



DATCP Meat Safety Update

In partnership with the Wisconsin Department of Health Services and Wisconsin Department of Natural Resources

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Venison and Chronic Wasting Disease (CWD)

To: State and federal meat safety inspectors; meat establishment operators who process venison

Re: Information on Chronic Wasting Disease and minimizing potential exposure

What is chronic wasting disease (CWD) and where is it found?

CWD is one of a group of diseases called transmissible spongiform encephalopathies (TSEs). TSEs are caused by malformed prions, or infectious proteins, which multiply in an animal by changing the structure of healthy prion proteins into an abnormal form of the protein. This process eventually leads to the death of brain cells and other nervous tissue and results in disease. CWD is known to affect deer, elk, reindeer, caribou, and moose and affects animals in 26 states in the U.S., three Canadian provinces, South Korea, Norway, Finland, and Sweden. As CWD continues to spread globally, the potential for human exposure also increases, demonstrating a need for continued research.

Can CWD be transmitted from deer to humans?

To date, there are no reported cases of CWD infection in people and current evidence does not show that CWD affects people. However, CWD research also has not ruled out the possibility that CWD could be a risk to people. Results of some CWD research in animals suggests that there may be a risk. Because of this uncertainty, the Wisconsin Department of Health Services recommends people do not eat meat from an animal that tests positive for CWD.

Where have prions been found in deer?

The highest concentration of CWD prions in deer are found in lymph nodes and nervous tissue. CWD prions are also found in saliva, blood, urine, feces, antlers, muscle, and fat. Because of the presence of prions in the blood and lymph nodes, do not consider any tissue in the deer carcass to be CWD prion-free.

Is CWD the same as mad cow disease, otherwise known as bovine spongiform encephalopathy (BSE)?

No. These diseases are in the same family of diseases known as transmissible spongiform encephalopathies (TSEs) but are not the same. Although the disease

process is very similar, CWD and BSE differ in the level of known risk and the regulations keeping potentially infectious tissues out of the food supply. There is strong evidence that consuming BSE-contaminated beef products causes variant Creutzfeldt-Jakob disease in humans. At this time, eating venison from a CWD-infected deer has not been shown to cause human illness. There are numerous regulations related to BSE in cattle. These regulations identify specified risk materials and ban them from the human food supply. No such regulations apply to venison and CWD. While there are recommendations for [handling and processing venison](#), such as boning out the meat and removing lymph nodes, these are only recommendations and are not enforceable.

How is CWD spread between deer?

CWD is most likely transmitted between deer through direct animal-to-animal contact. There is also an assumption that environmental contamination may play a role in areas where deer congregate or carcasses are present. CWD prions have also been found in the soil and can adhere to objects such as feeders. Typically, it takes approximately 16 months from infection with CWD before a deer begins showing any clinical signs. During this time, a healthy-looking deer may have the disease and be shedding prions in the environment. The majority of deer that test positive for CWD do not show any signs of disease.

How many wild deer have tested positive for CWD in Wisconsin last year?

For the period of April 1, 2018 through March 31, 2019, the Wisconsin Department of Natural Resources (DNR) reported 17,194 CWD samples analyzed and 1,063 positive samples. CWD is not evenly distributed across the landscape, therefore estimates of statewide or countywide prevalence are not possible to assess. In order to get an approximation of the distribution of CWD in Wisconsin, the DNR annually reviews and develops a sampling plan. That plan, test results, and mapping tools are provided on the [DNR CWD website](#).

What is the testing procedure for hunter submitted samples?

In Wisconsin, medial retropharyngeal lymph nodes are collected from hunter harvested deer for submission to the Wisconsin Veterinary Diagnostic Laboratory in Madison for testing. Hunters receive a barcode that uniquely identifies their deer and is linked to their test result. All samples are first tested with an ELISA (enzyme-linked immuno-sorbent assay) test. If a positive is found in a new area of the state, the sample will then be examined by a second method called immunohistochemistry (IHC). Both methods are highly accurate and the IHC is considered the gold standard test for CWD.

Hunters typically get results back in 10-14 days via email or mailed postcard. They can also check for their results on the [DNR's test results website](#). A not-detected test result does not guarantee that the deer is CWD-free; it means that no CWD prions were detected in the sampled lymph nodes and the risk of the deer containing CWD prions is low.

Are there any cooking temperatures that would inactivate the CWD prions if they were present in venison?

There are no temperatures within a normal cooking range (180-500F) known to inactivate CWD prions in venison. Incineration temperatures of 1800F will inactivate CWD prions.

Is it possible to inactivate CWD prions through cleaning and sanitizing?

Completely removing or inactivating CWD prions on equipment and surfaces is a challenge. Very few techniques have been published as effective for routine use during meat processing. CWD prions can adhere tightly to stainless steel and plastic surfaces while retaining their ability to infect an animal.

