

CWD UPDATE

Legislators Forum

May 22, 2003



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Transmissible Spongiform Encephalopathies: Etiology

- **agent not fully characterized**
- **smaller than smallest known virus**
- **elicits no detectable immune or inflammatory response in the host**
- **resistant to most disinfectants and treatments which normally destroy nucleic acids**

TSE Diagnostics: Current Tests

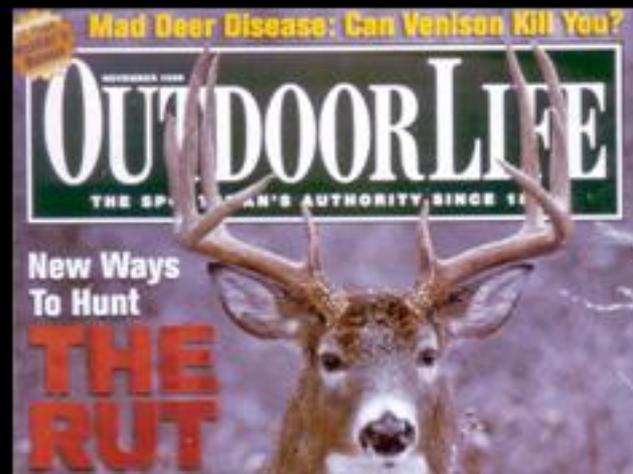
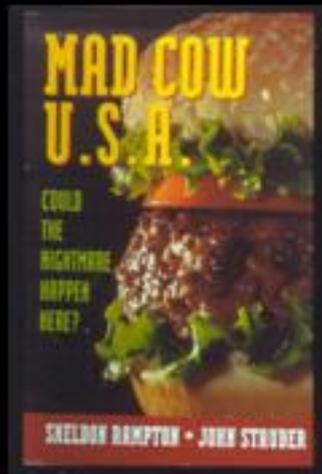
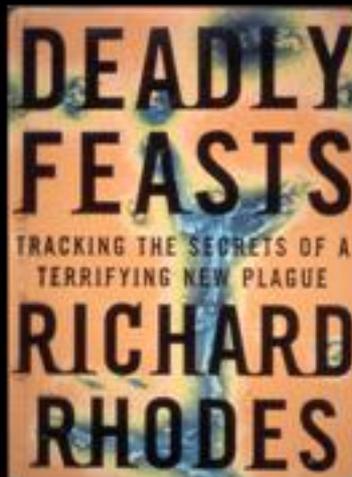
- Histopathology
- Bioassay
- SAF Detection
- Immunohistochemistry
- Immunoblotting
- Bio-RAD

TSE Diseases

- Scrapie > 250 years sheep
- Transmissible Mink Encephalopathy (TSE)
 - farm raised mink
 - documented Canada, Finland, Germany, Russia
 - Since 1947
- Creutzfeldt - Jakob Disease (CJD)
- Gertsman - Strausler - Scheinker Syndrome (GSS)
- Fatal Familial Insomnia (FFI)
- Kuru
- NVCJD

MAD DEER DISEASE
CAN VENISON KILL YOU?

Media Attention to the TSEs



CWD in the United States

- **1967-1980-** An insidious chronic wasting type disease of deer recognized in wildlife research facilities in Colorado and Wyoming
- **1979** - 1st occurred in elk
- **1980** - Identified CWD as a TSE of deer
- **1982** - Reported TSE in elk
- **1991** - Williams and Young reported CWD had occurred in a few free-ranging animals

South Dakota CWD Control (Summary)

- 1) Surveillance - ID, all deaths \geq 16 months, regardless of cause must be CWD examined.
- 2) Intrastate / Interstate movement requirements.
- 3) Import testing requirements.
- 4) Permit for interstate & intrastate movement.
- 5) Annual Premises Permit.
- 6) Mandatory official ID, inventory reconciliation.
- 7) Two herd-of-origin CWD statements required.

