

RESTORATION ADVISORY BOARD(RAB) MEETING  
6 APRIL 1995

1. The Restoration Advisory Board (RAB) held its regular monthly meeting on April 6, 1995.

2. RAB members/alternates present:

Mr. J. Ed Burke, City of Brighton  
Mr. Tim Gagen, City Manager for Commerce City, alternate for Mayor Busby  
Mr. Douglas L. Clinkscales, Denver General Hospital  
Mr. Thomas J. Butts, Tri-County Health Department, alternate for Kenneth Conright  
Mr. Roland Russell, Commerce City Resident, alternate for Jeannie Reeser  
Mr. Thomas L. Stauch, Department of Health and Hospitals  
Mr. Ed Grubb, Adams County School District 14  
Mr. Kevin T. Blose, Rocky Mountain Arsenal, Installation Co-Chair  
Ms. Barbara Nabors, Colorado Department of Public Health and Environment, alternate for Jeff Edson  
Mr. Ronel Finley, United States Fish and Wildlife Service, alternate for Debbie Long  
Mr. Connally Mears, United States Environmental Protection Agency  
Mr. Michael T. Anderson, Shell Oil Company  
Ms. Lonna Fischer, Thornton Resident  
Ms. Sandra Jaquith, Community Co-Chair and Denver Resident  
Mr. Lee Kaley, Northern Airport Corridor Association, Montbello Resident  
Ms. Susan Maret, Sierra Club, Denver Resident  
Mr. Dan Mulqueen, Denver Resident  
Mr. Harry E. Tate, Commerce City Resident  
Mr. Larry Coldren, Denver Resident, alternate for Theodora Tsongas  
Mr. John J. Yelenick, Denver Resident

RAB members absent:

Mr. Joel S. Meggers, Thornton City Manager  
Mr. James L. Erger, Brighton Resident  
Mr. Larry Ford, South Adams County Water and Sanitation District  
Ms. Beth Gallegos, Citizens Against Contamination  
Ms. Sandra Horrocks, Sierra Club, Hylands Ranch Resident  
Ms. Clara Lou Humphrey, League of Women Voters, Lakewood Resident  
Ms. Jeannine Natterman, Northglenn Resident  
Mr. Kenneth D. Mitchell, Brighton Resident  
Mr. Charles R. Spratt, Denver Resident  
Mr. Waldo G. Smith, Denver Resident  
Mr. Wm. French Smith, Denver Resident  
Ms. Dixie Witcher, Denver Resident

3. Sandy Jaquith opened the meeting at 5:15 p.m., when a quorum was reached.

4. Ms. Jaquith asked that the general issues be set aside until the end of the meeting and start with the ecological risk presentations. Mr. Finley said to go ahead and deal with the general issues since the Fish and Wildlife speaker had not arrived. Mr. Russell requested that the last sentence in the first paragraph of number 10 of the last regular RAB meeting minutes be stricken. The minutes were approved with this exception. It was moved and seconded to approve the minutes of the special RAB meeting without corrections. The minutes were approved.

5. Mr. Kaley called for a point of order and extended congratulations to Mayor Busby on his reelection.

6. Kevin Blose began the ecological risk assessment presentations with an overview, expounding on the handout in the meeting packet. He explained the complexity of the issues and the uncertainty in the process. He showed the potential for contamination buildup (biomagnification) on a chart and said there is a tendency for smaller animals to be more impacted because of the smaller area (home range) they occupy. He pointed out the residual risk to the owl which represents the biggest area of contention. Mr. Blose, by way of Figure ES2.4-2 in his handout, illustrated the Army's remedial method. He pointed out that there is some agreement that remedy for human health areas is needed. The Army's highest priority is the central, or most contaminated, areas first then go into the residual areas.

Mr. Kaley asked about spraying near Montbello, and thanked Ms. Mecham for the prairie dog alert. There was some discussion of prairie dogs and the food chain. Mr. Mulqueen asked if Fish and Wildlife did organ testing on animals, and Mr. Finley said yes and pointed out that the brain is very significant.

