disintegration of the Roman administrative apparatus during the Early Middle Ages influenced the decline of the quality of the city life and one of the features of this process was the lack of maintenance and construction of the sewage system.”<sup>49</sup>

Most European cities lost the ability to maintain the Roman infrastructure that had been left to them. Over time, the marvels of Roman engineering, from aqueducts and reservoirs to sewage systems

became seen as “the mysterious manifestation of the supernatural powers. As city life declined, the major Roman engineering works were transformed within the collective imagination into “devil’s bridges” built to challenge man and his heavenly protectors<sup>50</sup> .

In London, the Roman sewer system that emptied into the River Thames and its connected streams, was left uncleaned and forgotten.<sup>51</sup> Throughout Europe, medieval sewers were no more than “open ditches that followed existing drainage pathways and often were directed along the centre or roadways.”<sup>52</sup>

In 1357, England’s Parliament made it illegal to throw “any sort of waste into the Thames or any other waterway under the penalty of imprisonment and severe punishment.”<sup>53</sup> The point was that Londoners were to put their waste on carts and dung boats that would take it outside the city.<sup>54</sup>

Unfortunately:



“The result was that many dumped their waste elsewhere in the city. One such place was Tower Hill, which in 1371-72 was so tainted that those living nearby were disgusted by the odour of the dung and other filth. Citizens were then forbidden to dump their wastes there, which caused a renewed dumping into the Thames. Again, an attempt was made to prevent people from dumping any kind of waste into the Thames, as the King noted that the channel of the river had been narrowed so much that it caused a great hindrance to shipping”<sup>55</sup>.

Although cesspits existed for some city dwellers, the cost to construct one has been estimated at about twice the annual income of an unskilled worker, making them unaffordable for the poor. Even if one’s home did boast a cesspit, they were not designed to hold liquids. Human waste inevitably leaked into the soil, fouling the air and contaminating wells.<sup>56</sup>

“A cesspit is expensive to maintain: in London it requires a team of twelve men to dig out sixteen tons of excrement in an average household latrine over the course of two nights, several large barrels to contain the ordure, carts to take it away, food for the workers, candles (as it has to be done by night), juniper to refresh the pit, brickwork to rebuild the funnels of the

privy chute (which have to be broken by the emptying operation), and, last but not least, the cost of cleaning up the house after sixteen tons of excrement, slopping about in barrels, has been carried through it. The total cost of such an operation in 1575 is £ 2 4 shillings— the equivalent of 132 days' work for a labourer. You can see why the tenements of the poor have stinking cesspits, and why people in the city slums dump their filth into the gutter and allow their cesspits to overflow into the street.”<sup>57</sup>

The richer citizens of London may have had pipes leading to a cesspit located in their yard in an attempt to prevent the smell of human waste from entering their houses. Although the smell could creep back into the building, there was less risk of accidentally falling into the pit.<sup>58</sup>

In the Late Middle Ages, larger English cities tried to lessen the malevolent odours wafting through town by building public latrines. London had several communal privies, the largest of these was on London Bridge directly over the Thames.<sup>59</sup>

Unfortunately, the city's water supply came straight from the same wells and rivers which were, of course, polluted by all the human waste that had been dumped into them. Liquids from cesspools also drained into London's drinking water because

the ground naturally sloped “for miles from the north of the city down to the Thames River.”

Although Victorian Londoners recognized the polluting effects of human waste when deposited into the waterways, it was thought that diseases such as cholera were transmitted by bad smells. Thus, the hazards to public health went unrecognized as wells, rivers and other drinking water sources became increasingly contaminated with fecal matter. Some human waste was used as fertilizer, but, unless properly processed, the harmful pathogens simply re-entered the crops.<sup>60</sup>

Remarkably, in reading ancient Ayurvedic texts, once can find that India's sages were well-aware that contaminated water and certain behaviours could cause serious disease. Says the National Institute of Science's commentary on the Ayurvedic *Caraka Samhita*,

“According to Caraka, though individual persons differ widely in physical health and vitality, they are collectively liable to devastating epidemics caused by external factors (Vi. 3, 6-7)....

Contaminated water is recognized to be a major cause of ill health and epidemics ( Vi. 3, 7), and the use of only clean and pure water from natural sources is recommended at various places of the text (Sil. 6, 4 7, etc.)”

## SANITATION DURING THE MUGHAL EMPIRE

The Muslim faith strongly urges believers to ensure cleanliness in our lives and in the world around us. In the holy *Qur'an*, believers are taught that *Allah*<sup>1</sup> (SWT)<sup>2</sup> is the creator of all that exists, and is responsible for the gifts of nature:

“Who created the heavens and the earth and sends down water for you from the sky, by which We make luxuriant gardens grow? You could never make such trees grow. In them, is it another deity besides God?” (*Qur'an* 27:60)

“... And we send water down from the sky, in measure, and allocate it on Earth, and lo! We are also able to withdraw it.” (*Qur'an* 23:18)

Clean sanitation practices were of special importance to the Prophet Muhammed (PBUH)<sup>3</sup>, especially in relation to protecting water and the places upon which humanity traverses.

Said the Prophet (PBUH) “Beware of the three acts that cause others to curse you: relieving yourselves in a watering place, on foot paths or shaded places”

The Prophet (PBUH) also said, “Never should

you urinate on water that is stagnant.” (Book of Hadith, chapter: purification.)

In alignment with many of India’s ancient Vedic teachings are other Islamic instructions and codes that have been given to humanity in order to help promote cleanliness of body, environment, mind and soul.

Among its points are these detailed regarding sanitation by Islamic Scholar, Imam Tajuddin B. Shu’aib. In his book, *the Prescribed Prayer Made Simple*, he discusses specific actions that are recommended in order to help maintain a pious mind and good health when heeding the call of nature, such as:

1. When entering and exiting a toilet area, specific prayers should be said
2. It is not permissible to enter the toilet while carrying anything that bears the name of Allah, such as *Al-Quran*, or any book with the name of Allah in it, or jewellery such as bracelets and necklaces engraved with the name of Allah.
3. One should keep silent while in the toilet... Even if one sneezes, one should say in his mind *Alhamdu Lillaah*.

1 In Islam, there are at least 99 names for God. The 99 names recited in the *Beautiful Names of Allah* also describe the attributes of God.

2 The holy honorific for Allah, *Subhanahu wa ta’ala* is Arabic for “The Most Glorified, the Most High”. The abbreviation of this is “SWT”)

3 Peace Be Upon Him

4. If a person is driven by necessity to relieve himself in an open place, he or she should not face Al-Qiblah or turn his back to it.
5. One should be out of sight of people, thus the doors of the toilet should be securely closed.
6. One should avoid urinating, or otherwise, in the holes under shade or fruit trees, on river banks or at the edge of water tanks, at places where people perform ablution, in the graveyard or the masjid. In short, one should avoid places where people take rest or gather for any purpose.
7. After using the toilet, one should make *Istinjaa*, cleaning oneself with water.<sup>61</sup>

Unfortunately, during the Global Dark Ages of Sanitation, practices changed in India and across the world. According to Sulabh International Founder, Bindeswar Pathak, “with the founding of the Mughal empire by Babur in 1526, India’s sanitation situation changed for the worse”<sup>62</sup>As civilizations, kingdoms and empires fell, sanitation infrastructure—and the knowledge to maintain it—was lost. Populations scattered and changed, and indigenous social awareness on sanitation and hygiene faded.