Required Statements:

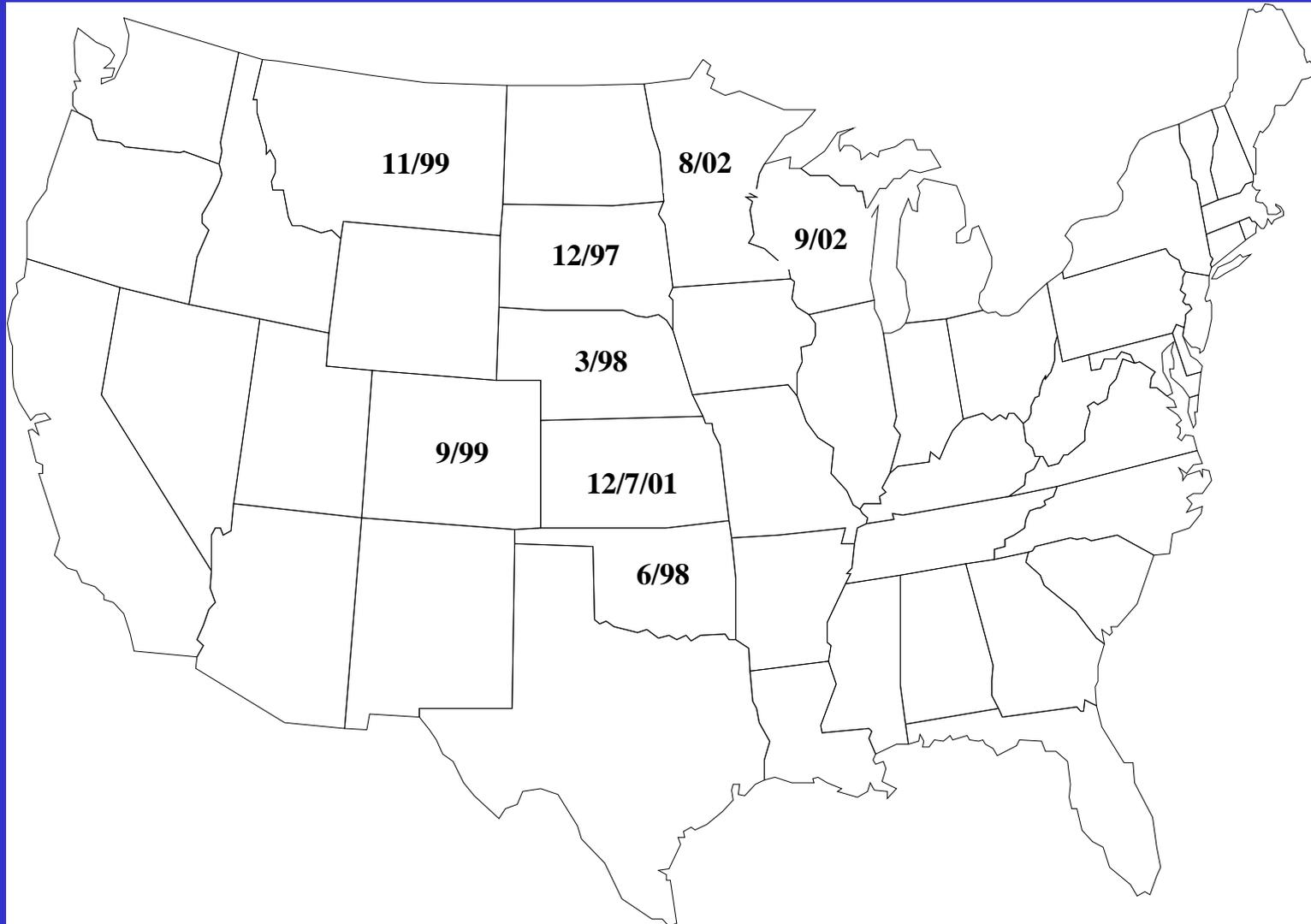
- (1) "All cervidae identified on this certificate originate from a herd in which all cervidae have been kept for at least one year or into which they were born. There has been no exposure to or additions from any other source in the past year. There have been no diagnosis, signs, or epidemiologic evidence of CWD in this herd for the past year. Records and causes of death for the past year in this herd of origin are available to the animal health official of the state of origin"; or
- (2) "All cervidae identified on this certificate originate from a herd which has been determined to have the stated monitored status by the animal health official of the State of South Dakota"; or
- (3) "All cervidae identified on this certificate originate from a herd which has been determined to have certified CWD cervid herd status by the animal health official of the State of South Dakota."

