



Bulletin No. 17  
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Hazards of Stalking the Wild Mushroom

"There are old mushroom hunters, and bold mushroom hunters, but there are no old, bold mushroom hunters."

On August 14, 1997, four individuals 17-to 23-years of age, were examined at Fairbanks Memorial Hospital with complaints of nausea, vomiting, and hallucinations. Each had consumed a homemade brew of wild mushrooms made for the purpose of inducing hallucinogenic effects. The mushrooms were collected in Denali after several weeks of heavy precipitation. Two individuals were released after an observation period in the emergency department. Two were hospitalized overnight and released in good condition the following day.

### Discussion

In 1996, 10,584 exposures to toxic mushrooms were reported in the US.<sup>1</sup> There are four basic groups most susceptible to such exposures (Table 1). Young children and elderly are most vulnerable to the effects of mushroom toxins.

**Table 1: Who is at risk for mushroom toxicity?**

- Foragers including immigrants who mis-identify toxic mushrooms that look like edible mushrooms from their country of origin.
- Children, who may chew on lawn mushrooms.
- Those seeking hallucinogenic "highs."
- Victims of attempted homicide, (rare)

There are four major types of toxins: gastrointestinal, disulfiram-like, neurologic, and protoplasmic. The latency period and signs and symptoms vary widely. The patient and health care provider may not consider ingestion of mushrooms if there is a prolonged period between ingestion and illness. In some cases, alcohol may precipitate symptoms (Table 2).<sup>2</sup>

Field guides generally do not provide enough detail to differentiate toxic from nontoxic mushroom species. Some edible mushrooms look like poisonous species that grow in the same habitat during the same season. Even expert mycologists can have difficulty identifying the many thousands of species. Although the most poisonous species of *Amanita* have not yet been reported in Alaska, mushroom species spread quickly to new habitats when conditions become favorable.

Types of toxicity	Mushroom families* (Toxin)	Latency period	Symptoms	Long-term Effects	Mortality
<b>Gastro-intestinal</b>	Agaricus, Amanita, Chlorophyllum, Omphalotus (Toxins poorly described)	1-4 hrs	Nausea, vomiting, cramping, diarrhea (may be bloody).	Can result in liver failure.	Reported deaths
<b>Disulfiram-like</b>	Coprinus (Coprine)	<72 hrs	<30 min. after alcohol ingestion: Flushing, sweating, headache, nausea, vomiting, rapid heart rate, shortness of breath, chest pain.	Severe hypotension. May mimic heart attack.	Unknown
<b>Neurologic</b>	A) Amanita, Inocybe, Clitocybe (muscarine) B) Amanita (ibotenic acid, muscimol) C) Psilocybe (psilocybin, psilocin)	A) 15 - 20 min B) 1-2 hrs C) 15-20 min	A) Salivation, urination, tearing, diarrhea, sweating, vomiting, urination, respiratory failure; B) Drowsiness & dizziness followed by hyperactivity, hallucinations, seizures, twitching; C) Euphoria, hallucinations or fear, rage & violence	More severe reactions in those with chronic lung and heart conditions.	6-12%
<b>Protoplasmic</b>	A) Gyromitra (gyromitra) B) Cortinarius (orellanine, orelline) C) Amanita (amatoxin)	A) 4-50 hrs B) 2-20 days C) Biphasic: 4-16 hrs, then 2-3 days	Nausea, vomiting, diarrhea and: A) Delirium, seizures, coma B) Polydipsia, polyuria, headache, myalgias, loss of consciousness C) GI symptoms resolve followed by liver failure and hypoglycemia.	A) hepatic failure B) renal failure C) hepatic & renal failure	15-50%

\*A few examples given, but the list is not all-inclusive. Only some species within each family are poisonous.

### General Recommendations:

1. Never eat a wild mushroom unless an expert identifies it as edible. If in doubt, throw it out!
2. Never eat any mushroom raw; mushrooms should always be cooked.
3. Don't collect mushrooms from polluted areas such as mines, heavily traveled roadways, and areas sprayed with herbicides, insecticides or fungicides.
4. If eating wild mushrooms, save a few uncooked mushrooms for identification should you become ill.
5. Be aware of common misconceptions about wild mushrooms (Table 3).

**Table 3: Myths about Mushroom**

- Poisonous mushrooms tarnish a silver spoon
- If it peels, it is safe to eat
- All mushrooms growing on wood are edible
- Mushrooms eaten by animals are safe for humans
- Mushrooms growing in meadows and pastures are safe
- Parboiling, drying, or pickling can detoxify poisonous mushrooms

**Recommendations to Health Care Providers:**

1. Consider mushroom toxicity if a patient presents with acute gastrointestinal, renal, hepatic or neurologic abnormalities.
2. Consider that more than one species of wild mushroom may have been ingested. Mild initial symptoms may resolve to be followed in a day or two by life-threatening problems.
3. When mushroom toxicity is suspected, obtain mushrooms, serum, and gastric contents to identify the species and toxin.
4. Illness may also be caused by toxins produced by bacteria that are contaminating non-poisonous mushrooms (both wild and store-bought varieties).
5. Contact Poison Control at (800) 478-3193 for specific treatment recommendations.

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Recommended reading: Benjamin, DR. *Mushrooms: poisons and panaceas. A handbook for naturalists, mycologists and physicians.* Germany, 1995, Koeltz Scientific Books.

**References:**

1. Litovitz TL, et al. 1996 annual report of the American Association of Poison Control Centers Toxic Exposure Surveillance System. *Am J Emerg Med* 1997;15:470-500.
2. Schneider SM. Mushroom Toxicity. In: Auerbach PS, editor: *Wilderness Medicine* 3<sup>rd</sup> ed, St. Louis, 1995, Mosby.

(Reported by Susan Galvin, Infection Control, Fairbanks Memorial. With thanks to Phyllis Kempton, Greater Anchorage Mycological Assoc. & Dr. Gary Laursen, Senior Research Associate of the Institute of Arctic Biology for reviewing this *Bulletin*. Submitted by Beth Funk, MD, MPH, Section of Epidemiology.)