This is not to say that toilets were no longer being used. Instead, the ways in which the waste was

managed took a definite new turn.

Emperor Akbar, who ruled from 1556–1605, is to this day remembered for his outstanding skills in organizing of governmental structures for his Empire, which stretched over much of India. To him, sanitation did play an important role, and thus he placed its oversight as a major duty by District Officers (*fowjdār*).

The provinces were divided into districts (sarkārs). Each district had a fowjdār (a military officer whose duties roughly corresponded to those of a collector); a qādī; a kotwāl, who looked after sanitation, the police, and the administration; a bitikchī (head clerk); and a khazānedār (treasurer).<sup>63</sup>

During his rule, toilets were found amidst the great halls and harems of royalty. According to the Toilet Museum in Delhi, these were greatly enjoyed even by the emperor himself. The descriptive comments for one exhibit notes: “*Emperor Akbar used to remain in his toilet for an hour.*”<sup>64</sup>

Yet to keep toilets clean, manual scavenging was now required. For this, marginalized people, as well as warriors and residents of defeated kingdoms, were enslaved by generations of Mughal administrations.

Said Associate Professor Prashant Bansode of



the Centre for the Study of Social Exclusion and Inclusive Policy,

“Chinese travellers had made observations during the Mauryan dynasty that there existed a class of people named *Chandalas* i.e. untouchable caste—who were staying outside the villages and were found to be engaged in scavenging activities. In the Mughal era, the rulers bought these caste people for scavenging work as Muslim women were not allowed to defecate in open due to the Purdha system. For them, the basket privies were designed which were commonly used in India till the colonial rule.”<sup>65</sup>

Outside of the royal palaces and harems, homes and fortifications also had toilets, yet many, such, as Jaisalmer Fort, had protrusions that emptied directly into the rivers or ground below. There also is evidence that Mughal King Jehangir constructed a public toilet large enough to be used by 100 families at a time in the 16<sup>th</sup> century. How it was cleaned has been lost to time.<sup>66</sup>

Yet, although sanitation practices declined in these global Dark Ages of Sanitation, many of the environmentally harmful activities of Medieval India were not in alignment with Islamic teachings.

Of the resources that God has gifted us with,

the Fourth Caliph, Hazrat Ali ibn Abi-Talib<sup>4</sup> (RA<sup>5</sup>) (601-668 AD) said “Partake of it gladly so long as you are the benefactor, not a despoiler; a cultivator, not a destroyer. All human beings as well as animals and wildlife enjoy the right to share Earth’s resources. Man’s abuse of any resource is prohibited as the juristic principle says ‘What leads to the prohibited is itself prohibited’.

### IMPROVED WATER RESOURCES FOR A CLEAN AND GREEN INDIA DURING SULTAN AND MUGHAL RULE

In Islamic thought, Allah is responsible for all of nature (and also for withdrawing its bounties). Thus, it is a primary responsibility to care for it.

Today, our world is steadily becoming dryer. Within a handful of decades, it is expected that the globe will have only half the water it needs, due primarily to the actions of humanity. In the 7th century CE, Islam was already aware of the crucial need to conserve each drop of water wisely, *as an act of faith*. In the holy Qur’an, Allah (SWT) intones,

“And have you seen the water that you drink? Is it you who brought it down from the clouds, or is it We who bring it down? If We willed, We could

make it bitter, so why are you not grateful?” (Qur’an 56: 58-70)

“And We have made from water every living thing,” (Qur’an 21:30)

“...waste not by excess, for Allah loves not the wasters.” (Qur’an 7:3)

Said the Prophet Muhammed (PBH) “*Do not waste even if performing ablution<sup>6</sup> on the bank of a fast-flowing large river*” (Al Thirmidhi)

In this day and age, the majority of our planet’s (and India’s) fresh water is extracted for farming. Islamic Law recognizes such water as a precious resource and places a personal responsibility upon farmers to remember those downstream. For this, learned points have been helping to guide farmers for centuries, especially in times of drought and surplus.<sup>67</sup>

Islam’s ancient wisdom regarding water conservation has led to many advances that would travel to India and across the world as Islam spread.

In time, as they expanded vastly the surface of irrigated lands, Muslims devised new techniques so as to catch, channel, store and lift the water (through the use of norias (water lifting devices), whilst new ingenious combinations of available devices were put in place. Rainwater was

4 Ali ibn Abi Talib (RA) was the cousin and son-in-law of the Prophet Muhammad (PBUH)

5 RA is an honorific meaning *Radeyallāhu Anhu*, or “May Allah be Pleased with Him”

6 Washing for Purification

captured in trenches on the sides of hills or as it ran down mountain gorges or into valleys; and surface water was taken from springs, brooks, rivers and oases, whilst underground water was exploited by creating new springs, or digging wells.<sup>68</sup>

In India, Sultanates, such as that of Firoz Shah Tughlaq, introduced improvements including the Yamuna Canal, which was reported to be 120 miles long. Canals had also been constructed by the Sultans in Delhi, yet these were mostly for pleasure gardens and palaces.

In Madhya Pradesh, the Faruqi dynasty of Khandesh had set in place improvements in the 15th century that also helped channel fresh water for drinking and garden irrigation. Later, under Mughal rule, innovative water works were constructed in the city that are still in use today. The designs included storage tanks that collected water from springs. The water would then flow through systems of underground conduits, pipes and wells, in order to provide an estimated 100 lakh litres of water a day for residents and royalty alike. Today, over 350 years later, the system can still provide up to 30 lakh litres of water a day to Burhanpur's population *at zero cost*.<sup>69</sup>

Apparently though, when Emperor Babur first came

to India, he wrote that he was surprised that he saw few (if any) irrigation canals during his travels<sup>70</sup>.

His reported lack of sightings seems surprising, as water tanks and other innovations had been implemented in India since the Indus Civilization, and water canals had been mentioned in Vedic scripture and Mauryan texts. Among these was the Grand Anicut canal in Tamil Nadu, which was constructed in 300AD, and is still in use today.<sup>71</sup> Yet, in travelling across India's far-reaching lands, it was clear to Emperor Babur that irrigation and waterworks could be expanded significantly.

Irrigation systems were thus extensively developed under Mughal rule. These included large networks of canals, water lifting devices, rainwater harvesting structures, storage tanks and other methods<sup>72, 73</sup>, that in many ways complimented ancient Vedic systems and significantly improved the agricultural economy.

So great was the contribution that India's farming income grew to the point in which it was equal to or higher than that of Europe at the time.<sup>74</sup>

## INDIA UNDER COLONIAL RULE

When Queen Victoria (1819-1901) was named Empress of India in 1877, sanitation in her native England had just begun to modernize. At the time,



one of the biggest killers in England was cholera, which was slowly being recognized as a water-borne disease that necessitated improved sanitation to combat. Thus it was that new sewers were being built underfoot to finally replace the infrastructure (where it existed) that largely dated back to Roman times.

