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Bulletin Number 20
November 30, 1984

WATERBORNE OUTBREAK OF GIARDIA HITS KETCHIKAN

On November 2, sanitarians with the Alaska Department of Environmental Conservation (DEC), Ketchikan, notified our office that three Ketchikan residents were ill with giardiasis. On November 9, 1984, Ketchikan physicians reported three more laboratory confirmed cases of giardia plus several clinical cases. The next day, after more patients with symptoms of giardiasis were identified, the Ketchikan Medical Society issued a "Boil Water" advisory for the city.

Epidemiologic investigation confirmed that a large outbreak of gastrointestinal illness occurred in Ketchikan. Between August 21 and November 15, 123 cases of gastrointestinal illness were identified; 48 (39%) were laboratory confirmed as giardia. Of the 123 cases, 99 (81%) had onset of symptoms prior to November 12; 93 cases (76%) occurred in adults 20 years or older. The majority of the cases lived in the Carlanna area of Ketchikan and received their water from the Ketchikan municipal water system.

No common source was identified among cases other than exposure to the city water system. Most cases received water primarily from Carlanna Lake. Numerous water samples obtained during October and November from the Ketchikan city water distribution system were negative for coliforms. One sample from pretreatment water from Carlanna Lake was positive for giardia. Other pretreatment samples were positive for total coliform and for fecal coliform bacteria.

Several construction projects were undertaken in September-November, 1984 to improve the Ketchikan municipal water system. During construction, major changes were made in flow rates and distribution patterns of the water system. Flow rates from Carlanna Lake were doubled while flow rates from Ketchikan Lake were reduced by 25%. On at least one day in mid-October, water from Carlanna Lake water was not chlorinated. Sewage treatment is inadequate in Ketchikan. Fecal coliforms routinely have been identified in large numbers from streams, ditches, and harbor water.

In order to disinfect the water system, chlorination was increased to 2.0 ppm for 48 hours on November 12-14 in the Carlanna distribution system. The boil water advisory was then lifted. Intensive surveillance was instituted to monitor illness in the community, to follow the course of the outbreak, and to insure effectiveness of control measures.

Meticulous operation and chlorination of the municipal water system is essential. Chlorination must be maintained at adequate levels and with sufficient contact time to insure disinfection of the water. Attention must be directed as a high priority to developing and implementing a comprehensive plan

to insure the integrity of the municipal water system and to develop an adequate sewage disposal and treatment system for Ketchikan.

(We would like to thank Tom Conley, M.D. and other physicians of the Ketchikan Medical Society; Joan Nugent, PHN, Debbie Jepsen, PHN, Ketchikan Health Center; Sister Barbara Haase, Director, Ketchikan General Hospital; Fern Garrett, Clinical Laboratory, Ketchikan General Hospital; Rob Danner, Bill Fagan, and Doug Lockwood, DEC, Ketchikan; and Billie Thomas, State Laboratory, Juneau for their assistance with the investigation)

