



TAB 21

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ENFORCEMENT & WILDLIFE  
INVESTIGATION CASE STUDIES

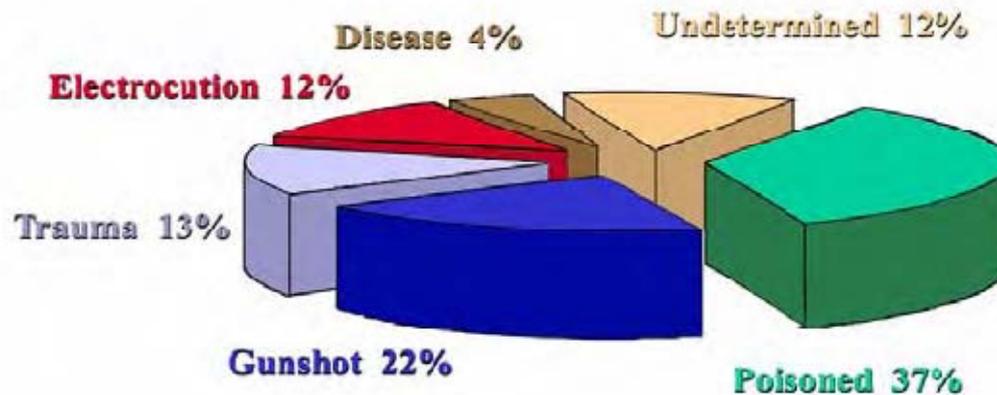
Frank Kuncir

# Extent of the Problem

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- DDT (OC) 1943 50+ years to ban (India ?)
- Carbofuran (Carbamate-Furadan®) 85-06 however still minimal use STAY TUNED!
- Fenthion-Baytex® (OP-avicide) Since 1988 Open Investigations
- "Pesticides"
  - US Exported Between 92-94 1.5 billion pounds (Many are banned in U.S.)
  - Average Use Annually 4 BILLION Pounds A/I annually (EPA 1996)
  - In some aerial applications <.01% reaches target pest

# Causes of Death in Eagles N=756 Carcasses

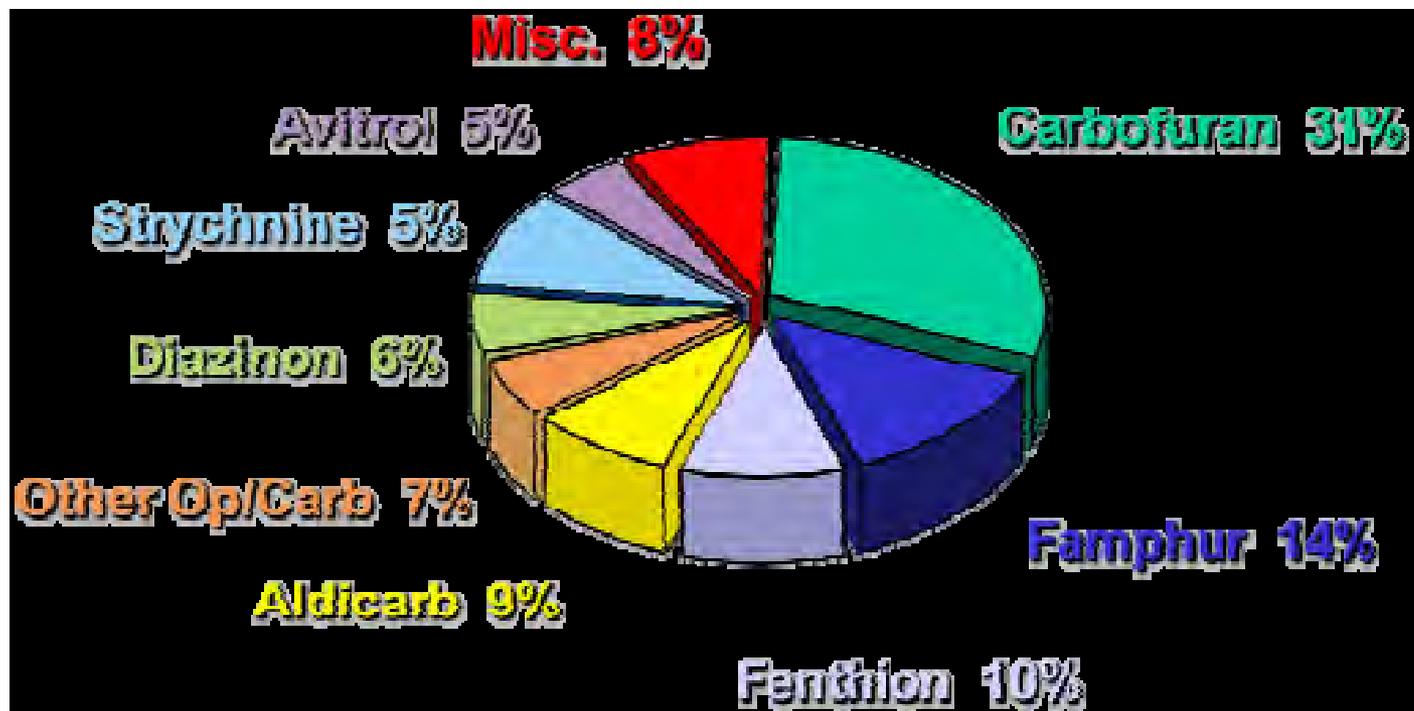


- The number of eagles killed each year by illegal use of restricted-use pesticides and other poisons alarming. The National Fish and Wildlife Forensics Laboratory reports that 37% of all eagles submitted for necropsy during criminal investigations have been poisoned.
- NFWFL data provided by Dr. Richard K. Stroud DVM MS Veterinary Medical Examiner, 2008

## Commonly Used Poisons

The two most common “poisons” used unlawfully in the Southeast are Furadan (Carbofuran – labeled for alfalfa and corn crops) and Temik (Aldicarb – labeled for cotton and peanut crops). Both are carbamate insecticides that EPA has designated as “restricted-use pesticides.”

Of 190 poisoning cases worked by the USFWS National Fish and Wildlife Forensics Laboratory, 31% involved the use of Furadan; Temik was found in 9% of the poisonings. (USFWS,OLE Southeast Region & Ashland Laboratory)



Discoveries Included Victims of Proper Use According to Regulations or Misuse (FIFRA 40CFR 12 (A)(2)(G), i.e. "use(d) in a manner inconsistent with labeling")



# Route of Exposure

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## Cranes and Crops



*Cranes can efficiently remove planted corn from a field. Photo by Su Liying.*

# The Nature of Our Former Agrarian Society Has Changed!

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- Modern agriculture has shifted from many small farms where several crops were grown to fewer large farms focused on limited cash crops. Today's modern age with its machinery favors large fields of single crops.

**Stewardship-Changes**



# Manual Application Method

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- The Majority of Herbicide Applications are with ground equipment which limits the off-target loss of applied chemicals.



**Back Pack Spray Rig**

# Air Blast Spray Rig



- However can produce mist that can be carried much farther and...

