IF IT WASN’T LIGHTNING OR PNEUMONIA OR THE FEED OR THE VACCINE, WHAT KILLED THE COW?
TRUE OR FALSE:

- **EVERYONE** has an “enemy” who is out to poison their animals!!! **TRUE**
- **OLD** animals just don’t die suddenly unless they are poisoned!!! **TRUE???, FALSE???
- **UNLIKE PEOPLE**, livestock are supposed to warn us before they die!!! **TRUE???, FALSE???
- Liver enzymes are **ONLY ELEVATED** in intoxications!!! **FALSE**
- **MOST** cattle are killed by lightning, whether there was a storm or not!!! **FALSE**
- If there is **ANY** evidence of previous pneumonia, **THAT** killed the cow!!! **FALSE**
- Feed and Vaccine Manufacturers are out to poison our livestock!!! **FALSE**
- Some livestock producers think they are out to get their livestock!!! **TRUE???
ACCIDENTS DO HAPPEN, BUT...
LARGE ANIMAL TOXIC FACTS TO REMEMBER:

🧟‍♂️ Toxic Differentials for Blindness in Cattle:
- **LEAD**
- **SALT TOXICOSIS/WATER DEPRIVATION SYNDROME**
- **PEM (Sulfur)**

☠️ Toxic Differentials for Sudden Death in Cattle:
- **PESTICIDES**
- **ARSENIC (with or without gross pathology)**
- **Cyanide**
- **Nitrate/Nitrite**
- **Urea (NPN)**
- **Neurotoxic Plants (Blue-Green Algae)**
- **Cardiotoxic Plants (Yew)**
- **Lead (expect some BLINDNESS)**
POISONING SHOULD BE SUSPECTED WHEN:

- Signs of **UNKNOWN ETIOLOGY/OTHER** causes **RULED OUT**
- Sudden **DEATH OF MULTIPLE ANIMALS/SIMILAR SIGNS**
- Rapid onset of an **AFEBRILE SYNDROME** or, even, **SUDDEN DEATH** of a previously healthy animal.
- **RECENT CHANGE** in diet or environment
- **NEIGHBORHOOD FEUDS/LOVE GONE BAD**
- **VERY SMALL**, very **YOUNG**, very **MEAN**, very **NOISY**, very **ANNOYING**, and/or very **STUPID** animals!!!
- Alien, “Biker”, and Meth Lab sightings in the area!!!
WORKING UP A POSSIBLE INTOXICATION

NOT REALLY DIFFERENT FROM WORKING UP ANY OTHER CASE!!!
WORKING UP A POSSIBLE INTOXICATION 1

HISTORY/PHYSICAL EXAMINATION

CLINICAL SIGNS/CIRCUMSTANCES
WORKING UP A POSSIBLE INTOXICATION 2

LIST OF PROBLEMS (WHAT’S WRONG???)

“BIG PICTURE” PROBLEMS (TARGET SYSTEM/ORGAN)

D.A.M.N.I.T.  WHAT ABOUT THIS CASE SUGGESTS INTOXICATION?

IF INTOXICATION UNLIKELY, GO ANOTHER DIRECTION

OR

IF INTOXICATION LIKELY, PLAUSIBLE TOXIC/NOT TOXIC??? DIFFERENTIALS

MOST LIKELY FINAL TOXIC DIAGNOSIS AND WHY (MIGHT NOT HAVE ONE)

MIGHT NEED TO KNOW TOXIC MECHANISM OF ACTION

TOXICOSIS TREATED↔DIAGNOSIS CONFIRMED

RETHINK IF DIAGNOSIS NOT CONFIRMED!!!
HOW TO CONFIRM DIAGNOSIS OF AN INTOXICATION ALIVE/DEAD

CLINICAL SIGNS/CLINICAL CIRCUMSTANCES
- ID/EVALUATE CLINICAL SIGNS (Consistent with Specific Toxicsis)
- ID POTENTIAL TOXICANTS IN ENVIRONMENT (Water/Feed/Junk)

