



USDA-CSREES 2007 National Water Quality Conference

[Communities at Risk: Protecting Family Drinking Water in Rural Alaska](#)

People living without piped water and sewer can be at increased risk for diseases spread by the fecal-oral route. One Alaskan village that relies on hauled water and sewage 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. Indoor and outdoor environments were sampled to determine the distribution and transport of fecal contamination. Laboratory experiments tested the survival of bacteria in winter conditions and efficiency of soaps in washbasin hand washing. Laboratory and community in-home trials of a chlorination regimen and a community taste test aided in the development of home storage and treatment recommendations. In addition to volunteer participation in experiments, the outreach component of this research included community meetings, student activities, and printed graphical reports and posters. Testing of the indoor and outdoor environment included water, soil, and stool samples and surface swabs analyzed for the indicators total coliform, *E. coli*, and Enterococci and the pathogens *Giardia* and *Cryptosporidium*. Microbial source tracking methods involving *Enterococcus faecium* and *Bacteroidetes* were also employed. Laboratory experiments confirmed that total coliform bacteria can survive through the winter to contaminate spring runoff. Human and animal fecal contamination was found within the village and objects such as ATV tires and boots transported bacteria within the village and into the home. Surface 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 pond. Exposure to fecal contamination could be reduced by cleaning up after dogs, careful disposal of honeybucket bags and gray water, and by protecting stored drinking water.

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