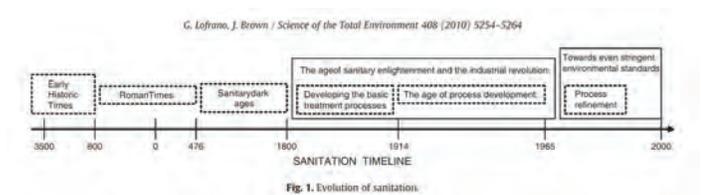


A BRIEF HISTORY OF WASTEWATER TREATMENT

By Jacob Gardner

Humans have been treating drinking water for a long time. As early as 4,000 BC ancient Sanskrit and Greek writings prescribed methods to improve the taste, odor, and appearance of drinking water. These early methods included boiling, sun exposure, straining, and charcoal filtering. Around 1500 BC the Egyptians developed a flocculant from seeds that helped pull particles from suspension in their water supplies. And then in 500 BC, the famous physician Hippocrates developed a filtering system to provide clean water to his patients.

While there is roughly 6,000 years of recorded history when it comes to drinking water treatment, there is a lack of information when it comes to the recorded history of wastewater treatment. This may be linked to a lack of ability to measure and understand the impacts of environmental contamination at the time and a stigma against discussing waste treatment. The timeline of wastewater treatment can be broken into five periods: early history, the Roman period, the sanitary dark age, the industrial age, and the age of environmental standards.



Early History: The Mesopotamians were the first to formally address sanitation by connecting homes to a drainage system that could carry away wastes around 3500 BC. Then, almost 1000 years later during the Bronze age, the Indus Civilization developed the first system that had a form of treatment. They funneled wastewater to a sump that allowed solids to fall from suspension while liquids were allowed to flow to the drainage system. Around 300 BC the Ancient Greeks took treatment a little further. They created public latrines that, along with storm water, drained to a collection network of buried box culverts made out of stone slabs. The water flowed through these networks and out of city centers to a collection basin. The collected water was then used for irrigation in agricultural fields.

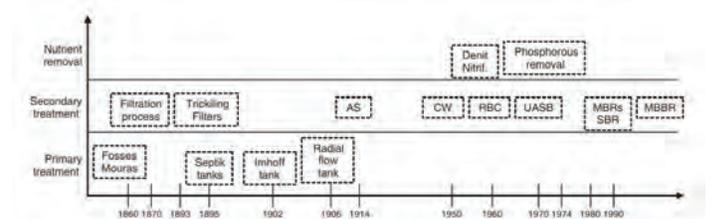
The Roman Period: While the Romans didn't invent water and sewer, they definitely perfected it. The Romans were famous for their aqueducts, but their full management of the water cycle is often overlooked. They had individual networks for water and wastewater and realized that people were healthier when the water source was kept away from where they discharged wastewater. The sewer system in Rome was expansive and had many small channels that flowed by gravity to larger channels. Some sections of the system are still in operation today: over 2500 years after they were constructed.

The Sanitary Dark Ages: From the fall of the Roman Empire in 476 AD. to the dawn of the industrial revolution in the 1800's, water and wastewater treatment fell from popularity. The Middle Ages were marked by a decline in hygiene and an increase in the spread of disease. The wastewater infrastructure of the Greeks and Romans was allowed to crumble and little engineering was put into treatment systems. This led to the proliferation of chamber pots that were emptied directly onto city streets until some European cities started to impose regulations on waste disposal in the mid 1300's. Under these regulations, family cesspits were transported and dumped outside city limits.

The Industrial Age: By the 1850's wastewater treatment had finally gotten back to where it was during the time of the Romans. London had one of the first sewer systems but had not progressed to any form of treatment besides dilution. London had a booming population and discharged directly into the Thames River. Without an understanding of assimilative capacity in the river, pollution ran rampant, and Victorians gave the river nick names like "the great stench" and "monster soup".

Meanwhile, in the United States, community sewers were being installed for storm water while most waste was poorly managed with family privies. Much of the waste during this period found its way to the sewer system through leeching and chamber pots being emptied into the street.

Age of Environmental Standards: The 1900's witnessed a revolution in wastewater management as scientific understanding and societal priorities started to decrease unhindered pollution. This period set the foundation for modern wastewater treatment. In 1912 the concept of biochemical oxygen demand was introduced, and then in 1932 aeration was introduced. During WWII the development of treatment techniques was stagnant, but after the war there was a period of rapid development in the field. While some parts of the world still employ dispersion and dilution, developed countries now lean on thousands of years of treatment development to protect public health and return quality water to the environment. >>



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