# Drift Considerations

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Can Drift

Even

Further>>>>>>>



# Aerial Applications



# HOWEVER, Lest we forget..

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- “By reducing plant cover and availability however herbicides may have a direct effect on wildlife populations....” Dr. Steve Hamilton, Iowa State Cooperative Unit,

## Cotton Defoliant Application-Safety Concern



# Purposeful Misuse

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- Rationalized Motives (\$)Protection of:
  - 1. Released Species, i.e.: Captive Bred mallards, pheasants, rabbits. (The latter 3 oft times associated with illegal “pole traps”)
  - 2. Crops from Agricultural Pests in orchards ( birds & deer) or roosting Corvidae near homes or pigeons in inner cities (Starlicides-1.3 million birds killed in one year in association with ADC trial applications in Ky. & Tn. alone
  - 3. Fighting Cocks from Raptors (Although illegal in most states, tolerated in many! )



# Case Studies

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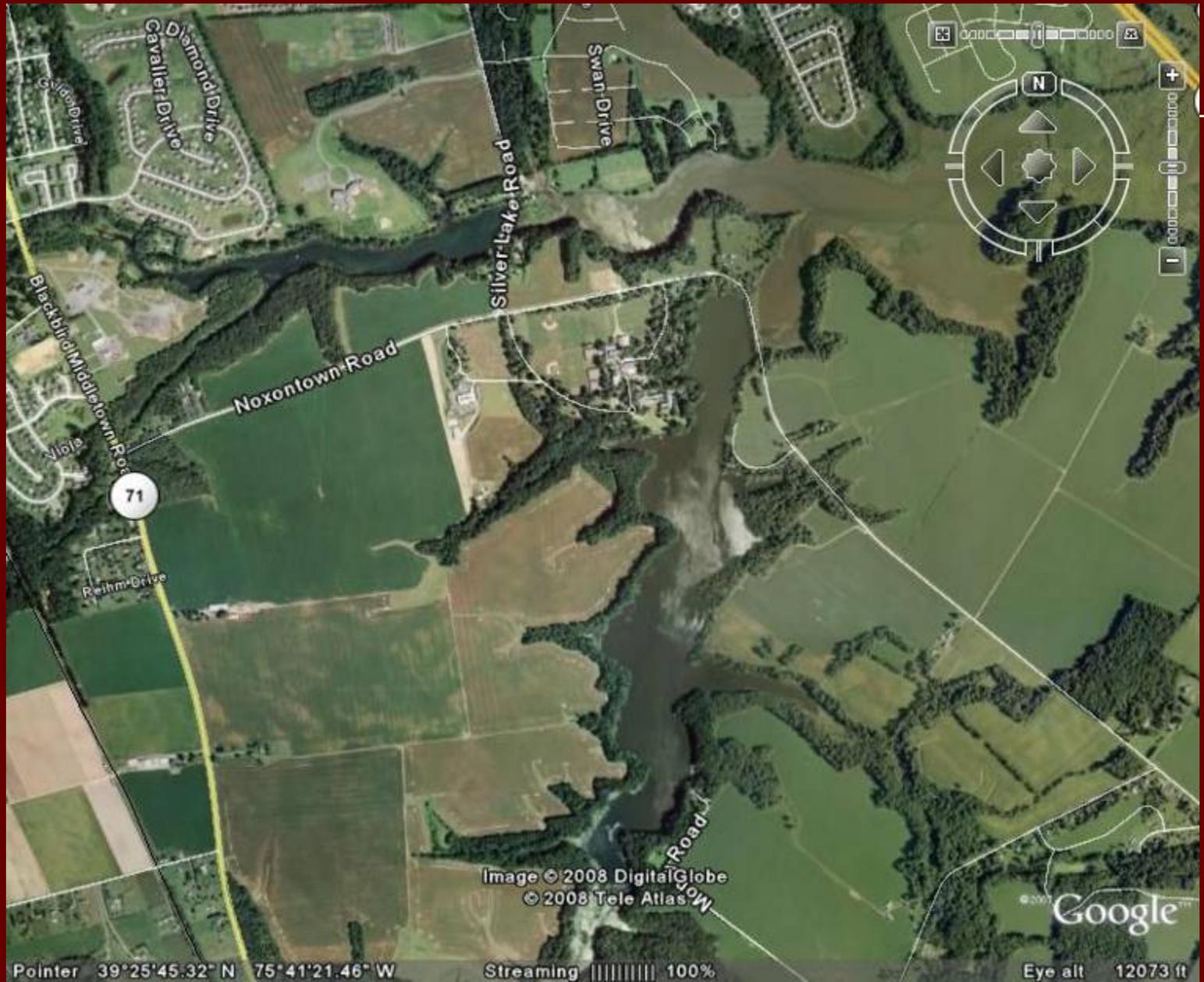
- U.S vs. William Shetzler  
MBTA, ESA, Conspiracy
- U.S. vs. Harry Dixon  
FIFRA, Aid & Abet MBTA, Conspiracy
- State of Delaware vs. William Shetzler & Harry Dixon: Take Protected Species (Red Fox)

# St. Andrews School, DE. (Dead Poet's Society, Robin Williams, 1989)

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- o "Our campus is a sanctuary for bald eagles, blue herons, egrets, ospreys; for deer, foxes, raccoons, hawks, owls, quail, and songbirds that find their homes in the woods, fields, and marshes that surround the campus. Noxontown Pond and Appoquinimink Creek are home to dozens of species of fish, reptiles, crustaceans, and amphibians. Two families of bald eagles have nested in the towering tulip poplars on the banks of these waterways. From September through February, thousands of Canada geese and swans descend on the area." St. Andrews School, Environmental Sustainability Statement, Website