Best practices, based on published research, include:

- Keep equipment and surfaces moist between exposure and cleaning.
- Thoroughly clean all contaminated equipment and surfaces with soap and water to remove all visible organic matter. Use separate cleaning tools for venison and inspected species.
- After cleaning, soak all appropriate processing equipment, surfaces, and cleaning tools in a 50:50 bleach (ultra-strength or at least 6% sodium hypochlorite) to water solution for at least one hour.

- Thoroughly rinse all equipment, surfaces, and cleaning tools with clean, hot water after soaking in bleach water solution. This practice will reduce damage to surfaces caused by chlorine.

What about the new bleach study?

A research study (linked below) published on October 4, 2019, described a process to inactivate CWD prions on stainless steel equipment. A solution made of 2 parts household bleach (ultra-strength or 6% sodium hypochlorite) to 3 parts water was used to soak stainless steel equipment for five minutes. This technique was shown to stop CWD prions from being infective. However, if any venison tissue at all is left on the stainless steel, there is a chance this method will not inactivate prions in that tissue. The study results also only apply to stainless steel, not to plastic, wood, or other metal types.

Inactivation of chronic wasting disease prions using sodium hypochlorite by K. Williams, A. Hughson, B. Chesebro, & B. Race.

<https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0223659>

Can CWD prions transfer between meat products when processed on the same surface or with the same equipment?

Yes, there is a risk of prions transferring from contaminated surfaces to other surfaces or meats. CWD prions have been identified on equipment and surfaces that were used when processing CWD positive carcasses. Unlike bacteria, disease-associated prions are only known to multiply in living animals, but they can remain infectious on non-living surfaces for years. This means that the number of CWD prions on a carcass or object will not increase over time, but the existing CWD prions will remain present and infectious. Given this and the challenges of effective cleaning and sanitizing procedures, CWD prion cross-contamination is a real risk.

How should you dispose of carcass waste?

The DNR recommends that you dispose of all deer carcass waste in a licensed landfill. However, licensed meat processors and permitted taxidermists receiving deer carcasses must dispose of all inedible parts and all parts of the spinal column, brain, and lymphoid tissues in a properly permitted landfill or with a licensed renderer in accordance with state law [[Wis. Admin. Code § NR 10.105\(7\)\(c\)](#)]. Use of deer parts as bait for trapping or attracting animals for personal entertainment, such as photography, is prohibited. Additional

information can be found on the DNR [deer carcass waste disposal sites](#) page.

How is wild game processing, including venison, regulated in Wisconsin?

There are two types of wild game processors – those operating under a DATCP license and those not operating under a license. Wisconsin law does not require licensing of facilities that process only wild game, including venison.

According to state law [[Wis. Admin. Code § ATCP 55.03\(11\)\(b\)](#)], DATCP-licensed meat processing businesses may custom process venison within their facility if several requirements for sanitation, product separation, and labelling are met. (In this case, custom processing means processing venison products for an individual who owns the venison and who will eat the venison with their family and non-paying guests.) Inspectors will verify the cleanliness of the facility and that the establishment is meeting the requirements mentioned above, but inspectors do not look at individual deer carcasses or venison products that are custom processed.

The second category of wild game processors are those that legally operate without having a license. As mentioned above, processors of exclusively wild game are not required by law to be licensed by DATCP. Unlicensed processors typically operate out of their homes and are not inspected. The customer determines on their own the quality of the services provided by unlicensed wild game processors.

Currently, there are no federal or state regulations that prohibit CWD-positive venison from being used for human food. However, since 1997, the U.S. Centers for Disease Control and Prevention and the World Health Organization recommend people do not eat meat from animals infected with a TSE such as CWD.

Where can I find for more information on CWD?

- Wisconsin Department of Agriculture, Trade and Consumer Protection:
https://datcp.wi.gov/Pages/Programs_Services/ChronicWastingDisease.aspx
- Wisconsin Department of Health Services:
<https://www.dhs.wisconsin.gov/news/releases/111618.htm>
- Wisconsin Department of Natural Resources:
<https://dnr.wi.gov/topic/wildlifehabitat/cwd.html>
- Center for Disease Control (CDC):
<https://www.cdc.gov/prions/cwd/index.html>
- World Health Organization:
https://www.who.int/zoonoses/diseases/prion_diseases/en/
- Chronic Wasting Disease fact sheet, The Center for Food Security and Public Health, Iowa State University:
<http://www.cfsph.iastate.edu/DiseaseInfo/factsheets.php>

This update is a source of program policy information administered by the Division of Food and Recreational Safety at the Wisconsin Department of Agriculture, Trade and Consumer Protection.

For questions, contact:

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Additional resources are available at https://datcp.wi.gov/Pages/Programs_Services/MeatSafety.aspx.