ALIVE (Potentially challenging and toxicosis-/target organ dependent)
- WHOLE BLOOD/SERUM/URINE/VOMITUS
  - ID TARGET ORGAN BASED ON HEMATOLOGIC/BIOCHEMICAL $\Delta$s
  - POSSIBLE ANALYSES FOR “TOXICANTS”, ESPECIALLY IN VOMITUS

DEAD
- NECROPSY/HISTOPATH/+ or – TOXICOLOGY TESTING
  - ID TARGET ORGAN BASED ON GROSS/HISTOPATHOLOGIC $\Delta$s
  - ANALYSES FOR “TOXICANTS”
    - FRESH/FROZEN GASTRIC (Rumen) CONTENTS, LIVER, KIDNEY
    - $\frac{1}{2}$ BRAIN IF NEUROLOGIC SIGNS
    - OCULAR FLUID/CEREBROSPINAL FLUID/OTHERS
HELP IS JUST A PHONE CALL AWAY!!!
573-882-6811
DIAGNOSIS OF SUSPECTED INTOXICATION:

кр. Collect **DETAILED & ACCURATE HISTORY**
Consists of reported signalment + clinical signs/clinical circumstances

🌿 Directly assess **CLINICAL SIGNS/CLINICAL CIRCUMSTANCES**

🌿 **LIST OF PROBLEMS/DAMNIT/LIST OF DIFFERENTIALS**

🌿 **TENTATIVE DIAGNOSIS/MOST LIKELY differentials**

🌿 Correlate **MECHANISM OF ACTION** to **CLINICAL SIGNS/PROBLEMS**

🌿 Evaluate the **EFFICACY OF TREATMENT** in progress.

🌿 **CLINICAL PATHOLOGY** (especially if ALIVE)

🌿 **NECROPSY EXAM/PATHOLOGY** (especially if DEAD)

🌿 Collect **APPROPRIATE SAMPLES** for **ANALYSES**
HOW TO MAKE THE MOST OF A NECROPSY TO CONFIRM A “TOXIC” DIAGNOSIS:

- AVOID ONE “MAGIC” SAMPLE APPROACH
- COLLECT & **FIX** TISSUES FOR **HISTOPATH**
- COLLECT **FRESH/FROZEN** TISSUES FOR **TOXICOLOGY**
- TAKE IMAGES OF ANIMALS/ENVIRONMENT/NECROPSY
- CONSULT AN “EXPERT”
PROPER PRESERVATION/STORAGE:

- Fix TISSUES for **HISTOPATH** in **FORMALIN**.

- **CHILL/FREEZE** VOMITUS & TISSUES FOR **TOXICOLOGIC** ANALYSES.

- **IMMEDIATE FREEZING** is optimal if testing for **VOLATILE TOXICANTS**, such as ammonia, cyanide, zinc phosphide, or metaldehyde IN **RUMEN AND/OR STOMACH CONTENTS**.

- For Organochlorine Pesticides, **AVOID PLASTIC** containers if possible (might be unavoidable); **GLASS JARS/ALUMINUM FOIL ARE BEST**.

- **IF IN DOUBT**, check with laboratory **BEFORE** sending.
SOME EXAMPLES FOR DISCUSSION
OP AND CARBAMATE INSECTICIDES

![Image of Coumaphos](image1)

![Image of Trichlorfon](image2)

![Image of Spectracide Malathion](image3)

![Image of Carbaryl](image4)
ORGANOCHLORINE PESTICIDES
Urea-molasses Multinutrient Block as a feed supplement to dairy cattle

Innovation feeding strategy for ruminants based on poor feeding and managerial conditions.
PERILLA MINT
CHERRY TREES
JOHNSONGRASS
BLUE-GREEN ALGAE
YEW
POISON HEMLOCK