# St Andrews School



# Zoom-Poisoned Baits

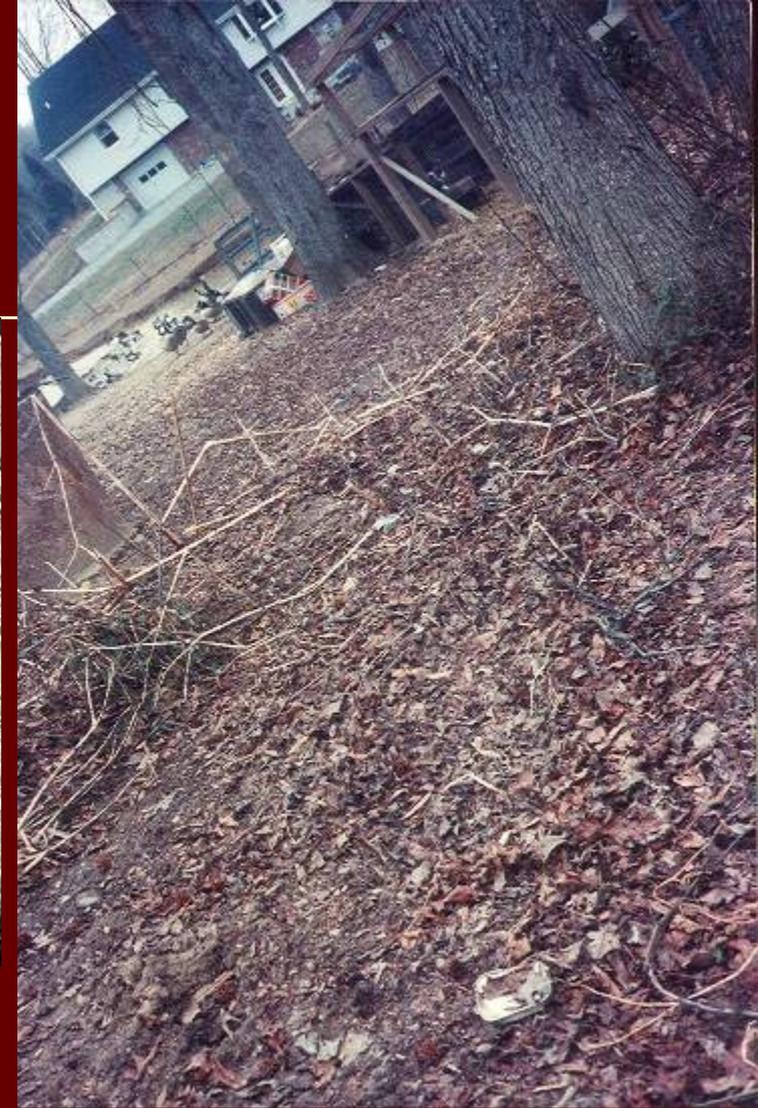
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# Pesticide Injected Bait

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○ The only good hawk....

# Is A Dead Hawk!!!

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- \_\_\_\_\_, "that's what you need, that'll get rid of em"!



# Turkey Vulture



# Misuse

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**Diversity of Victims**

# Mammalian Victims

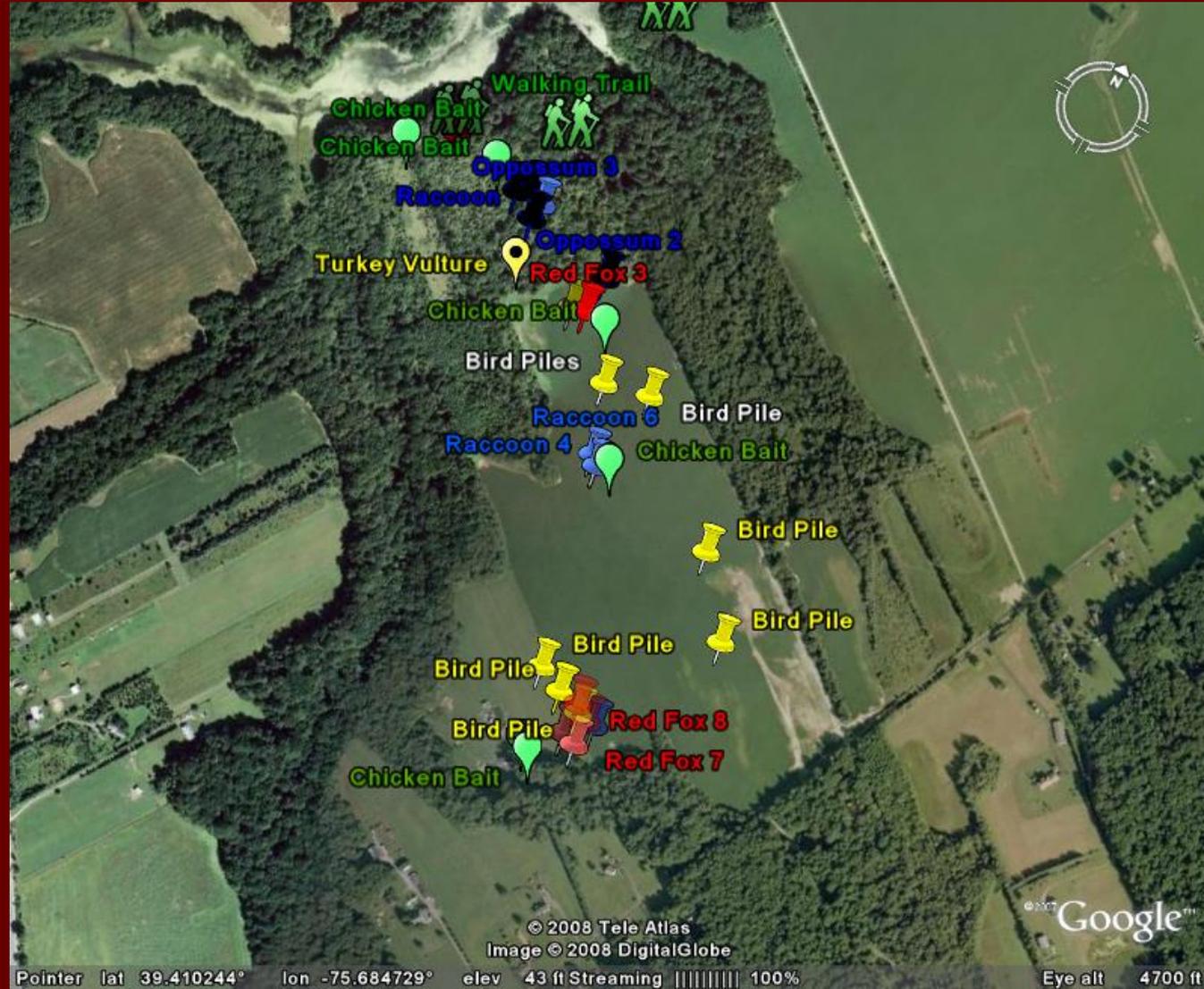
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# Raptor Victims-Note Species



# Shetzler-Dixon Kill Site



- Each Colored Dot represents a victim or pile of victims
  - 18 months jail time

# Case Study

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- U.S. V. Sheldon Vickers
- & Related Delmarva "RSA" Bald Eagle Deaths

# Predation Victim

**Predation Victim Remains**



# Captive Bred Release Mallard Victims

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- Feather spot



Sheldon Vickers Farm  
(Granular Furadan: 110,000 PPM)

**Circle of Death-2**



**EVIDENCE SEIZURE TAG**

DEPARTMENT OF THE INTERIOR  
U.S. FISH AND WILDLIFE SERVICE  
DIVISION OF LAW ENFORCEMENT

SEIZURE TAG NO.  
501313

TIME OF SEIZURE: 30 5:00AM  
FILE NO. INV-7421 AH  
FROM: (PERSON AND/OR LOCATION)



