

# MEMORANDUM

# State of Alaska

Exhibit E

TO:  
FOR THE RECORD

DATE:  
December 19, 1983

FILE NO:

TELEPHONE NO:

FROM:  
John Middaugh, M.D.  
State Epidemiologist

SUBJECT:  
PCBs - Aniak

## Background

In 1978 the U.S. Air Force abandoned its Aniak White Alice Communications site. The site then was turned over to the Kuspuk School District which expanded and converted the old site buildings into a vocational/education center. In addition, a new high school currently is being built near the old White Alice building.

When the site was abandoned by the Air Force, it is estimated that 400 - 450 gallons of polychlorinated biphenyls (PCBs), used as insulating fluid in power transformers, remained on the site. During September 1981, the Air Force recovered approximately 100 gallons of PCBs and excavated 81 tons of contaminated dirt. In July 1983, an additional 300-350 gallons of PCBs were discovered by Alaska Department of Environmental Conservation (DEC) personnel. Also found were floor tiles which may have been contaminated in a PCB spill which occurred in the fall of 1979-80 when the White Alice buildings were gutted by local workmen.

In the summer of 1983, extensive environmental sampling at the site was conducted by the Department of Environmental Conservation. Numerous areas of soil contamination were discovered, some reaching a depth of 4 - 5 feet and containing PCBs at levels between 460 - 28,000 ppm. In addition, several other hazardous wastes were found at the Aniak White Alice site (Attachment 1). