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Into the Wind: Water Purification

If you've ever backpacked, you know that water needs to be treated before it is safe to drink. Water often contains pathogens, viruses, and microorganisms that make people sick, so a variety of different methods have been developed to make the water safe to drink. The water treatments iodine, SteriPen UV Radiation, boiling for 1 minute, boiling for 10 minutes, and filtration were tested to determine the effectiveness of each in removing contaminants, microorganisms and bacteria - specifically *E. coli* and other coliforms. A microscope was used to visually look for microorganisms, sediment, and organic matter. Colonies were cultured using Coliscan Easygel to detect the presence of *E. coli* and other coliforms in the water. The results indicated that filtration was the most effective in removing contaminants. SteriPen UV Radiation - which I hypothesized would be the most effective - and boiling for one minute turned out to be the least effective. Filtration effectively removed contaminants because no moving things were visible and no colonies grew. Filtration also removed sediment and organic matter. SteriPen UV Radiation and boiling for one minute resulted in the growth of two colonies and moving microorganisms were clearly visible under the microscope. Iodine and boiling the water for 10 minutes were each somewhat effective. Water treated with iodine grew one colony, and water boiled for ten minutes grew no colonies, but moving microorganisms were clearly visible under the microscope. These results will help backpackers make decisions of the safest water treatment method to use.