**Carbamate-Granular**

**Predator Bait**

# Baits-Zoom

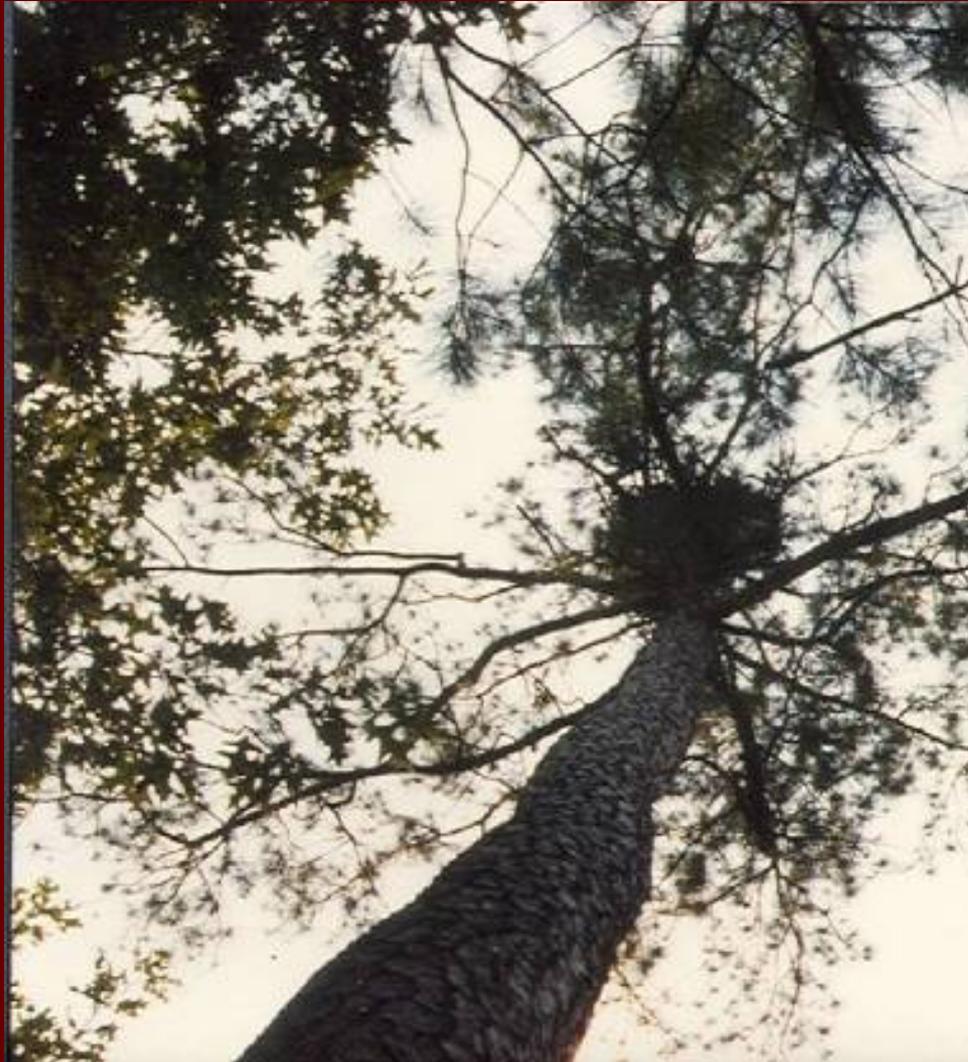


# Abandoned Eaglet (Victim)



# Abandoned Nest

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# Charcoal

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*Young of the Year Secondarily Exposed to Poisoned Bait*



# Baltimore Zoo Personnel Administering Atropine to Victim

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**Carbamate Exposure Can Be Reversed**

# Secondary Poisoning Victim

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- Symptoms of Acetylcholinesterase Inhibition (Help Dr. Vyas)
  - *Ataxia -Muscle Fasciculation- Dysypnea*



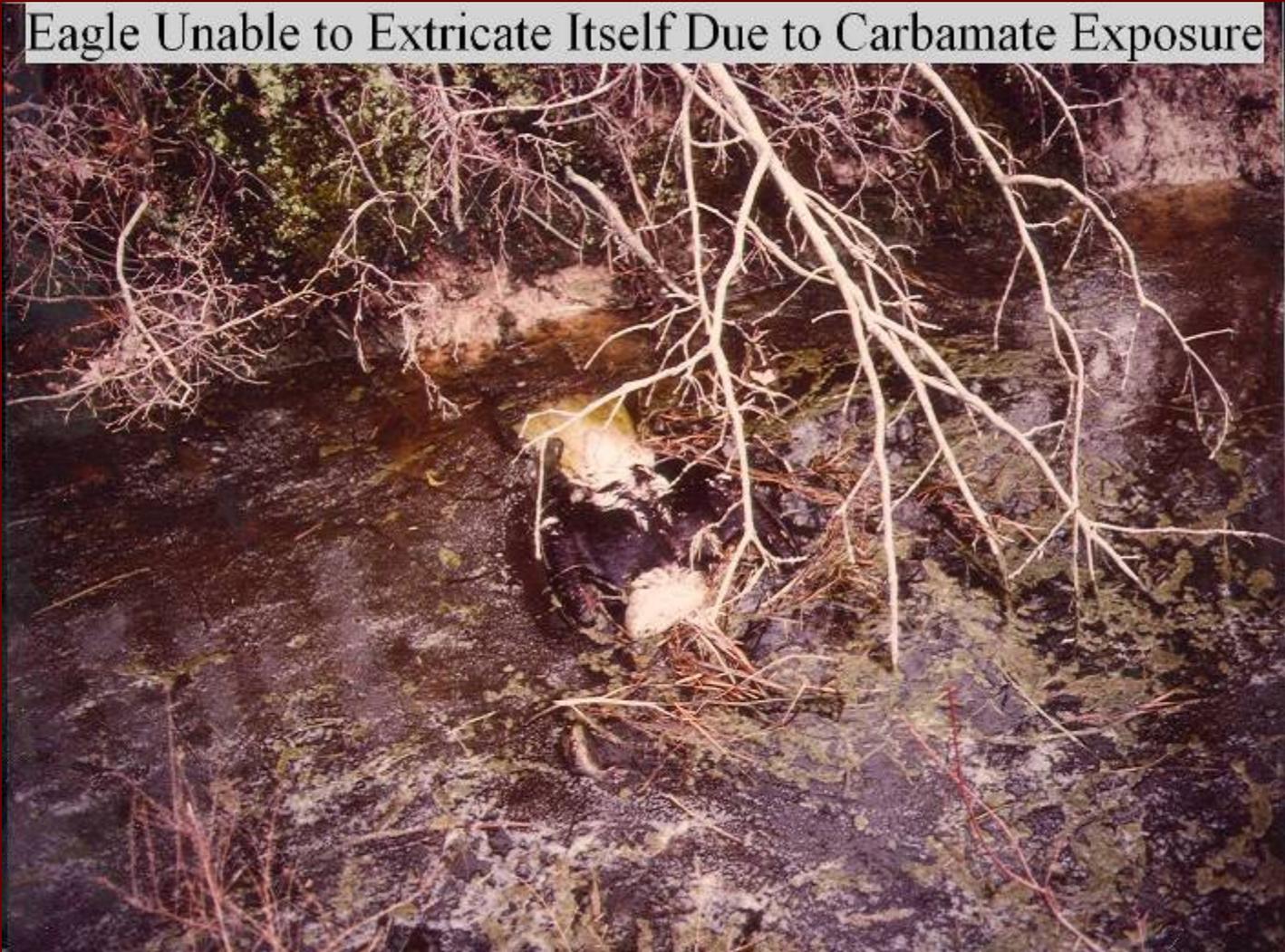
# Itty Bitty Words I Know!