AND

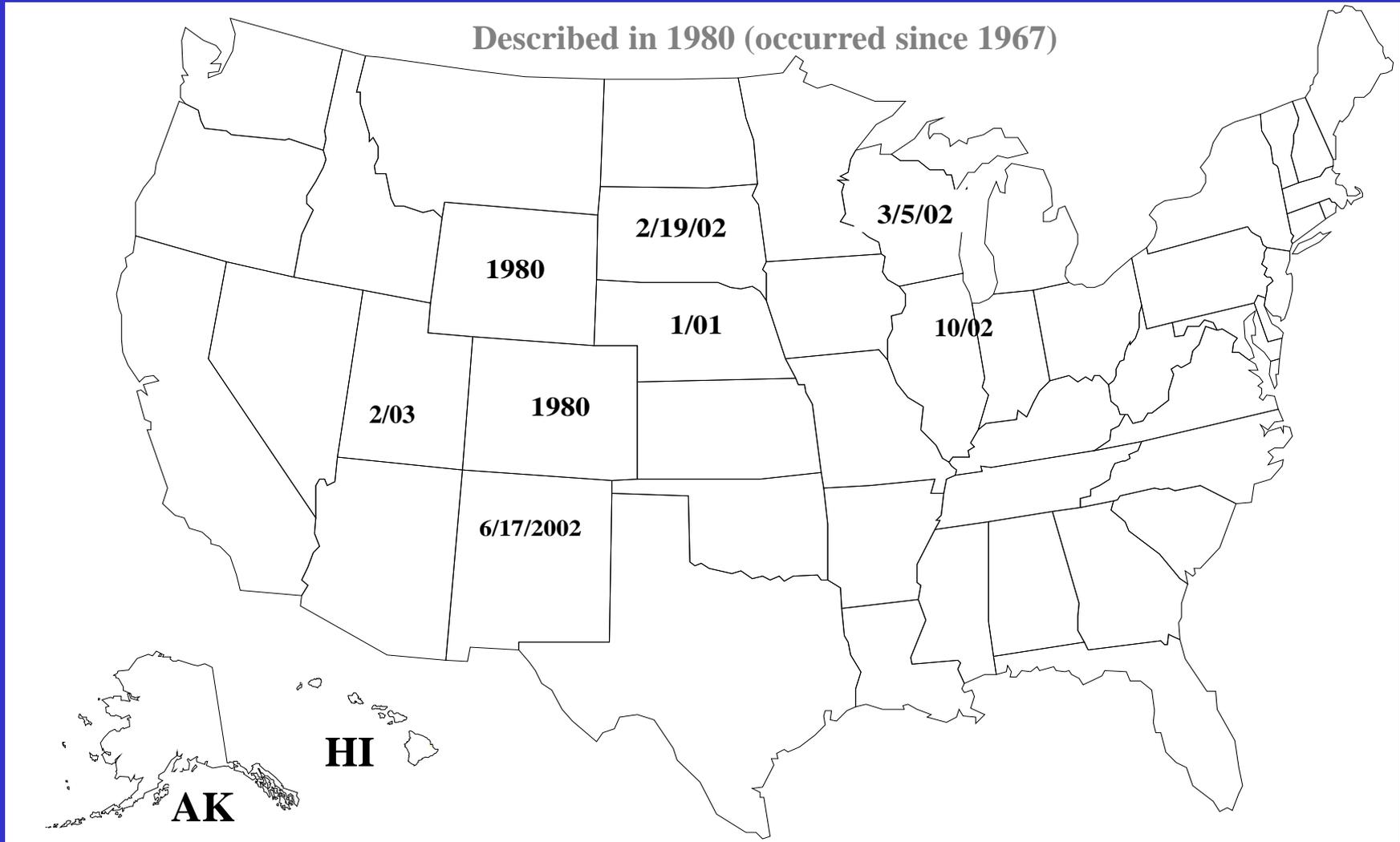
This statement must go on all health certificates:

No animal has ever originated from, OR been a member of a herd, where CWD has been diagnosed, OR been a member of a CWD trace-back or trace-forward herd; in the past 5 years.

