

High-country camping and hiking are popular activities in Colorado. Scenic trails and quiet woodlands cut by sparkling streams are a delight to the senses. But hidden within the seemingly pure waters of most mountain streams are microscopic creatures called Giardia, which may cause serious illness if ingested. To protect yourself, know the facts, and take the proper precautions.

Giardiasis



Giardia lamblia organism

Giardiasis is a protozoal infection of the small intestine. Protozoans are tiny single cell organisms with complex life cycles. Giardia exists in two stages: the active adult and the dormant cyst. The cycle starts with the ingestion of Giardia cysts. In the small intestine the cysts transform into adults that reproduce. As the adults pass through the intestinal tract they change back into cysts and are released back into the environment through fecal wastes. The cycle is repeated if an individual ingests the cysts either through contaminated water or hand to mouth contact. Giardiasis is diagnosed by identifying cysts or adults in the feces of the individual infected.

In the wild, beaver, dogs, elk, and possibly other animals carry the disease. Of these animals, beaver are the most common host. In man, carriers who have no symptoms are more important in the transmission of the disease than those with symptoms.

Onset of the disease begins anywhere from one to four weeks after an individual is exposed but usually in nine to fifteen days

Symptoms of Giardiasis include diarrhea, gas, cramps, nausea, vomiting, and fatigue. These symptoms typically vanish then re-occur at cyclic intervals.

Factors common to outbreaks:

- Consumption of untreated or unfiltered water from streams.
- Out of country travel.
- Consumption of water from water systems that use surface water and rely upon disinfection as the only treatment.
- Child-care centers (hand to mouth transmission).
- Shallow wells near streams.



Beaver Pond

Water Testing

Standard potability tests are inadequate in detecting Giardia. High volume sampling may be effective but is costly and impractical for routine situations.

Control Measures

The following control measures are **NOT** effective:

- Chlorination: A complicated combination of chlorine, pH, time and temperature is necessary to kill Giardia cysts and is not practical or feasible for the average consumer.
- Other disinfectants: The effects of ozone and ultra violet radiation on giardia are not well known.

The following control measures **ARE** effective:

- Filtration: Filtration is effective provided the filter pore size is no larger than 1.0 micron. This type of filtration should be used for surface sources, infiltration galleries or shallow wells and springs. A larger pore size filter should be used

ahead of the smaller one to prevent premature clogging.



- Boiling water for ten minutes or longer destroys giardia cysts.
- For larger water treatment systems, adequate control can be achieved through a combination of filtration and chemical pre-treatment.

Common Misconceptions about Giardiasis

“Water flowing in streams is purified after flowing for 1/2 mile”. Giardia cysts are stable in water and do not die off down stream. Assume all mountain streams are contaminated with Giardia cysts.

“If water passes a standard potability test, it is safe to drink”. While standard potability tests can detect some potential problems, a negative test does not rule out the presence of Giardia.

“Giardiasis can go away all by itself”. Giardia does not “just go away”. Symptoms usually re-occur and even those who do not show symptoms still carry the disease and can be the source of infection for others. See your physician for accurate diagnosis and treatment.



Giardia



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