The first modern-style flush toilet was invented in the 16<sup>th</sup> century by Sir John Harrington, the godson of Queen Elizabeth (1533-1603) However, it wouldn't be until Queen Victoria's reign that flush toilets would start catching on, thanks to centuries-worth of technical tweaking by individuals such as Thomas Crapper, who helped perfect the technology. In 1861, Mr. Crapper was hired to install flush toilets in many of the nation's royal palaces for the first time.<sup>75</sup>

As England rushed to take care of its own deadly sanitary conditions, it paid little heed to the similar needs of India. There, the British Royal Commission was struggling as an increasing number of its military troupes fell sick and perished from diarrhoea. In response, Commissions for Public Health were established, followed by sanitation police and sanitary boards.

While the establishment of these systems should have spelled progress, the British military and elite

were the primary beneficiaries. The rest of the population remained largely on its own.

In a study published within the *Indian Journal of History of Science*, we learn that public health works, including sewage and medical care, was woefully underfunded for the common man:

“Apart from the feeble medical intervention on the part of the imperial government, the actual responsibility for public health was left to the initiative of the local administrative units like municipalities in the larger towns, and District Boards were being set up in the rural and semi-urban areas since 1881. They were required to raise their own resources and provide for drainage, water supply, general sanitation, maintenance of hospitals and dispensary etc. in addition to other development activities.”<sup>76</sup>

According to NDTV/Banega Swachh India,

“Despite the population being in manageable numbers, rural sanitation and water supply were issues never taken up by the administration. This disinterest in India's sanitation scenario is a reason why improving sanitation conditions today is a Herculean task, said Professor Kumar Jyoti Nath, President, Institution of Public Health Engineers, India.”<sup>77</sup>



Prior to Colonisation, India fortified and protected its drinking and agricultural water through the wisdom of the ancient *Rishis* and Indus Valley Civilization. Hence, the sub-continent was jewelled with vibrant lakes, rivers and ponds. It was similarly endowed with fabricated tanks, water harvesting technologies and other systems that ensured plentiful water and bountiful crops throughout most of the year in much of the land. These needed to be maintained, and such maintenance was gladly paid for by the local Kings as

every-day people provided free labour to ensure their prolonged use.

As populations grew, cities rose, cultures merged, and technologies changed, these ancient ways began their decline. Wide-open spaces and water sources became encroached by habitations, preventing individuals from following the age-old adages to avoid water sources and other areas while heeding the calls of nature. As the wisdom faded, so too did the knowledge that prevented contamination.

## COLONIAL CITIES RISE; SANITATION

### FAILS

Mumbai, which had been under colonial rule since 1534 (first Portuguese, then British), was developed as an important hub of commerce and trade, drawing people from across India and around the world.

While the many islands that composed what we now know as Mumbai were stitched together over the centuries, housing, fortifications and infrastructure similarly grew. To the eye, the city was modernizing, but mostly forgotten was the crucial need for sanitation. In a research compilation by the Journal of Urban and Regional Research, it was found that,

“Conybeare (1852:17) wrote of ‘cesspools’ — open drains, that emanated smells into houses and over food — while Leith (1864: 36) wrote of ‘noxious matters’, ‘poisonous gases’ and ‘accumulated filth’, arguing that ‘filthiness’ was the worst of Bombay’s ‘many Evils’. Streets and areas, especially off the main streets in the Native Town, or to the north of the city, were designated ‘unsanitary’ or ‘polluted’. Night-soil collectors using wooden carts and head baskets, and later iron carts from Britain, struggled to collect ever-increasing amounts of human waste from the streets, which was then taken by train to Sion and Kurla north of the island city, and mixed with ash and vegetable matter and

dumped into salt marshes (Tindall, 1992: 200).”<sup>78</sup>

As India’s natural resources, such as the salt marshes, were degraded, indigenous water management practices -- incorporating reservoirs, rainwater harvesting, tanks and other water conservation techniques -- were disparaged by the colonial leaders as “uncivilized”. Funds for their maintenance were withdrawn, until many collapsed and were forgotten, along with the ancient knowledge that created them. It wouldn’t be until the 21<sup>st</sup> century that these technologies would start to be rediscovered as important strategies for staving-off drought, recharging groundwater and irrigating farms.

In Colonial Mumbai, according to the Journal of Urban and Regional Research, the poor and immigrants were not only denied proper sanitation, they were xenophobically blamed as being *the sources* of disease and contamination *themselves*. This led to exceptionally-high instances of disease and death in the population.

“The poor were disproportionately affected by inadequate sanitation. For example, while among Hindus in general, the death rate was 58.8 per thousand, it rose to 94 per thousand among lower castes (Ramasubban and Crook, 1996: 146).

In 1892, while the predominantly European

South Fort area had a mortality rate of 8.6 per thousand, this rose to 46.2 in the relatively close locality of Kamatipura (ibid.: 147). Poorer areas had some of the highest mortality rates in the city, and as T.S. Weir, the municipal officer of health in the 1890s, observed, rapid residential expansion, accompanied by a lack of sewer connections, led to increasing mortality rates (ibid: 147)... *The Sanitary Commission was of the view that migration and vagrancy acted as a contagion.*<sup>79</sup> (italics/bolding added by author)

## MANUAL SCAVENGING ACROSS CONTINENTS AND CULTURES

It was slow work as the manual scavenger pushed the rattling cart through the steamy streets. All around him, passers-by gagged, held their noses, and cast glances of disgust. His sense of dignity had long been lost to decades of hand-clearing the overflowing excrement of the multitudes, which would slither animal-like onto his clothing, into gutters, and onto the streets... of New York.

In the 1880's, two-thirds of Manhattan's toilets emptied into cess-pools which needed to be cleaned by hand by the poor and racial minorities. The contents were dumped by the tonne into the city's

riverways, to the point that they sometimes had to be dredged for ships to pass. The situation was similar in Washington, DC, where untreated human waste was collected by hand and dumped into festering ponds and marshes, causing disease and death... Perhaps even of an American President.

“In Washington, D.C., one of the city's dumping grounds was a field near the White House, where a marsh of Washingtonian waste putrefied under the president's nose. This suggests that this may have been a contributing factor to President Harrison's untimely death in 1841, since the White House water source was a mere seven blocks downstream.”<sup>80</sup>

So it was, from early history until modern times that, manual scavenging, or the collection of human waste by hand, has been a global vocation. In America, it lasted into the 1920's. In many countries, it continues to this day.

In ancient China, “night-soil” collectors were considered beneficial members of the working community. As far back as 533 CE, one can find a text called the *Qi Min Yao Shu*, which described the use of human excrement as fertilizer. By the 18<sup>th</sup> century, human waste became a prized commodity for farmers, who called it “Golden Juice.”<sup>81</sup>

In 17<sup>th</sup> century Japan, water toilets were completely banned, so that sewage could instead be manually collected and sold to farmers as a commodity. So prized (and pricey) became the excrement that, by the 1700's, thieves were known to abscond with it, and neighbours to argue about it.