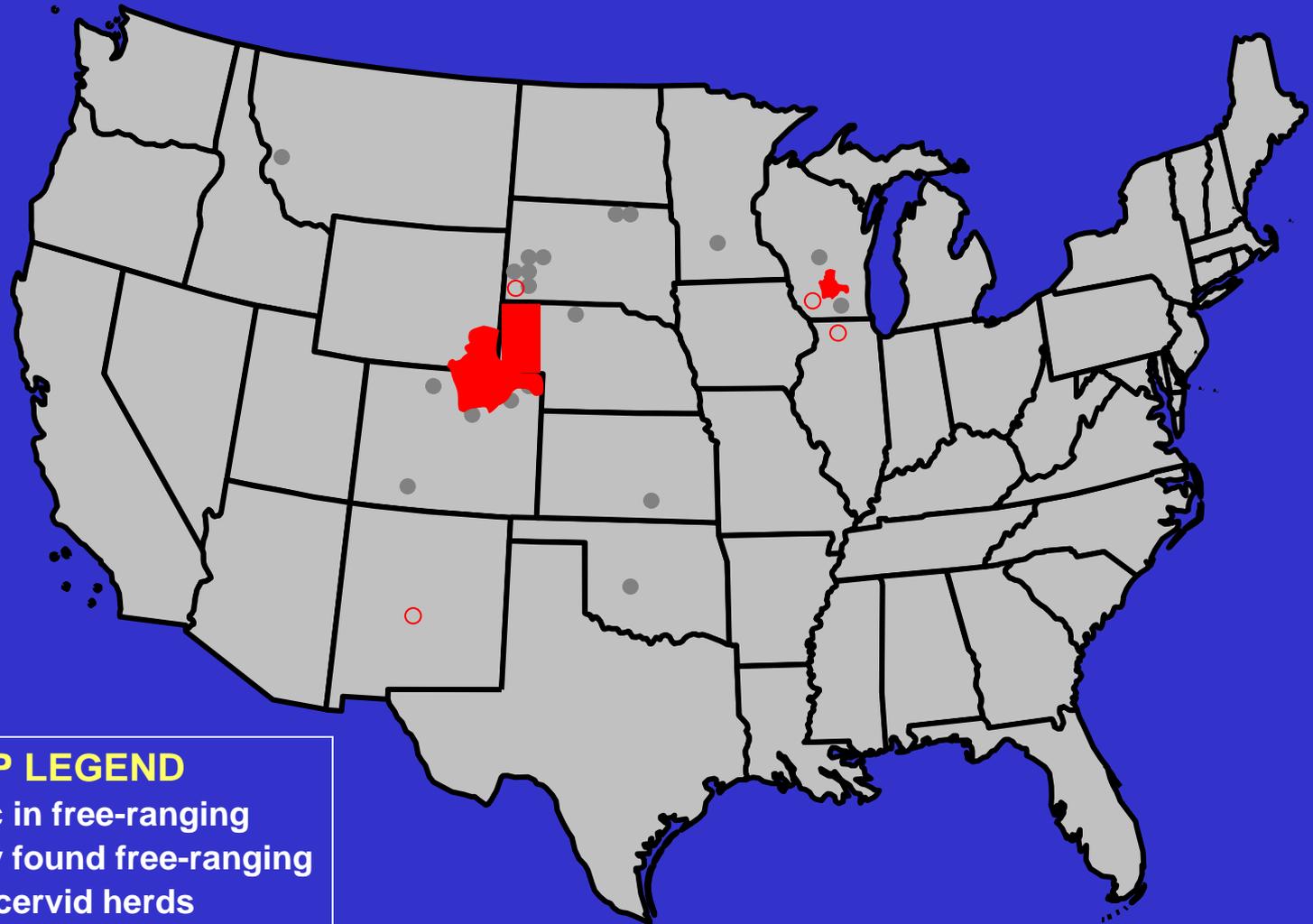
CWD in Captive Cervids in the United States



CWD in Free - Ranging Cervids



Chronic Wasting Disease: Known Distribution



MAP LEGEND

- Endemic in free-ranging
- Recently found free-ranging
- Captive cervid herds

Why Is Chronic Wasting Disease Important?

- **Human Health Questions**



- **Animal Health Questions**



- **Wildlife Population Health**



Human Health Questions

There is currently no evidence that CWD in cervidae is transmitted to humans

WHO, FDA TSE Committee, CDC

Epidemiology

CDC and state studies

CWD is NOT BSE

strain typing studies

Molecular barriers

in-vitro studies



Prudence in the face of uncertainty

CHRONIC WASTING DISEASE

Recommendations to Hunters

Harvest healthy animals

Wear latex/rubber gloves

Don't eat brain, spinal cord, eyes, lymphoid tissues

Debone meat when processing

Use good sanitation



Are Cattle Susceptible to CWD?