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- Pupil Constriction
- Decreased Heart Rate
- Paralysis
- Excessive Salivation
- Respiratory Difficulties leading to respiratory arrest
- Prostration of wings (Outstretched legs also)

# Sublethal Exposure-Drowning

Eagle Unable to Extricate Itself Due to Carbamate Exposure



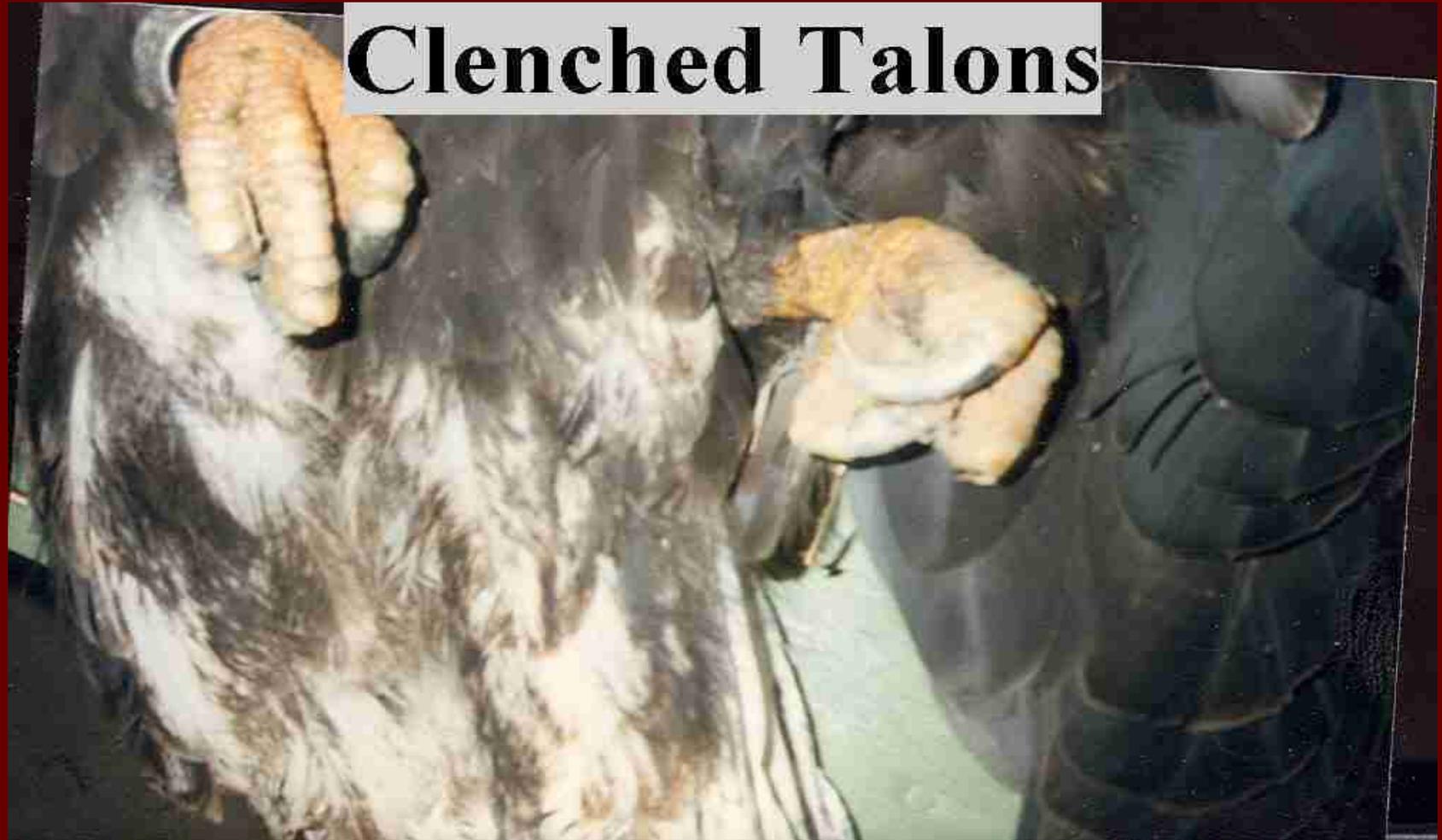
# Sublethal Exposure



# Acetylcholinesterase Symptom

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## Clenched Talons



# M & M Investigation

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- Day 1 Planting according to label instructions by FMC's selected farmer as "Best in State of Delaware" and pesticide dealer! Ground water table subsurface 24 inches. Corn planted using no till method.
- D Day + 5 Hours 2" rain within 1 hour.
- D Day + 13 Hours Dying begins across all strata of fauna
- D Day + 15 Hours Snow Geese & Mallard ducks from nearby Bombay Hook NWR feeding on dying fauna and begin to exhibit symptoms of acetylcholinesterase exposure
- 200 + dead & dying waterfowl observed in area, falling out of sky into marshes, creeks and fields. Most irretrievable.

# D-Day +13 Hours

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# The Worms Go In.....