Ms. Jaquith asked if the Army did its own biota monitoring. Mr. Blose stated the Army did biota monitoring on a one-shot basis between 1985 and 1988. An Army contractor provided most of the data and Fish and Wildlife supplied the rest. Now the Army uses Fish and Wildlife as a contractor for the biomonitoring

Mr. Warner from the audience asked if the offspring are affected by organochlorines. Ms. Henry said it has never really been looked into. They are sure it affects them, but there is no documentation per se.

Mr. Mulqueen wanted to know if the deer ingested dieldrin from the plants. Mr. Finley stated that there is very little dieldrin found in deer; the biggest problems are with the animals that live in the dirt. Mr. Mulqueen then asked how the deer might act if they had ingested dieldrin. Mr. Finley said there may not be any obvious effects.

7. At 5:45 Mr. Kaley needed to leave and identified Mary Seawell as his alternate for this meeting.

8. Cathy Henry gave a presentation on terrestrial and aquatic biomonitoring. She gave some history of Fish and Wildlife's involvement and said their studies had changed over the years from discovering types of animals to studying the effects of contamination on the animals. She expounded on her handout from the packet and emphasized the fortuitous specimen program and the Kestrel monitoring. Dieldrin is the contaminant that is discovered most often and at the highest levels. Peak mortalities from these studies

seem to be during the breeding season. (Ms. Henry's view graph sheets are attached to these minutes).

Ms. Jaquith asked if the same level of birds are dying elsewhere on the Arsenal as at building 111. Ms. Henry stated that they could be, but that more birds might be attracted to the 111 area. Ms. Jaquith also inquired if birds that don't feed there are put in another category. Ms. Henry answered that transmitters are used just for that reason. Ms. Jaquith also wanted to know if you could assume that birds are from the Arsenal if they have dieldrin. The answer was yes. The Kestral's mortality rate normally is 50%, but the majority of animals die within their first year. If they survive the first year they usually live long lives.

Mr. Russell inquired if there was offpost biomonitoring. Mr. Finley said there are no results for the offpost study area. They monitor on the peripheral of the arsenal and compare that with other Arsenal areas. Offpost studies with starlings would be difficult because most people do not like starlings and would not want them attracted to their area.

Some of the studies the U.S. Fish and Wildlife Service (USFWS) will be conducting are dosing studies, a Great Horned Owl contamination analysis and more kestrel studies that will eventually wind down.

The Arsenal aquatic systems seem to be fairly healthy. The studies and monitoring programs are diverse using people from USFWS, Clemson University, Texas Tech and CSU. The Fish and Wildlife Service does not have the total population of all the species or birds, but have a good idea on some.

In the fortuitous specimen sampling they collect blood and eggs. Right now they check all species, but will go to one species a year later.

Ms. Jaquith asked if the Fish and Wildlife studies are required. Mr. Finley answered that they do biomonitoring, or the chemical impact on wildlife, studies because the arsenal is a Super Fund site. It will be the USFWS's responsibility to establish if there will be residual damages after the ROD, and to determine what they are. Ms. Jaquith said she would like a list of all their studies and several other members showed an interest. Mr. Finley said he would get a list for all the members.

The use of 2,4-D for spraying on the arsenal was brought up. It was stated that 2,4-D had been used on the Arsenal, but they now use Roundup. Ms. Maret asked if 2,4-D had been used shouldn't it be looked into? EPA's toxicologist from the audience said that 2,4-D breaks down and has not been demonstrated to be a problem here. Mr. Warner asked if it could be determined how much 2,4-D had been used on the arsenal. Mr. Blöse said it was used according to standards and is not a CERCLA waste, but that he would try to get this information.

