



USDA-CSREES 2006 National Water Quality Conference

Mobilization of fecal bacteria in a rural Alaskan community

People living without piped water and sewer can be at increased risk for fecal-oral diseases. One Alaskan village that relies on hauled water and honeybuckets was involved in this study to determine the pathways of fecal contamination of the human environment and drinking water so that barriers can be established to protect health. Samples were tested for the fecal indicators *E. coli* and *Enterococcus*. Several samples were also tested for *Giardia lamblia* and *Cryptosporidium parvum* and molecular source tracking methods based on *Enterococcus* and Bacteroidetes were employed. Human and animal fecal contamination was found within the village. Laboratory experiments confirmed that total coliform bacteria can survive through the winter to contaminate spring runoff. Objects such as ATV tires and boots transported bacteria within the village and into the home. Flow transported bacteria within the community at breakup, but flow from the dump did not appear to contribute to contamination in town. Within the home viable fecal bacteria were found on water dippers, kitchen counters and floors and in washbasin water. *Giardia* was found at the dump, but not in the washeteria's raw water intake. Exposure to fecal contamination could be reduced by cleaning up after dogs, careful disposal of honeybucket bags and gray water, changing washbasin water and by protecting stored drinking water. Experiments are underway to establish an optimal in-home chlorine dosing plan based on the type of water source and conditions of storage.

Author: Dan White

Coauthor(s): Molly Chambers Shawna Laderach Hrish Adhikari Dave Barnes
Silke Schiewer Malcolm Ford