# The Worms Go Out.....



# Frog Photo



# Granular Carbamate Sublethal Victim

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- Snow Goose



# Sublethal Response



# M & M Case

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## Cloacal Staining



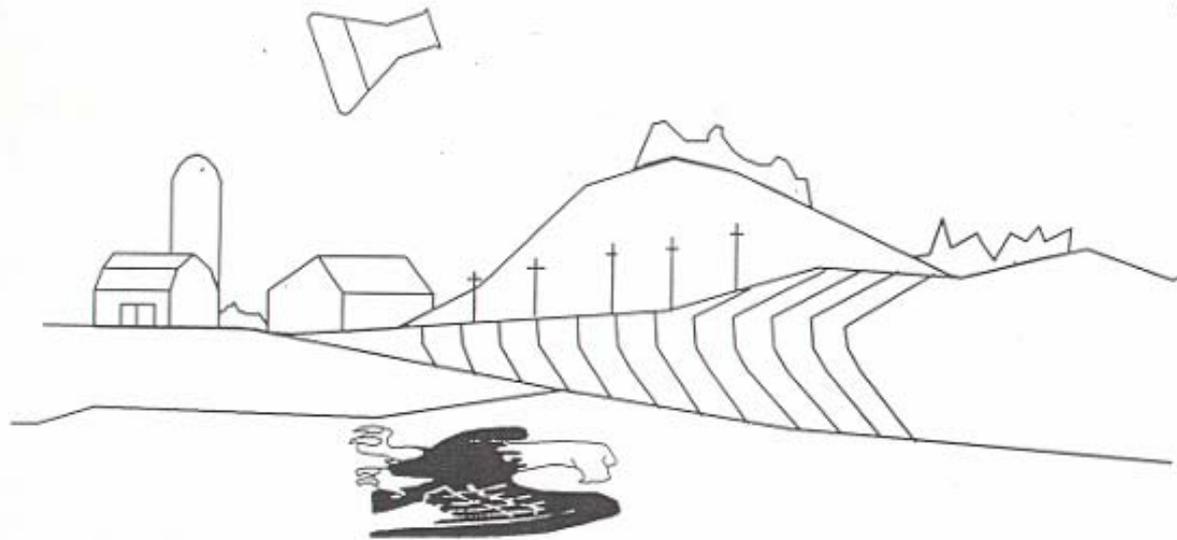
# M&M Case

*Guilty As Charged!*



# CARBOFURAN

Better Living Through Chemistry



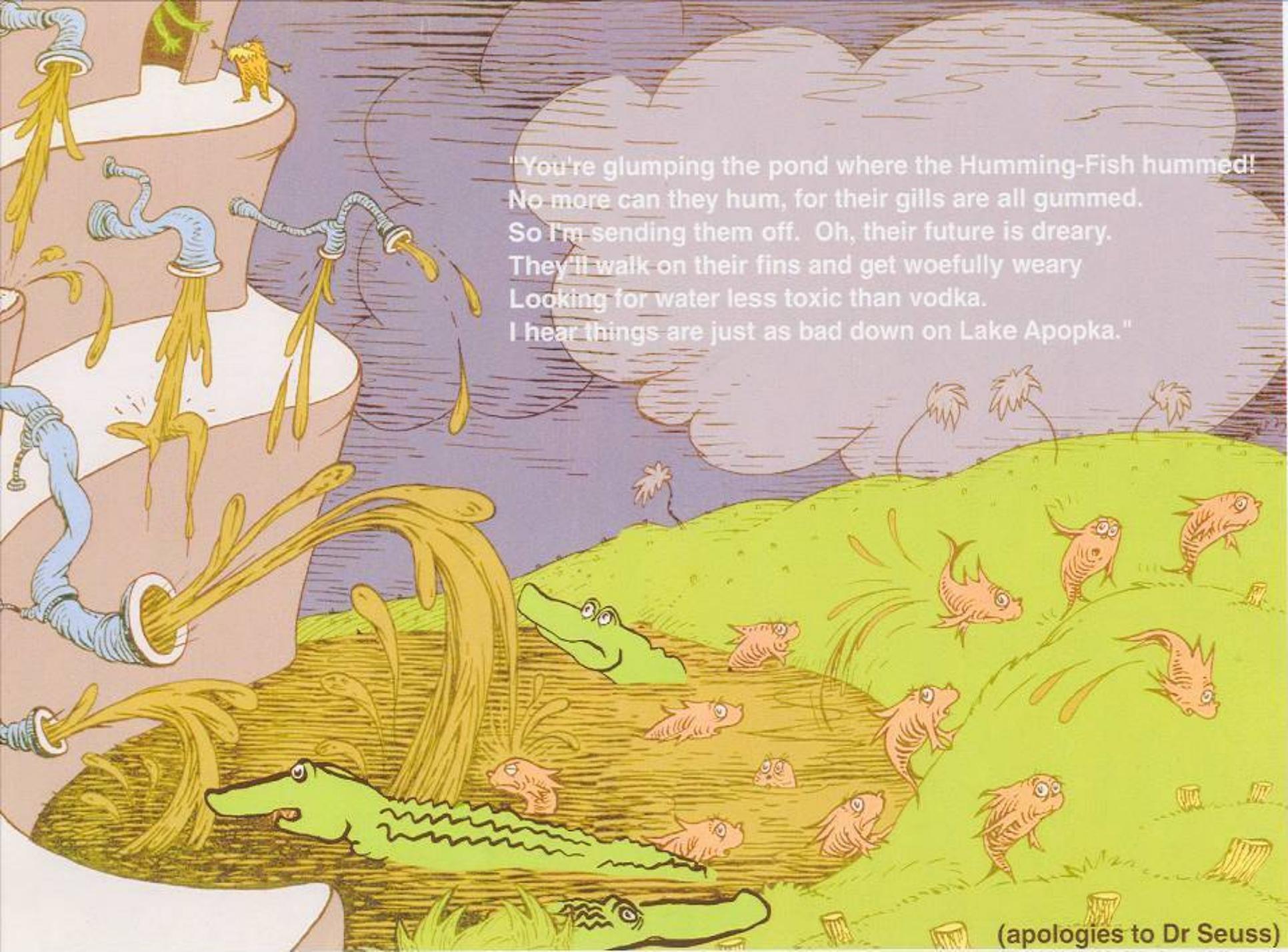
# Fenthion (Baytex)

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- U.S. V. Non indicted Florida County Mosquito Control District
- or
- Bayer Corporation







"You're glumping the pond where the Humming-Fish hummed!  
No more can they hum, for their gills are all gummed.  
So I'm sending them off. Oh, their future is dreary.  
They'll walk on their fins and get woefully weary  
Looking for water less toxic than vodka.  
I hear things are just as bad down on Lake Apopka."

(apologies to Dr Seuss)

# Lake Apopka Allifrog

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# Caution: Graphic Cocktail Response

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# Rodenticides

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- Anticoagulants – Brodifucoum  
(Subsequent to Lake Apopka Kill)
- Vitamin D-Cholacalicerol

DISCOVERY OF A HIGH NUMBER OF  
RAPTORS FEEDING ON RAT FESTATION

# SOLUTION!



# S/A Zorro, AKA Taylor

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- A Personal Story



# Taylor aka S/A Zorro



## Bald Eagle

*Haliaeetus leucocephalus*

Zorro, a juvenile male Bald Eagle, is a very special bird. He was admitted to Audubon of Florida's National Center for Birds of Prey from Lake County, Florida, in April of 1999, exhibiting symptoms of toxicity. He was found in the vicinity of Lakes Griffin and Apopka, areas having a history of bird die-offs likely caused by exposure to land polluted with decades of agricultural chemical use.

Rescued in a catatonic state, Zorro was unresponsive to normal stimuli, experienced frequent seizures and showed signs of respiratory distress. He would sit on his perch with his wings folded, yet flopped away from his body, while his head rested on his shoulder looking very much like a rag doll. He showed no interest in food and had to be hand fed for many months. The poisoned young eagle lacked the basic coordination skills used in perching, walking and feeding, and even when a piece of food was placed in his beak, he could not seem to swallow it without a lot of effort. Zorro would chomp repeatedly on the meat while tossing his head from side to side. Often times the chunk of food would become stuck on the razor-sharp tip of his beak. He would continue to shake his head until he dislodged the chunk and sent it flying through the air. Most feeding sessions ended with about half the food in the eagle and the other half decorating the face, hair and clothing of the feeder!

