



Antibacterial Cement Additive: A Protective Approach Towards Construction



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Opinion

Water is life. All the living creatures starting from human to tiny microbes needs water for their growth. In our daily life we need water for all household work, personal hygiene and above all for drinking. There is a paramount need for ecologically as well as economically sustainable technologies which can sanitize the human pathogens present in municipal water supply and other sources of water like ground or surface water. If the water bodies are contaminated or the source water is carrying fecal contamination, Coliform organisms and E. coli are found which imply health risk to the population consuming the water due to the presence of pathogens accompanying the coliform bacteria. Apart from bacteria other organisms like virus, algae and fungi or yeast are commonly found and some of them have high survival rate. Chlorination is the most commonly used method of water disinfection along with ozonation and UV treatment. Some of these methods are costly and do not work alone effectively. A combination of methods is required to effectively disinfect a water source. These methods are quick but not long lasting and each has its own adverse effect to human health. Once the reservoir comes to operation the pathogens re-grow from the sediments.

Water is stored in concrete as well as synthetic tanks. Synthetic tanks are used mostly for domestic storage. But for huge public

service reservoirs having thousands of compartments only concrete is used. The cleaning and maintenance for domestic tanks are manageable but that of public service reservoirs are difficult. Even after proper management and maintenance if there is a failure and bacterial contamination is reported, the remedial work will accelerate the capital cost to many folds apart from the time taken and the sufferings of public.

It is suggested that in addition to regular cleaning and maintenance if the material of the reservoir wall will be antibacterial then it would not allow the biofilm formation thus minimizing the bacterial growth. Researchers have reported development of antibacterial materials with incorporation of copper and silver. Copper and silver well known germ killers from centuries. These two wonder metals are incorporated in matrices like layered double hydroxides to give the whole material an antibacterial property. This material when mixed with cement gives the antibacterial property to the cement and material mixture. It is proposed that after normal construction of the skeletal structure of the tank the finishing layer of the cement should be mixed with an antibacterial powder which will give the protection against bacteria. Self resistance is the best resistance.



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