How has anthrax affected Minnesota?
Anthrax has been reported worldwide and in nearly every state in the United States. Minnesota’s last reported human case was in 1953.
In Minnesota, anthrax has been diagnosed over 200 times on 192 farms since 1909. More recent anthrax outbreaks have been reported in 1969, 1984, 1993, 1996, 1997, 2000 and 2001. Most of the Minnesota farms that have had animals diagnosed with anthrax are in southwestern Minnesota, near the Minnesota River. Heavy rainfall with flooding followed by periods of dry weather likely has contributed to these outbreaks.
The 2001 outbreak involved Roseau, Kittson, Polk and Marshall counties in Northwestern Minnesota with 93 cattle, 2 horses and 2 free-ranging white-tailed deer deaths reported. There were no human cases. Anthrax had not been diagnosed in any of these counties before 2000 and prior flooding may have introduced the *B. anthracis* organism into these new areas of Minnesota.

How do animals become infected?
Most animals, particularly cattle and sheep, are infected while grazing contaminated anthrax areas. Flooding can contaminate low-lying areas. In Europe and Canada pastures have been contaminated after flooding with waste from tanneries. Also the consumption of inadequately processed, contaminated feedstuffs of animal origin, such as bloodmeal or bonemeal, has been implicated as a cause of anthrax outbreaks. Ruminants (i.e. cattle, sheep and goats) are the species most commonly affected with the peracute (severe illness in a short time) form of the disease where death may occur without warning. It is often reported as a "lightning" death. The second form (acute or subacute anthrax) may result in fever, depression, convulsions and dyspnea (difficulty in breathing). Death occurs approximately 24 hours after the initial signs of illness. Animals may hemorrhage from the mouth, nose and anus. Cattle, sheep and horses are most commonly affected animals with this form of anthrax. Chronic anthrax presents as lingual and pharyngeal (throat) tissue swelling. Death can be caused from suffocation. This form of illness has been reported most often in swine, but also occurs in horses and dogs.

How do people become infected?
Anthrax is a disease of humans as well as animals. In humans there are 3 forms of the disease: cutaneous, inhalation, and intestinal. Cutaneous or skin anthrax, the most common human disease form, results when the organism enters broken skin. Cutaneous anthrax accounts for nearly 90% of all reported cases. Two to 5 days after the spore gets into a wound, a reddened, papular lesion develops, which commonly is

What is anthrax?
*B. anthracis* is a spore-forming bacterium that grows within the body tissues of the animal/ human host. Spores develop when the organism is exposed to the atmosphere. Consequently, *B. anthracis* spores found in the soil are resistant to drying and UV light and may remain viable in the soil for decades. The bacillus produces an exotoxin with at least 3 active protein factors: edema factor, lethal factor and protective antigen. These 3 proteins in concert are responsible for the lesions, illness and possible deaths in both animals and humans.
mistaken for an insect bite. Later, a blister forms that becomes a depressed, black lesion (eschar). With antibiotic treatment, deaths from cutaneous anthrax are rare. However, without treatment, up to 20% of affected individuals may die. The inhalation form of anthrax is rare and is caused by the inhalation of spores from contaminated dust, wool or hair. This form has been documented in workers in wool or hair processing mills. Despite treatment, death is the usual outcome. The third form is intestinal anthrax caused by the consumption of inadequately cooked meat or other animal products from anthrax-infected animals. There have been no reported cases of intestinal anthrax in the United States. Epidemics of the intestinal form have been reported in poorer countries. Again, death is the usual outcome of this form.

**How can anthrax from locally-processed cattle or wildlife be prevented?**

It is important that diseased, dying, and dead animals not be processed for human consumption. Animals with anthrax will be ill with a high fever. Therefore the best way to prevent anthrax from getting into the food chain is by inspecting animals before and after slaughter (ante mortem and postmortem inspection). At many meat and poultry slaughter facilities, State and Federal inspectors perform these inspections. For locally processed meat, a veterinarian or skilled butcher can be helpful in identifying diseased animals that should not be processed and consumed. Producers that have had anthrax identified on their premises need to watch for "sudden" death or acute illnesses in their livestock. If suspicious cases are observed, producers need to contact their veterinarian immediately. Bear and deer hunters should follow the same precautions, especially in permit area 12 and the northwestern part of the “no-quota” area in Roseau, Lake of the Woods and Kittson counties.

**Should people be vaccinated?**

A human anthrax vaccine is manufactured in the USA. This is a cell-free filtrate vaccine, meaning that it contains no dead or live bacteria. Official guidelines on who should receive vaccination include those individuals who work directly with *B. anthracis*, who handle potentially infected animal products from high incidence areas (incidence is considered low in the United States), and military personnel deployed to areas with high risk for exposure. Vaccination may be part of a treatment regimen for individuals exposed to *B. anthracis*.

**How can the spread of anthrax be prevented?**

When *B. anthracis* is exposed to oxygen, the organism transforms to a spore. Spores are resistant to temperature extremes, chemical disinfectants and desiccation.

**How should I report anthrax?**

Anthrax is a reportable disease in Minnesota. Confirmed or suspicious cases of anthrax must be immediately reported by telephone to the Minnesota Board of Animal Health (MBAH) at (651) 296-2942. MBAH veterinarians investigate all anthrax outbreaks and assist local practitioners in carrying out the MBAH rules.

**What about animals that have died from anthrax?**

Anthrax carcasses cannot be moved over public highways. If an animal is diagnosed with anthrax, all animals on that farm will be placed under quarantine for 30 days after the last animal has died. Animals should be removed from potentially contaminated pastures and vaccinated with an approved vaccine under MBAH staff supervision. Symptomatic animals should be treated with antibiotics (penicillin or oxytetracycline) and re-vaccinated in 2 weeks. On anthrax contaminated premises, it is recommended that cattle should be vaccinated annually, preferably during the spring, for a period of 5 years after the most recent anthrax outbreak. It is important to observe the recommended withdrawal period for meat and milk after antibiotic treatment or vaccination.

**Additional Information:**
- Centers for Disease Control and Prevention
- Minnesota Department of Health
- Minnesota Board of Animal Health

*This fact sheet is meant to provide basic information. For specific health concerns please contact your physician or veterinarian. Updated 2005.*