IC inoculation
oral inoculation
contact exposure
range exposure



Disposal Issues

TSE Disease

- CWD- deer, elk
- Scrapie - sheep, goats

Concerns

- **Live animals**- environment, water, ground, air, articles, rivers, streams
- **Carcasses**- natural deaths, CWD deaths, hunter harvests
 - “**endemic areas**”- where we’ve looked and found disease.
 - “**nonendemic areas**”- where we have not looked or have not found disease.”
- **Diagnostic Laboratories**
 - tissues
 - fluids
 - blood
 - research materials

November 22, 2002

USEPA Region 8 Conference Center, Denver, Colorado

Robbie Roberts (Presiding), Region 8 Administrator

“Discussion on Management Strategies for materials which may contain Chronic Wasting Disease Contamination”

- **Science** of CWD
- EPA **Responsibilities** - Air, Solids, Water
- **State of Science** CWD - Related Considerations
- **Review of Current Practices** - Landfills, Laboratories, Field sampling, hunter handling of carcasses

Purpose of Meeting:

Promote understanding of CWD and Potential Risks

Improve EPA's understanding of **responsibilities of**
Federal / State **Agencies**

Understand current handling practices for CWD
Wastes

Help EPA make informed regulatory **decisions**

Attendee's Recommendations

1. The various levels of **government** should **act quickly to send a consistent message** to **preclude** to the **confusion** and unnecessarily heighten public concern with a mixed message of unnecessary delay in decision making.
2. **EPA** should **consider** deposition in properly operated **landfills** as **a protective disposal** method for animal carcasses **outside the endemic areas** of CWD.
3. **Decisions** should be based **on good science**, and strive to avoid unintended consequences; the risks of various approaches, such as those posed by **usage of prion-inactivating agents should be evaluated**;
4. **Risk assessments should be performed to evaluate the risk of CWD transmission to humans and animals**;
5. **EPA and the states** should **partner on** further development and **implementations** of public **education programs**. These educational programs should be specifically **designed to inform and not alarm the public**;
6. Further **research is needed** in several areas of waste disposal practices, and prion-contaminated waste disposal specifically. One example given was biosolids; and
7. **EPA and State environmental agencies should act as clearinghouses for Best Management Practices, and include** those **recommended by** the **American Association of Veterinary Laboratory Diagnosticians**.

EPA's Authority / Responsibility

- Only UNTREATED wastes are prohibited. Most entities were in fact, implementing some form of treatment, e.g. chemical sterilants, restricting discharges, etc.
- Separate controls maybe implemented for game processors, taxidermists, landfill leachates? that go to Publicly Owned Treatment Works (POTW) to assist POTW's to make decisions.

Science Synopsis

Are Prions in Muscle?

- **Not** found in muscle tissue of **Deer**
- **Experimental** studies observed Prions in hind limb of **mice**

Are Prions in Blood?

- Evidence is YES on Scrapie and BSE (in mouse studies)

Is there a Species Barrier?

- No conclusive Test
- all Prions appear in laboratory to convert at different efficiencies (CWD converts less efficiently than BSE, Scrapie)
- **In Vitro** - PrP^{Cwd} can convert human Prp-C to abnormal
- No evidence of deer or elk CWD in humans
- No evidence of deer or elk CWD in cattle or other species

Other Federal Agency Actions

USDA, FSIS

No Policy

HHS, FDA

No Regulations

Is CWD a risk to humans?

- WHO “There currently is no evidence that CWD in Cervidae (deer, elk) is transmitted to humans.
- CDC “There is no evidence that CWD has been transmitted or can be transmitted to humans under natural conditions. However, there is not yet strong evidence that such transmission could not occur.

(PROVE A NEGATIVE???)

Inactivation of Prions

Ineffective

__Filter

Autoclave

Irradiate

Dry heat

__Cooking

Disinfectants

Effective

Alkaline Hydrolysis

Phenol

LpH (low pH)

Sodium Hypochloride (2% free chlorine)

Incinerate

Canadian BGP (Brooks Gasification Process)

EPA Region VIII

November 22, 2002 - Meeting at request of Labs, Public Health Agencies, State Environmental Agencies, Wildlife Agencies, Animal Health Agencies

- EPA agreed to delay recommendations on disposal
- Form working group for scientific input

Interim

- EPA NEVER FORMED WORKING GROUP
- EPA circulated recommendations to POTWs (EXTREME)
- Not to State Environmental Agencies responsible
- Not to Laboratories affected
- Not to Wildlife Agencies
- Not to Animal Health Agencies
- Not to scientists working on CWD

April 28, 2003 - Conference Call - Above Groups - WY, SD, NE, CO

April 30, 2003 - Meeting with Region 8 Administrator

May 9, 2003 - Meeting in Region 8 agreed to