“The value of human wastes was so high that the rights of ownership to its components were assigned to different parties. In Osaka, the rights to fecal matter from the occupants of a dwelling belonged to the owner of the building, whereas the urine belonged to the tenants. ...Fights broke out over collection rights and prices. In the summer of 1724, two groups of villages from the Yamazaki and Takatsuki areas fought over the rights to collect night soil from various parts of the city.”<sup>82</sup>

As discussed in the previous section, 19<sup>th</sup> Century England was adrift with manual scavengers, who took to dumping burgeoning loads of untreated sewage directly into the Thames River. So malodorous did the practice become that the stench of human waste would waft into Parliament House as MPs debated issues of the day. London's “Great Stink” of 1858 finally broke the resolve of the Parliamentarians, who decided it was time to invest in building sewers.

Just three years later, as the Thames continued to fester, Queen Victoria's husband, Prince Albert, died an early and unexpected death from typhoid, a disease most often caused when drinking water has been polluted by sewage.<sup>83</sup>

In India, there are several theories about how scavenger caste groups began, and how they were proliferated. The traditional caste-based system is said to have developed during the *Pauranic* period, thousands of years ago, as humanity created hereditary societal structures. At the time, four castes were forged: Brahmin, Kshatriya, Vaisya, and Shudra, which would work together for the common good of society.

The origins of new castes largely dedicated to manual scavenging may have arisen from slavery. One text, the *Narada Samhita*, makes mention that one of the 15 duties of slaves is manual scavenging. In the *Vajasaneyi Samhita*, author, Gita Ramaswami says “Chandalas were referred to as slaves engaged in the disposal of human excreta.”

Yet, said Dr. B.R. Ambedkar (1891-1956), the chief architect of the Constitution of India, who campaigned tirelessly against the social discrimination of manual scavengers, “While



untouchability did not exist in 200 A.D., it had emerged by 600 [A.D].”<sup>84</sup>

It was the great man’s theory that the practice of deeming fellow human beings as “untouchable” was not present during Vedic times. It wasn’t until Dr. Ambedkar read Chinese traveller, Yuan Chwang’s, 7th century commentary on India that he found mention of the emergence of what he called, “untouchability”.

According to Bindeshwar Pathak, the number of manual scavengers seems to have increased during the Mughal era, when defeated and enslaved members of the *Kshatriya* (warrior) caste were forced to clean human waste by hand.<sup>85</sup> In addition, female slaves would be tasked to manually clean the toilet excrement of harems through underground tunnels.

Yet it was the institutionalization of manual scavenging under Colonial laws and policies that expanded the dangerous and dehumanizing practice formidably. The drafters of the *Bengal Municipal Act* provided a case in point, as they wrote about their decision to license and promote manual scavenging:

“We have provided in section 11 for the introductions in any municipality or part of a municipality of the licensing system of scavenging instead of the Halalcore system.”<sup>86</sup>

So concerned was the Executive Engineer of Mumbai regarding manual scavenging practices that he sent a passionate report to the Benches of Mumbai’s Judges, with pleas that sewer systems be installed in the reeking city.

“The night-soil is removed only once a day — between half-past four and eight in the morning. It is clear, therefore, that a large quantity of the filthiest matter must lie about from nine to eighteen hours of the day, giving out the foulest exhalations. To satisfy oneself that this is the case, it is only necessary to visit the gullies at the backs of the houses at any hour after the sweepers have done their work. It will be found that every privy has more or less ordure in it awaiting- removal. Can it be conducive to the well-being of the people to keep excrement in the precincts of their dwellings all the day long? In the second place, it is impossible to remove all the night-soil from a privy by hand.”<sup>87</sup>

Later, the man who would be known as Mahatma Gandhi would rise before the nation to call for

an end to the practice of manual scavenging. Unfortunately, already much damage had been done through colonial expansion of a sanitation “technology” that degraded innocent men, women and children, rather than investing in innovations not dependent on human hands.

“Stating that the British ‘institutionalised’, if not invented, manual scavenging, [author, Gita Ramaswamy] observes, ‘Technology is supposed to remove social prejudice; however, the technology of sanitation was structured to deepen social prejudice in India.’<sup>88</sup>

## SWAMI VIVEKANANDA AS A SANITATION HERO

During colonialization, burgeoning cities such as Kolkata were experiencing sanitation woes similar to that of Mumbai, leading to rapidly-rising instances of disease and death. As in Mumbai, many populations-- particularly the poor and disenfranchised-- were largely neglected in terms of sanitation, leaving the work to be carried out by the benevolent.

Among the unsung early heroes for sanitation were Swami Vivekananda and his British-born disciple,

Sister Nivedita (*née Margret “Margot” Noble*). Predicting the coming of a plague to the Kolkata area, the great swami wrote in a letter dated 29 April, 1898,

“If the plague comes to my native city, I am determined to make myself a sacrifice, and that I am sure is a “Darn sight, better way to Nirvâna” than pouring oblations to all that ever twinkled.”<sup>89</sup>

The next year, a deadly plague epidemic indeed started its rampage through the city, prompting Swami Vivekananda to call for the construction of relief camps, sanitation works, and the cleaning of household drains. So dedicated was he to the cause that he had almost put up for sale the Ramakrishna Order’s sprawling and beautiful *Belur Math*, before being stopped by Sri Sarada Devi,<sup>7</sup> who foresaw the importance of the property for the future upliftment of society.

Sister Nivedita worked tirelessly for the sanitation effort. In a letter dated April 9, 1899, she wrote,

“Swami [Vivekananda] says my great fault is attempting too much, in which he is emphatically right. I am to give up all thought of plague-nursing and throw my whole heart and soul still deeper into the sanitation [work] that we have now on hand...

...We have had two hundred and thirty-five rupees subscribed for sanitation. It seems a great success, though of course we could do with a great deal more. When the monk who has the work in hand went over on Saturday to report, he said Swami was so touched by the news, that they had two hours of everything, from the Upanishads onwards, [saying] “There could be no religion without that activity, that manhood and co-operation. There was Nivedita living in a corner and English people helping her. God bless them all!” ...When I reported today, he just winked and said. “Plague, Margot, plague.”<sup>90</sup>

## HOW TRAGIC FLOODS CHANGED HYDERABAD

On September 28, 1908, cyclonic rains turned the River Musi into a torrent that rose 60 feet and overtook the city of Hyderabad. 6,00000 lives were impacted<sup>91</sup> and thousands died as the Musi’s waters swept into streets, homes and hospitals, collapsing buildings and bridges as if made of paper.<sup>92</sup>

After the flood, Hyderabad State Nizam, Mir Mahbub Ali Khan, led a series of sweeping changes to protect future lives. The project included the construction of two major tanks above the city. The

<sup>7</sup> The revered wife of Swami Vivekananda’s holy guru, Sri Ramakrishna





*Osman Sagar* was the largest, featuring a 120 foot-high dam and serving as a new drainage basin for an area of 250 miles. It also provided a sustainable source of drinking water.<sup>93</sup> Furthermore, to prevent sewage from contaminating the river, a large sewage farm was constructed and pipes were laid in order to ensure the waste of the growing city was controlled.<sup>94</sup> At the time, the project was considered a historic achievement, placing the city above many of its Western peers in terms of wastewater management.

### THE WISDOM OF THE MAHATMA

As a child, the home of Mahatma Gandhi was served by a young manual scavenger named Uka. The offspring of a highly-respected Diwan (Prime Minister), the young Mohandas was prevented from playing with the boy. If accidentally they should touch, Gandhiji's mother would immediately take him to bathe.

