Health considerations for lead and venison

Lead history

- Lead is one of the most thoroughly studied toxicants, and its toxicity has been known for thousands of years.
- Recent research has shown that lead may have developmental effects in children at very low levels, and there is likely no threshold for toxicity.
- Because it is a very useful and relatively inexpensive metal, lead continues to be used in many products. The past uses of lead in paint and gasoline have been major contributors to blood lead levels in most children and adults.
- Since children and adults may be exposed to lead during their daily life, we should avoid any additional exposures when possible.

Lead in hunting populations

- Previous studies in other countries and other areas of the U.S. have shown that populations that eat game shot with lead ammunition as a high percentage of their diet are likely to have elevated blood lead levels.
- Modeling of blood lead levels after consumption of lead-contaminated game suggests that frequent and ongoing consumption of meat containing lead contamination would lead to substantially elevated blood lead levels. Less frequent consumption of lead-contaminated meat produces much lower elevations in long-term blood lead levels.
- We don't know whether the hunting community in Minnesota is at greater risk of lead-associated problems than the general public. The Centers for Disease Control and Prevention (CDC) recently began a study to compare venison consumers with non-venison consumers in North Dakota, but results will not be available for some time.

What are the health impacts from lead exposure?

- Elevated levels of lead in the blood can harm children and adults, but the exact level at which health effects occur depends on a number of factors, including other sources of lead, diet and nutritional status, and age.
- Many times there are no symptoms until the health problems are very serious. Usually people who are lead poisoned do not seem to be sick. Even with no overt symptoms, lead may be causing damage.
- One thing we do know is that children under the age of six are at greater risk for lead poisoning because their brains are still developing and they absorb lead much more easily than adults.
- Population-based studies have shown that in children, exposure to lead at an early age may lead to loss of IQ, behavioral problems, and learning difficulties. These effects may not be observed until several years after the lead exposure.
- Pregnant women should also avoid lead exposure because lead can easily cross the placenta and transfer to the fetus.
- While adults are not as sensitive as children and pregnant women to the effects of lead, recent research has shown that long-term moderately elevated blood lead levels may cause mental decline and high blood pressure, with an associated increase in the risk of kidney problems, heart attacks, and strokes.

Why haven't venison-related lead poisoning cases been identified?

- In Minnesota there are no documented cases of people having overt symptoms of lead poisoning from venison consumption. However, at the moderate levels of exposure that would likely be experienced by people occasionally eating lead-contaminated venison, overt symptoms of lead poisoning are not usually apparent.
- The effects of lead in children are not usually seen until years after the exposure has ceased, and are also seen in some children with no known lead exposure. Therefore, it is highly unlikely that lead poisoning from past consumption of venison would be identified as the cause of behavioral problems or learning difficulties in any single child.
- The problems caused by lead in adults are common symptoms, especially as people age; therefore it is unlikely that lead would be identified as the cause of these conditions in any one person unless the exposure was very severe.
- All of this suggests that moderate levels of lead poisoning may go undetected in both hunting and non-hunting populations due to its subtle nature.

Why not just provide consumption advice like we do for fish?

- Unlike contaminants in fish, which tend to be uniformly distributed through the meat and within the same size of fish and species from a given lake, the lead fragments in ground venison are not uniformly distributed.
- One person could take a bite of venison and receive a very high dose of lead; someone else might not get any lead at all.
- Since it can't be determined with any certainty who might receive meat with a high dose of lead and who might not, we need to assume a "worst case scenario" and err on the side of caution and of protecting the sensitive and vulnerable populations served by the food shelves.

What about people who have already consumed venison from the food shelf? What is their health risk?

- It is not possible to say with certainty whether someone who already consumed the venison has been exposed to lead or not. Given the findings of the limited sampling, it is possible that some lead exposure may have occurred. However, for most adults, the body can tolerate small amounts of lead exposure without visible or noticeable symptoms. Increases in blood lead levels would be short-lived and would eventually return to previous levels if the dose was a one-time occurrence. If lead exposure occurred regularly it may keep the blood lead level elevated.
- However, as noted above, pregnant women and young children face increased risks even from short-term and relatively low levels of exposure.
- If families are concerned about any lead exposure they may already have had, they should consult their physician, and consider possibly getting a blood lead test.

The mission of MDH is to protect the health of all Minnesotans, so we want to make hunters aware of the potential for lead contamination. We recommend that until further data are available about the presence of lead in venison, hunters should consider limiting the consumption of venison by young children and pregnant women, who are most vulnerable to lead.