Permanent brain damage is one side effect of high exposure to pesticides, and is suspected in the case of this young eagle due to his unnatural behaviors. Zorro is easily distracted and will sometimes pace aimlessly in his enclosure. On several occasions when the floor of his enclosure was lined with patterned sheets, he seemed to mistake the areas of color for food and would repeatedly bite at the designs. When perched outside, he will occasionally attempt to eat dirt and he often becomes extremely agitated for no apparent reason. Learning to jump from his high perch (about 18" off the ground) to his low one (about 8" high) was a struggle, but he didn't give up. Time after time he would misjudge and take a tumble, but now, many months later, he almost always executes the move with perfect precision. His mental cognition has vastly improved since his admission, and he has settled comfortably into a daily routine at the Center of perching and preening in the "Bird Garden" alongside two adult Bald Eagles.

Zorro has good days and bad days. On not-so-good days, he seems restless and must be coaxed into eating his dinner. On good days, he perches outside with the other birds seeming content to feel the warm rays of the sun and enjoy the wind on his wings. He eagerly eats cut chunks of food from his dish and doesn't tear at the floor coverings in his mew. If whole prey is placed under his talons, he will rip and tear at it, yet he loses interest quickly. Once while being showered with a cooling mist from the garden hose, he bent his legs and did a "tail dip" characteristic of normal bathing behavior.

The long-term prognosis is still very uncertain for Zorro. The type of poison to which he was exposed takes years to break down and is stored in fatty tissues. It is imperative for him to maintain a high body weight for his good health since additional stored toxins could be released into his system when he utilizes stored body fat during molting or other times of stress. Every day is a "Thanksgiving" holiday for this eagle, with a generous feast offered to him by a caring staff who appreciates his simple existence and is grateful that he survived. Somewhere deep within, there is a 'real' eagle just waiting to emerge from under the mask of chemical exposure. It may be a long journey for Zorro, but he's not traveling alone--we're rooting for him all the way.



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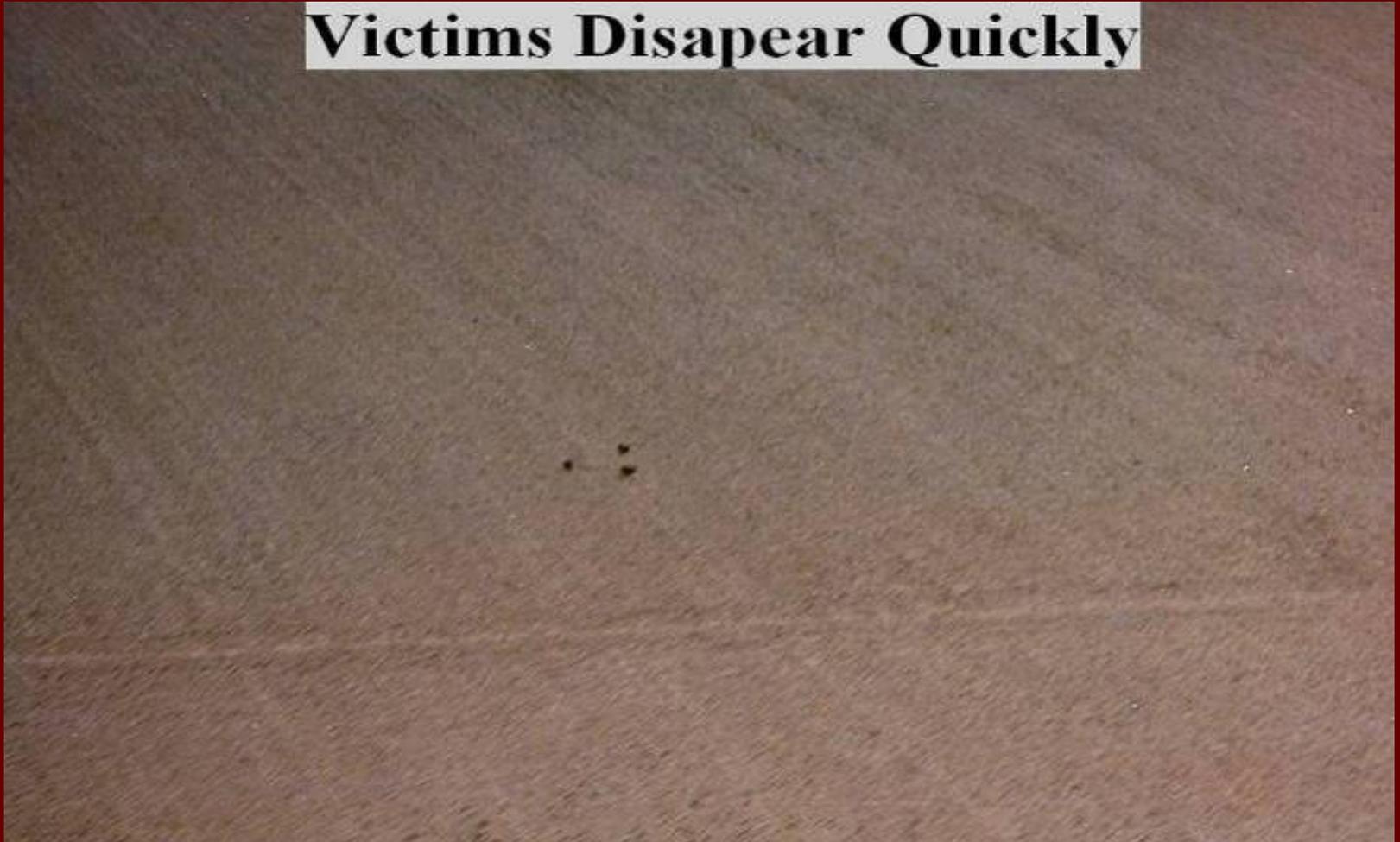
# The Lake Apopka Agreement by Heath Rauschenberger

(provided as a handout in binder)

# Exposure as a Result of “Proper Utilization” per FIFRA

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**Victims Disappear Quickly**