To the youngster, this was a grievous wrong, which was apathetical to his sensibilities. Eventually he

said to his mother, “Uka serves us by cleaning dirt and filth, how can his touch pollute me? I shall not disobey you, but the *Ramayana* says that Rama embraced Guhaka, a *Chandal* (a caste considered untouchable). The *Ramayana* cannot mislead us.”<sup>95</sup>

The memory would form a life-long impression as a hero was forged from childhood.

“‘Love of the people,’ he once explained, ‘brought the problem of untouchability to my life.’ His revolt against it began when he asked his mother why touching Uka was a sin.”<sup>96</sup>

In South Africa, he experienced spiritual awakening while advocating against the disenfranchisement of residents of Indian origin. On reading book after book, from Tolstoy to “the Sayings of Zarathustra,” to Hindu scriptures, to Irwing’s “Life of Mohammed,” his heart blossomed with a strong love of humanity. In so doing, he became even more pained to see all about him the lack of sanitation, the disenfranchisement of his fellow countrymen and the dehumanizing imposition of manual scavenging.

“In South Africa itself Gandhi had developed a passion to destroy the twin ‘evils’ of ‘Untouchability’ and insanitation. By and by, he took to scavenging himself. He discussed the subjects of sanitation and hygiene at the Indians’ meetings. He had written to the ‘Medical Officer,

Johannesburg’, to visit the Indian location as the insanitation and overcrowding there could lead to an epidemic. [1904, CW 4:130-31] Soon thereafter, plague broke out and Gandhi stressed the need for “sanitation and hygiene as part of our being. [CW 4:176]”<sup>97</sup>

Said close friend, HSL Polak in his *Memories of Gandhi*,

“It was in South Africa, too, that he learnt what it was to be an “untouchable”, both racially (as I knew from direct experience as a member of his household), and from the practice of elementary scavenging which he undertook at his “simple life” colonies at Phoenix and Tolstoy Farm. Hence his powerful advocacy, upon his return to India, of the removal of “untouchability,”<sup>98</sup>

On returning to India, encounters with a plague epidemic led him to see behind the scenes glimpses of a devastating lack of sanitation. From homes of the privileged to the gutters of the sweepers, he was surrounded by the horrors of India’s own Dark Age of Sanitation. Even places of worship were not immune. As a priest led him to the toilets, gutters and garbage dumping grounds of a local temple, he was especially horrified, as he would be again and again, at other places of worship across the nation.

“It pained me to see so much uncleanliness

about a place of worship. One would expect a careful observance of the rules of sanitation and hygiene in a place which is regarded as holy.

***The authors of the Smritis, as I knew even then, have laid the greatest emphasis on cleanliness both inward and outward.***” (Mahatma Gandhi)<sup>99</sup>

(Italics and bolding in this chapter added)

To the Mahatma, the disease, mosquitoes, flies, and squalor of cities from Mumbai to Madras were curable through applied human effort. “Everyone must be his own scavenger,” he intoned, as minds awakened to the possibility of a Swachh Bharat once more.

***“By dirtying our surroundings, we violate the teaching of the Gita: to see ourselves in others.***

Dirt is matter displaced, e.g. human excreta can be transformed into “golden manure<sup>8</sup>” and widened and clean roads in a city would yield “an economic gain” through improved health, life-spans and output.”<sup>100</sup>

Thus it was that *Swachhta* and *Swaraj* went hand-in-hand. From the municipalities, where: “The first condition of any municipal life is decent sanitation and an unfailing supply of pure drinking water.”

... To the villages, where he visualized each one could, “lend itself to perfect sanitation - - cottages

with sufficient light and ventilation - - lanes and streets will be free of all avoidable dust...The night-soil will be turned into manure.”<sup>101</sup>

...To the holy rivers of Mother India, such as the Ganga:

“While I realized the grandeur of the holy Ganga and the holier Himalayas, I saw little to inspire me in what man was doing in this holy place.”

“To my great grief, I discovered insanitation, both moral and physical...There is defilement of the mighty stream [the River Ganga] even in the name of religion,” he wrote.

“Thoughtless ignorant men and women use for natural functions the sacred banks of the river where they are supposed to sit in quiet contemplation and find God. They violate religion, science and the laws of sanitation.” (Mahatma Gandhi)<sup>102</sup>

Driven by a strong and indeterminable internal compass and a vision that would not fail, the light that the great soul shined upon India reawakened the slumbering nation to what it could and must be. Marching across sands and across time, his footsteps marked the hallowed path towards an Independent, Just and *Swachh Bharat*.

8 See this publication’s chapter, “Manual Scavenging Across Countries and Cultures.” Perhaps, this author suggests, the great man’s reference to “golden manure” may be in relation to its discussed economic value and name in China.



## AN INDEPENDENT NATION RISES FOR A SWACHHATA SANSKRITI

By 1947, India's population, which was more than 300 million people, had less than 1% sanitation coverage. At that dawn of Independence, India's First Prime Minister, Shri Jawaharlal Nehru, said, "The day every one of us gets a toilet to use, I shall know that our country has reached the pinnacle of progress"<sup>103</sup> Said Mahatma Gandhi not too long before, "Sanitation is more important than independence."

67 years after the tri-colour first flew, India's newly-elected Prime Minister, Shri Narendra Modi, would stand on the ramparts of the Red Fort to make a clarion call for a *Swachh* and Open Defecation

Free Bharat by 2nd October, 2019, the 150th birth anniversary of Mahatma Gandhiji.

Said the Hon'ble Prime Minister, "Brothers and sisters, we are living in the 21st century. Has it ever pained us that our mothers and sisters have to defecate in the open? Whether the dignity of women is not our collective responsibility? The poor womenfolk of the village wait for the night. Until darkness descends, they can't go out to defecate. What bodily torture they must be feeling! How many diseases does this act engender? Can't we just make arrangements for toilets for the dignity of our mothers and sisters?"

This milestone announcement set India on an

incredible journey. At the inception of what would become the *Swachh Bharat Mission*, nearly 600 million people were not using toilets. Today, every state in the Nation has been declared Open Defecation Free.

The strides have been great, even miraculous, as India took a Swachh March for a new Millennium, bringing together every facet of society, young and old, rich and poor, known and unknown.

As India's collective hands reached for the golden ring of a clean new era, the leaders of all faiths would join forces to re-awaken collective memories of a *Swachhata Sanskriti*. Their voices raised in support of a great new vision reminded the masses of clean heritages lying dormant under the dust of history.

Pujya Swami Chidanand Saraswati, Founder of the Global Interfaith WASH Alliance and President of Parmarth Niketan, served to gather the faiths on a single platform for a *Swachh Bharat*, saying:

“Keeping in mind the utmost importance of not doing harm to others, we can no longer look the other way and say the lack of toilet use in India is tolerable. Instead, with so much at stake, we must all take a warrior's stand for a clean and healthy India. For this reason, the leaders of all of our country's major faiths have joined forces and joined hands for a *Swachh* new tomorrow in support of the Government and people of India. For this reason begins a new chapter in our nation's *Swachhata Sanskriti*.”