9. Mr. Star, of Geotrans, gave the State of Colorado's risk assessment presentation. The state has many concerns about past and present studies. Mr. Star speculates that the USFWS does not want regulations telling them how to do their biomonitoring. The state is concerned with what isn't being done. They have only past studies to review and they were not a part of them. They are concerned that the proposed remedy in the DAA has no mention of the ongoing dispute on biomagnification factors. A supplemental field program will address that issue and the state is a full participant in this. The results are not yet in, but they want a non-detect to be meaningful in respect to risk

characterization; this is the main point of the study. Mr. Star is speculating when he says that the state and EPA could agree on the Army's proposed remedy if the state and EPA could participate fully in the USFWS design of biomonitoring programs and the risk criteria used and additional remedial actions to be performed if the risks were exceeded.

Mr. Star listed the state's concerns with the Army's proposed remedy as:

1. It only recognizes the army's BMF. The Army's BMF is the least conservative of the three being considered (the other two are Shell's and EPA's).
  2. It uses the Great Horned Owl as a surrogate species for all else, for example, a proposed remedy for the kestrel and eagle.
  3. It arbitrarily cuts off remedy for biota leaving behind risks up to 500 times the acceptable levels for the prairie dog (food for the eagle). This level of risk is using the Army's BMF.
  4. It has over-reliance on health and diversity observations of biota. EPA and the state do not believe that the health and diversity observations of biota at RMA were performed in a meaningful way towards describing "how clean is clean."
  5. It places an over-reliance on the USFWS biomonitoring program. USFWS's monitoring procedure is much improved and will answer many of the uncertainties of the biota risk assessment; however, the State and EPA still have significant concerns, in particular - there is no clear risk criteria that the data from the USFWS program must satisfy and no specified additional remedies if the data exceeded these risk criteria.
  6. It has an over-reliance on short term risks to biota versus long term gains.
  7. It does not address risk through the aquatic food web.
10. At this time, several members needed to leave the meeting and there would be no quorum. Ms. Jaquith asked them to stay just a bit longer. Major Connor suggested the members look into the continued absence of some members and reconsider their membership. A voluntary committee consisting of Dan Mulqueen, Lonna Fischer, and John Yelenick will report back to the members at the next meeting. If these members are dropped it would change the quorum figure.
11. There is a RAB/SSAB workshop on risk scheduled for 04/29/95, by Pat McDonald of Kansas State University.
12. Mary Seawell was introduced as part of the Department of Public Health and Environment.
13. Mr. Mears asked if anyone would like to carry on a discussion of the risk assessment after the meeting is adjourned. Mr. Finley wants to reply to the state and wants to do it when there is a quorum.
14. Mr. Clinkscales moved to start the next monthly meeting with risk assessment presentations from Shell and EPA and continue with discussion. It was seconded by Mr Butts. There was only one opposition vote to adjournment. The meeting was adjourned at 7:05 p.m. because it lost its quorum.

15. The next meeting of the RAB committee will be 05/04/95.

Yvonne Peterson  
Recorder

## FORTUITOUS SPECIMENS

### History

Prior to 1990, wildlife mortalities were recorded and investigated by U.S. Army or their contractors. Birds recorded from Building 111 since 1982, some by FWS. Some from RI and CMP showed dieldrin in tissues or carcasses.

FWS was involved in investigating fish and waterfowl dieoffs, then took over fortuitous specimen program in 1990. Most reported from 1990-1992 were birds (63) at Building 111. These were primarily starlings, robins, doves.

In 1993, a formal protocol for handling specimens was developed to include necropsy and contaminant analyses on all appropriate specimens.

### 1993 and 1994 Results

- \*\* 98 Building 111 birds + 29 others (mostly deer and raptors). 35 submitted for necropsy and/or contaminant analyses. Tissues from some 1992 specimens were submitted for analyses.
  
- \*\* 138 specimens recorded in 1994 of which 66 were Building 111 birds. Others were primarily raptors and deer. 41 submitted for necropsy and/or contaminant analyses, 63 disposed but cause of death determined on some, 30 archived, 4 submitted to a wildlife rehabilitator.
  
- \*\* Necropsies determined some electrocutions, some trauma, some disease, and some undetermined cause of emaciation or simply undetermined.
  