# Proper Calibration

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# Calibration Run

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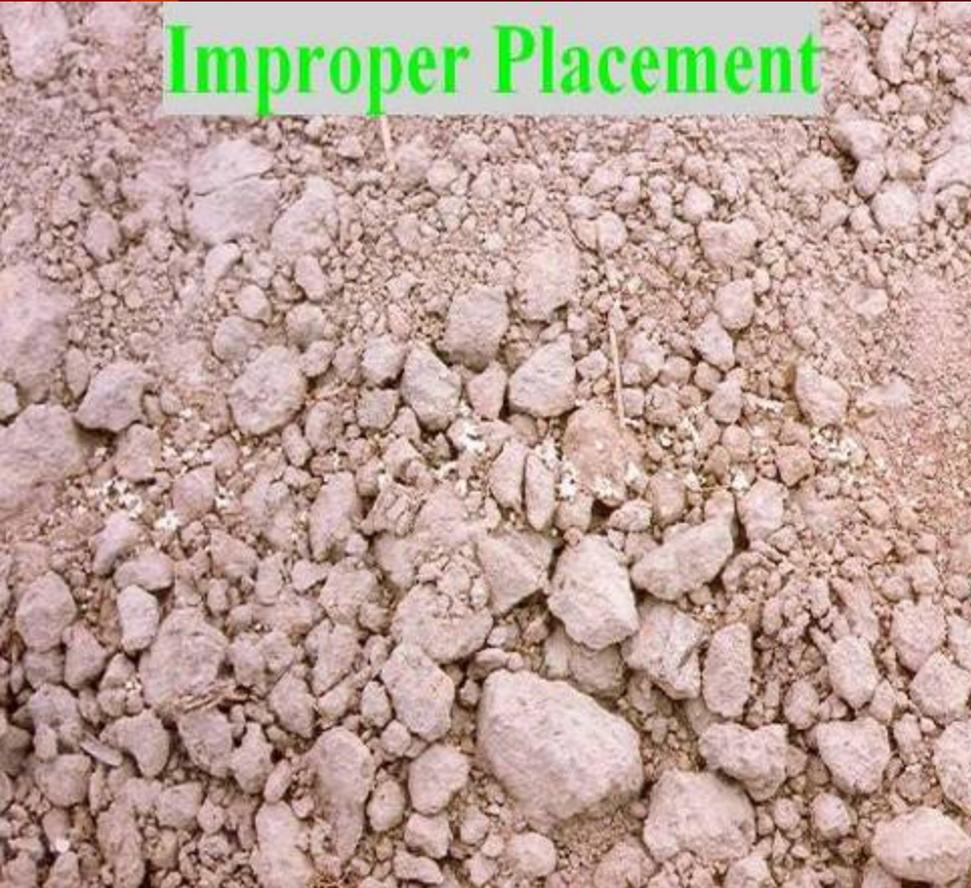
- Calibration may result in appropriate application in a soil type such as this Florida “sugar sand”, however



It may not be accurate in coarser,  
denser soils such as clay or loam

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Improper Placement



# The Human Factor

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- Legal Application

# Manual Loading Process, End Row Turns...etc.

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- However sloppy agricultural practices lead to....

## Carbamate Spill Associated with Planting



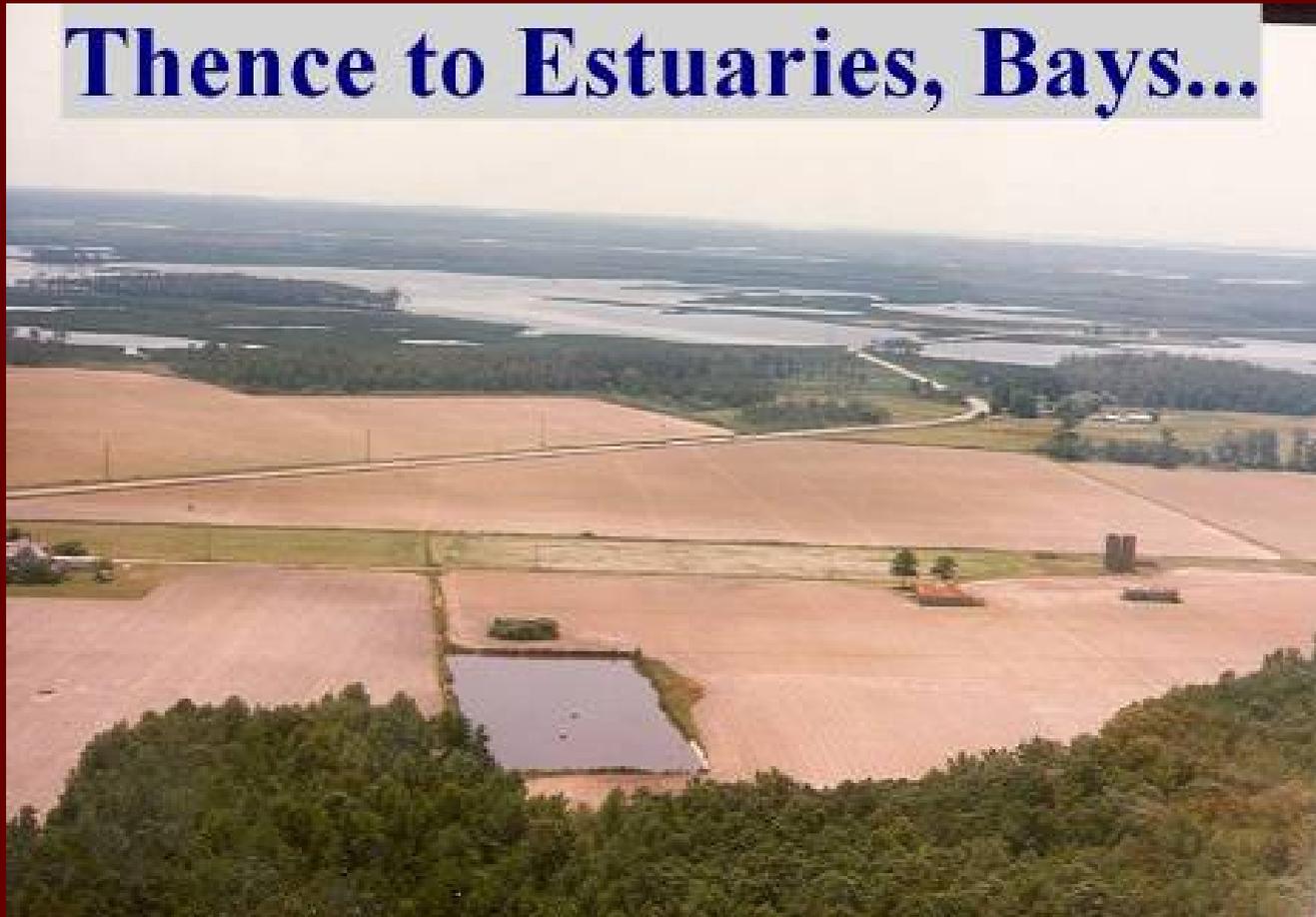
## Swale Ditch Disruption to Planting

# Swale to Ditch



And thence to the sea??

**Thence to Estuaries, Bays...**



# The Nature and Extent of the Problem

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- "...icide=Dead Stuff!
- Tip of the Iceberg.....



# Epicerter of Circle of Death

## Warbex (Famphur) Misuse for Coyotes

- Concentration of Poison generally determines the size of the resultant circle



# Epicenter of Circle of Death

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*Temik Loaded Bait @ Epicenter*



Problems related to investigative task at hand. It's like looking for the proverbial:

# Needle In A Haystack



# Solved by the Use of Proper Search Platform

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# Risk Benefit Balance

## {FIFRA section 6(b)}

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- BURDEN OF PROOF (As to continued registration)
- The Registrant must demonstrate pesticide is safe when used under “**widespread and commonly recognized practice**”.
- “Burden of persuasion that a pesticide is entitled to registration is always on the proponent for registration” Emphasis Added FTK (40 CFR Part 154.5)

“Like winds and sunsets, wild things were taken for granted until progress started to do away with them” ALDO LEUPOLD