## CONCLUSION

Driving through a section of New Delhi recently, we sensed a difference, but could not determine the cause. It looked brighter, greener, more inviting... beautiful. We had navigated that particular area countless times before, yet had never once appreciated it.

We asked the driver why these streets suddenly appeared to be extraordinary.

As we approached a stoplight, he turned to me.

“Now, they’re clean,” he responded.

Together, we smiled.

“Jai Hind!” he said.

There is a certain peace that comes from clean surroundings. Apparently, it’s hardwired in our brains.

According to the World Bank, “Experts say that garbage-free public spaces can be a part of a comprehensive strategy to reduce crime and violence.”<sup>104</sup> Likewise, a Netherlands study determined that “People become more disobedient in environments plagued by litter and graffiti.”<sup>105</sup>

Reported a Gallup Study, the more people “felt their city was beautiful, clean, and safe, the more likely they were to report being happy... Similarly, the more they felt that publicly provided water was safe, and their city was a good place to rear and care for children, the more likely they were to be happy.”<sup>106</sup>

Thousands of years before there were studies and polls, our ancestors knew. The sages knew.

*Swachhata is Shant.*

And so it goes, through the ebbs and flows of time, that we return to an era of cleanliness for the land we call, “Mother India.” With every child picking up a wrapper, with every toilet used, with every city, river and field kept clean, the *Sanskriti* that is *Swachhata* returns to us.

And so it is that we look back to dream forward, and realize forevermore that hope is in our hands.



## (Endnotes)

- 1 BBC. Neolithic and Bronze Age Britain: Timeline [http://www.bbc.co.uk/history/british/timeline/neolithic\\_timeline\\_noflash.shtml](http://www.bbc.co.uk/history/british/timeline/neolithic_timeline_noflash.shtml) (accessed 2019)
- 2 Kapoor, Mugdha, “Move Over Mohenjo-Daro, India Now Has the Biggest Harappan Site In Rakhigarhi”, India Times, 9 May, 2017, <https://www.indiatimes.com/news/india/rakhigarhi-is-now-the-biggest-harappan-excavation-site-even-bigger-than-mohenjodaro-231896.html> (Accessed 2019)
- 3 Sharma, Rakesh Kumar; Singh, Sukhvir (May 2015). “[Harrapan interments at Rakhigarhi](#)” (PDF). *International Journal of Informative & Futuristic Research (IJIFR)*. **2** (9): 3403–3409. [ISSN 2347-1697](#).
- 4 Khan, Saifullah, Sanitation and wastewater technologies in Harappa/Indus valley civilization (2600-1900 BCE)
- 5 Fitzsimmons, Matthew A, “The Indus Valley Civilization”, *The History Teacher*, Vol. 4, No. 1 (Nov., 1970), pp. 9-22, Published by: Society for History Education “
- 6 Lothal: Sanitary drainage at the Acropolis” <https://www.harappa.com/lothal/14.html> (accessed 2019)
- 7 Archeological Evidences of toilets in ancient India-- *Journal of Multidisciplinary Studies in Archaeology* 6 (2018): 764-781 (PDF)
- 8 IBID
- 9 De Feo, Giovanni, Antoniou, George, Fardin, Hilal Franz, El-Gohary Fatma, et al. “The Historical Development of Sewers Worldwide” *Sustainability* 2014, 6, 3936-3974; doi:10.3390/su6063936.
- 10 Ibid
- 11 Antoniou , Georgios P., “Evolution of Toilets Worldwide through the Millennia,” *Sustainability* 8(8):779 · August 2016
- 12 *Morley, Neville . The Roman Empire: Roots of Imperialism,* Pluto Press, Aug 17, 2010. [ISBN 9780745328706](#)
- 13 Koloski-Ostrow, Ann Olga. *The Archaeology of Sanitation in Roman Italy: Toilets, Sewers, and Water Systems*, The University of North Carolina Press, April 6, 2015, **ISBN-10:** 1469621282
- 14 Koloski-Ostrow, Ann Olga “What toilets and sewers tell us about ancient Roman sanitation,” *Phys.org*, November 19, 2015.
- 15 *Ibid.*
- 16 Carr, K.E. Roman sewers – ancient Roman toilets, poop, pipes. *Quatr.us Study Guides*, September 5, 2017. Web. August 1, 2019.
- 17 *Ibid.*
- 18 *Ibid.*



- 19 Shultz, David. "Roman toilets may actually have been bad for public health," *Science Magazine*, January. 7, 2016
- 20 De Feo, Giovanni, Antoniou, George, Fardin, Hilal Franz, El-Gohary Fatma, et al. "The Historical Development of Sewers Worldwide" *Sustainability* 2014, 6, 3936-3974; doi:10.3390/su6063936. p. 3953
- 21 Harper, Kyle. *The Fate of Rome: Climate, Disease, and the End of an Empire*, p. 21. Princeton University Press, October 24, 2017.
- 22 Leafloor, Liz, "5,000-year-old stepwell found in Dholavira, said to be largest in India" *Ancient Origins*, <https://www.ancient-origins.net/news-history-archaeology/5000-year-old-stepwell-found-dholavira-said-be-largest-india-002291>
- 23 Shekara, Chandra, "Was the eastern reservoir in Dholavira, actually a great bath, like the one in Mohenjo Daro?" <https://chandrashekharsandprints.wordpress.com/2015/03/29/was-the-eastern-reservoir-in-dholavira-actually-a-great-bath-like-the-one-in-mohenjo-daro/>
- 24 Trupti Vaity\* and Sonal Tawde\*\* "Water Conservation of Ancient Structures of India" *Research Journal of Chemical and Environmental Sciences*, 2017, <http://www.aelsindia.com/rjcesfeb2017/1a.pdf>
- 25 Sanujit, "Religious Developments in Ancient India" <https://www.ancient.eu/article/230/religious-developments-in-ancient-india/> (accessed 2019)
- 26 Khan, Saifullah, Sanitation and wastewater technologies in Harappa/Indus valley civilization (ca. 2600-1900 BC)
- 27 Archaeological Evidences of toilets in ancient India-- *Journal of Multidisciplinary Studies in Archaeology* 6 (2018): 764-781 (PDF)
- 28 Prasada, Rama, "The Yoga Darsana Of Patanjali With The Sankhya Pravacana Commentary Of Vyasa And The Gloss Of Vacaspati Misra", page 163, Concept Publishing Company, 2007
- 29 Paramahansa Prajnanananda Giri, "Yoga Sutra of Patanjali With Commentary by Shri Lahiri Mahasaya and Metaphorical Explanations" (c) 2011 Prajnana Mission, Prajna Publication, Diefenbachgasse 38/6, A-1150 Vienna, Austria
- 30 Sulabh International, "Museum of Toilets Handbook," Accessed in 2019 <http://www.sulabh-toilet-museum.org/downloads/Sulabh-International-Museum-of-Toilets-HandBook.pdf>
- 31 Bakora, Arun, Ministry of Drinking Water and Sanitation Advisory to Principal Secretaries of Rural

