

Water Purification by Capillary Action in Paper Towels

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Tragedies such as the 2008 and 2018 cholera epidemics in Zimbabwe can be avoided in future if cheaper methods of water purification are developed. Capillary action was investigated as a possible cost effective method of water purification as it does not require much initiation energy. The rate of capillary action was investigated on common household materials - paper towels, newspapers and tissue paper. The materials were hung up in triply and 1cm depths of their lower ends were immersed in tap water. The distance traveled by water in each material after 200s was recorded and paper towels showed the greatest rate. This experiment was repeated with sheets of thicknesses 3 sheets and 5 sheets which subsequently increased the rate of uptake. Rolling up the layered sheets further increased the rate and after 3 repeats of the experiment on the rolls of different thicknesses the roll with 5 sheets was most effective. One of the ends of this roll was immersed in Blackberry juice and overnight clear water collected from its adjacent end. In conclusion, capillary action in paper towels can be used to separate clean water from mixtures and can clean approximately 130 liters of water in a single day for less than \$10, and when modified with activated carbon can be used to purify water of microscopic impurities, speedily and cost effectively.

Awards Won:

Third Award of \$1,000

American Chemical Society: Certificate of Honorable Mention