- \*\* Analytical results showed dieldrin to be most often detected and detected in highest amounts. Brain dieldrin concentrations have been shown to be most effective in determining poisoning. FWS developed a guideline for interpreting dieldrin in brain tissues:
  - ✓ >9 ppm indicates cause of death as dieldrin poisoning
  - ✓ 5 - 9 ppm with supporting necropsy/clinical signs indicates cause of death as dieldrin poisoning
  - ✓ 1 - 5 ppm indicates undesirable exposure to dieldrin and possible health problems, but may not have been cause of death
  - ✓ <1 ppm indicates no involvement in death or health problems, but still may be undesirable exposure

BUILDING 111 INVESTIGATIONS

1993:

Bird abundance counts

Daily carcass searches by USFWS: 98 carcasses - finches, robins, starlings, doves, sparrows, other

- ★ - peak mortalities in spring
  - 57% were hatch year birds
- ★ - 31 submitted to NWHRC resulting in 17 necropsies, nearly all undetermined or undetermined cause of emaciation
  - 20 submitted for analytical
  - 49 disposed, 15 archived

1994:

Soil, water, invertebrate sampling at Building 111 lawn: Nothing in water; dieldrin, DDT, DDE, DDD in soil and invertebrates from lawn.

Banding and telemetry: Transmitted 10 starlings and 7 robins as well as banded others (total of 94 banded). 4 transmitted birds died, 1 hit by car, others appear to be dieldrin poisoning. Telemetry showed some birds ranging beyond Building 111.

Daily carcass searches by USFWS: 66 carcasses - robins, starlings, finches, sparrows, doves, other

- ★ - peak mortalities in spring
  - 35% were hatch year birds
- ★ - 12 necropsies, same result as above
  - 14 submitted + 8 transmitted submitted for analytical
  - 31 disposed, 16 archived

## ANALYTICAL RESULTS

Interpretive guidelines for dieldrin brain residues:

- ✓ >9 ppm indicates cause of death as dieldrin poisoning
- ✓ 5 - 9 ppm with supporting necropsy/clinical signs indicates cause of death as dieldrin poisoning
- ✓ 1 - 5 ppm indicates undesirable exposure to dieldrin and possible health problems, but may not have been cause of death
- ✓ <1 ppm indicates no involvement in death or health problems, but still may be undesirable exposure

1993 & 1994 Building 111 birds:

60% (n=15) had greater than 5 ppm in the brain (7 were over 9 ppm)

28% (n=7) were between 1 and 5 ppm

4% (n=1) were less than 1 ppm, this was a trauma victim

8% (n=2) were below detection, both house finches

### OTHER BIRDS:

Magpie in south plants had 12.72 ppm dieldrin in brain

Red-tailed hawk with 4.55 ppm dieldrin in brain from section 6, red-tailed hawk from section 7 with 3.22 dieldrin in brain

Great horned owl from south plants with 5.38 ppm dieldrin in brain and one from section 35 with 4.31 ppm in brain



## SUMMARY

- ☛ Necropsy diagnoses of emaciation combined with brain residues support mortality of many Building 111 birds and some others from dieldrin poisoning. In addition, several birds found in convulsions indicative of dieldrin poisoning. Some natural mortality probably also occurs, particularly among nestlings and fledglings.
  
- ☛ Peaks in spring may be related to added stresses of migration and breeding and weight loss and/or increased feeding on contaminated insects. House finch (seed eaters) deaths are still unexplained.
  
- ☛ Mortality may not be specific to Building 111. Although the lawn is contaminated, transmittered birds foraging principally at Building 111 were healthy and did not die; however, they did have organochlorines in tissues. Transmittered birds that ranged farther were the ones that died. In addition, some species found dead such as meadowlarks and orioles have not been observed feeding on the lawn.
  
- ☛ More dead birds reported at Building 111 because high visibility from number of people and mowed lawn, probably less scavenger activity here. Deaths probably are occurring other places on the Refuge.