- Sanitation in All States, Government of India, 22 February 2017 [https://www.sbm-gcg.in/backend\\_panels/circular/1548663581SBMG46831.....pdf](https://www.sbm-gcg.in/backend_panels/circular/1548663581SBMG46831.....pdf) (accessed 2019)
- 32 Urban Water and Excreta Management in India's Cities, "India's Toilet Tradition," <https://sites.google.com/site/waterexcreta/home/groundwater> (accessed 2019)
- 33 Archeological Evidences op. cit
- 34 Sachin Kr. Tiwary and Shubham Saurabh Heritage: Journal of Multidisciplinary Studies in Archaeology (accessed 2019)
- 35 Prasad, Om Prakash. "GLIMPSES OF TOWN PLANNING IN PATALIPUTRA (C 400 B.C.—A.D. 600)." Proceedings of the Indian History Congress, vol. 45, 1984, pp. 111–120., [www.jstor.org/stable/44140188](http://www.jstor.org/stable/44140188).
- 36 Ibid
- 37 Ibid
- 38 sanitation and waste management in ancient Asia
- 39 Malagi, Shivakumar, Toilets? 600 years ago Vijayanagara palaces had it all, Deccan Chronicle, August 13, 1006 (accessed 2019) <https://www.deccanchronicle.com/nation/in-other-news/130816/toilets-600-years-ago-vijayanagara-palaces-had-it-all.html>
- 40 Kumar, Alok, "Squatting with Dignity: Lessons from India," Sage Publications, India, 2010
- 41 Tawade, Prathmesh, Economic Development Of India From Indus Valley To The Gupta Empire, University of Mumbai [https://www.academia.edu/7468582/Economic\\_Development\\_of\\_India\\_from\\_Mohenjadar0\\_to\\_Gupta\\_Empire](https://www.academia.edu/7468582/Economic_Development_of_India_from_Mohenjadar0_to_Gupta_Empire) (accessed 2019)
- 42 Archaeological Evidences op. cit.
- 43 Ibid
- 44 The Vibhaṅga- Sekhiya- Chapter Ten <https://www.dhammadata.org/vinaya/bmc/Section0026.html> (accessed 2019)
- 45 Alliance of Religions in Conservation, "Faith in Water", <http://www.arcworld.org/downloads/Faith-in-Water-book.pdf> (accessed 2019)
- 46 Ibid
- 47 Towards Better Management of Combined Sewer Systems <https://pdfs.semanticscholar.org/5ec8/7a16e0c6e0334725b09eb2262fcf957478bb.pdf>

- 48 Royuela, Albert Montserrat “Towards better management of combined sewer systems – a methodology based on low-cost monitoring” Doctoral Thesis, University of Girona, Spain 2015 : <http://hdl.handle.net/10803/387560>
- 49 Shekara, Chandra op. cit.
- 50 Benevolo, L. La Ciudad Europea; Crítica: Barcelona, Spain, 1993. P.35
- 51 Cherry, Anna. “Medieval Hygiene: Practices Of The Middle Ages.” *HealthyWay Magazine*, Web. December 8, 1916
- 52 De Feo, Antoniou, Fardin, et al. op. cit.
- 53 Taylor, Craig. The Disposal of Human Waste: A comparison between Ancient Rome and Medieval London. *Past Imperfect*, Vol 11. 2005. pp.53-72.
- 54 *Ibid.*
- 55 *Ibid.*
- 56 Taylor, Craig “The Disposal of Human Waste: A comparison between Ancient Rome and Medieval London,” *Past Imperfect*, Vol.11 (2005), page 56
- 57 Mortimer, Ian. *The Time Traveler’s Guide to Elizabethan England* (pp. 233-259). Penguin Publishing Group. Kindle Edition.
- 58 *Taylor, op. cit.* p 66
- 59 *Mortimer, op.cit.*
- 60 *Taylor, op. cit..* p. 71
- 61 Shu’aib, Tajuddin B., 1993. The Prescribed Prayer Made Simple, Da’awah Enterprises International. Excerpt at [http://www.iman.co.nz/ed/prescribed/pp1\\_2.html](http://www.iman.co.nz/ed/prescribed/pp1_2.html) (accessed 2019)  
[http://www.iman.co.nz/ed/prescribed/pp1\\_2.html](http://www.iman.co.nz/ed/prescribed/pp1_2.html)
- 62 Pathak, Bindsvar (2008), History of Public Toilets, Plumbing world, paper presented at the International Symposium on Public toilets, Hongkong. <https://germaphobe.wordpress.com/category/uncategorized/page/7/> (accessed 2019)
- 63 Encyclopaedia Britannica Online Edition <https://www.britannica.com/place/India/The-reign-of-Akbar-the-Great> Accessed 2019

- 64 Chawla, Pariniti. "Delhiites, Did You Know There's an Entire Museum Dedicated to Toilets in Your City?" Delhi Planet <https://www.delhiplanet.com/2019/07/10/delhiites-did-you-know-theres-an-entire-museum-dedicated-to-toilets-in-your-city/> (accessed 2019)
- 65 Bansode, Prasant, "The Synchronicity of Purifying City and Social Closure", Centre for the Study of Social Exclusion and Inclusive Policy, Gokhale Institute of Politics and Economics, Pune, August, 2015 <https://www.rc21.org/en/wp-content/uploads/2014/12/E3-2-Bansode.pdf> (Accessed 2019)
- 66 Pathak Bindeswar . 2008. History of Public Toilets.
- 67 Islamic Civilization "Irrigation and Water Management" <http://alfutuhat.com/islamiccivilization/Agriculture/Irrigation.html>
- 68 IBID
- 69 Mughal System Still Supplies Water at Zero Cost,1992. Indian Environmental Portal <http://www.indiaenvironmentportal.org.in/content/3030/mughal-system-still-supplies-water-at-zero-cost/>(Accessed 2019)
- 70 Wescoat, James L., Jr. "Early Water Systems in Mughal India." In Environmental Design: Journal of the Islamic Environmental Design Research Centre 2, edited by Attilo Petruccioli, 51-57. Rome: Carucci Editions, 1985.<http://archnet.org/authorities/2595/publications/3190>
- 71 UN FAO, 2011, Aquastat India. [http://www.fao.org/nr/water/aquastat/countries\\_regions/ind/index.stm](http://www.fao.org/nr/water/aquastat/countries_regions/ind/index.stm) (Accessed 2019)
- 72 India Net Zone. 2013. "Irrigation System in Mughal India" [www.indianetzone.com/50/irrigation\\_system\\_mughal\\_india.htm](http://www.indianetzone.com/50/irrigation_system_mughal_india.htm) (cached at <https://webcache.googleusercontent.com/search?q=cache:7dU6KkEXmsJ:https://+&cd=1&hl=en&ct=clnk&gl=in>)
- 73 Schmidt, Kenneth., "An Atlas and Survey of South Asian History" [https://books.google.co.in/books?id=BqdzCQAAQBAJ&pg=PA100&redir\\_esc=y#v=onepage&q&f=false](https://books.google.co.in/books?id=BqdzCQAAQBAJ&pg=PA100&redir_esc=y#v=onepage&q&f=false)
- 74 Sunjeya, Vivek, "Understanding Business: A Multidimensional Approach to the Market Economy" Page 8, Routledge Publishings
- 75 British Association for Urological Surgeons, "A Brief History of the Flush Toilet," [https://www.baus.org.uk/museum/164/the\\_flush\\_toilet](https://www.baus.org.uk/museum/164/the_flush_toilet) (Accessed 2019)
- 76 *Popular Response to Epidemics in Colonial Bengal, Indian Journal of History of Science, 43.2 (2008) 277-283*

- 77 Dutta, Saptarshi, “India@70: A Brief Colonial History Of Sanitation In India” NDTV/Banega Swachh India <https://swachhindia.ndtv.com/india70-a-brief-colonial-history-of-sanitation-in-india-10602>
- 78 Journal Compilation, “Governing the Contaminated City,” International Journal of Urban and Regional Research 32.2 © 2008 The Author. Journal Compilation © 2008 Joint Editors and Blackwell Publishing Ltd. (Page 419)
- 79 Ibid
- 80 Braun, Aidee, “The 19th-Century Night Soil Men Who Carted Away America’s Waste” Atlas Obscura, March 15, 2016 <https://www.atlasobscura.com/articles/when-american-cities-were-full-of-crap> (Accessed 2019)
- 81 <https://ojs.ethnobiology.org/index.php/eb/article/view/1351/703>
- 82 Haney, Susan, “Urban Sanitation in Pre-Industrial Japan” [http://wjsmith.faculty.unlv.edu/smithtest/Urban-Sanitation\\_PreIndustrial-Japan.pdf](http://wjsmith.faculty.unlv.edu/smithtest/Urban-Sanitation_PreIndustrial-Japan.pdf), Journal of Interdisciplinary History/MIT Press, 1987 (Retrieved 2019)
- 83 National Archives of England, “Victorian Britain, A Healthy Nation?” <https://www.nationalarchives.gov.uk/education/victorianbritain/healthy/default.htm> (accessed 2019)
- 84 Shyamlal, “The Bhangi: A Sweeper Caste, Its Socio-economic Portraits,” Popular Prakshan Publishers, 1992
- 85 Pathak, Bindeshwar, “Technologies for Human Dignity The Sulabh Sanitation and Social Reform Movement,” <https://www.mitpressjournals.org/doi/pdf/10.1162/itgg.2009.4.3.43>
- 86 Handbook of the Sulabh International Museum of Toilets
- 87 Tullooh, H, Full text of “The drainage and sewerage of Bombay: being a report submitted to the Bench of Justices of that city” [https://archive.org/stream/b20410670/b20410670\\_djvu.txt](https://archive.org/stream/b20410670/b20410670_djvu.txt) (Accessed 2019)
- 88 Vishwanathan, S, “Exposing an Abhorrent Practice,” Frontline Magazine, 11-24 February, 2006 <https://frontline.thehindu.com/static/html/fl2303/stories/20060224000808000.htm> (Accessed 2019)
- 89 Swami Vivekananda, “Swami Vivekananda on Himself,” Advaita Ashram, 2006 (Fourth Edition)
- 90 Sister Nivedita, Letters of Sister Nivedita - Volume 1, Advaita Ashram, 2017
- 91 Zameer Ahmed, D. Ram Mohan Rao, Dr.K.Ram Mohan Reddy, and Dr. Y. Ellam Raj, “Urban Flooding, Case Study of Hyderabad”, Global Journal of Engineering, Design and Technology, July-Aug 2013 <https://www.longdom.org/articles/urban-flooding--case-study-of-hyderabad.pdf> (Accessed 2019)
- 92 Cohen, Benjamin. “Modernising the Urban Environment: The Musi River Flood of 1908 in Hyderabad, India.” *Environment and History*, vol. 17, no. 3, 2011, pp. 409–432. *JSTOR*, [www.jstor.org/stable/41303522](http://www.jstor.org/stable/41303522).
- 93 Ibid

- 94 Swaraja Staff, "How M Visvesvaraya Made Hyderabad Flood Free: Lessons For Smart Cities," April 2, 2016 <https://swarajyamag.com/smart-cities/how-m-visvesvaraya-made-hyderabad-flood-free-lessons-for-smart-cities> (Accessed 2019)
- 95 Government of India Ministry of Culture, "Importance of Gandhian Thoughts on Cleanliness" <https://gandhi.gov.in/gandhi-cleanliness.html> (Accessed 2019)
- 96 Rao, UR, "Let us Know Gandhiji," Publications Division Ministry of Information & Broadcasting.
- 97 Anand, YP, "Cleanliness, Sanitation: Gandhian Movement and Swachh Bharat Abhiyan," <https://www.mkgandhi.org/articles/cleanliness-sanitation-gandhian-movement-swachh-bharat-abhiyan.html>
- 98 "Memories of Gandhi" by H.S.L. Polak in Contemporary Review, London, March, 1948. Excerpt found in <https://www.sahistory.org.za/sites/default/files/Gandhi%20in%20SA-Reminiscences%20-%20full%20text.pdf> (accessed 2019)
- 99 Gandhi, Mohandas K, "My Experiments with Truth, An Autobiography", Samitra Book Publishers
- 100 Anand, YP, op cit.
- 101 Anand, YP, op. cit.
- 102 Complete Works of Mahatma Gandhi 42:76-77, Gandhi Heritage Portal [https://gandhiheritageportal.org/cwmg\\_volume\\_thumbview/NDI=#page/1/mode/2up](https://gandhiheritageportal.org/cwmg_volume_thumbview/NDI=#page/1/mode/2up)
- 103 Wilson, Hodder, "Flushed: How the Plumber Saved Civilization", (Page 215), Simon and Schuster
- 104 Ceraiti, M. Kaipper "Cleaner Streets May be Safer Streets," World Bank Group. <https://www.worldbank.org/en/news/feature/2015/06/09/por-que-las-calles-mas-limpias-pueden-ser-mas-seguras> (Accessed 2019)
- 105 Coghlan, Andy, "Graffiti and litter lead to more street crime," New Scientist Magazine, November 21, 2008 <https://www.newscientist.com/article/dn16096-graffiti-and-litter-lead-to-more-street-crime/#ixzz5zsPpbEqA> (accessed 2019)
- 106 Benfield, Kaid, "Why the Places We Live Make Us Happy," City Lab/ Atlantic Monthly Group, February 2, 2012, <https://www.citylab.com/design/2012/02/why-places-we-live-make-us-happy/1122/>





## GLOBAL INTERFAITH WASH ALLIANCE

Parmarth Niketan Ashram

P.O. Swargashram

Rishikesh, Uttarakhand- 249304, India

Phone: (+91) 135-2440077, Mobile: (+91) 7830454761

### ON-LINE:

[www.washalliance.org](http://www.washalliance.org)

Facebook: /WashAlliance

Twitter: @Wash\_Alliance

[Swamiji@WashAlliance.org](mailto:Swamiji@WashAlliance.org)



GLOBAL  
INTERFAITH  
WASH  
ALLIANCE

Water, Sanitation and Hygiene for Everyone, Everywhere



सत्यमेव जयते

पेयजल एवं स्वच्छता विभाग  
जल शक्ति मंत्रालय  
भारत सरकार

DEPARTMENT OF DRINKING WATER AND SANITATION  
MINISTRY OF JAL SHAKTI  
GOVERNMENT OF INDIA

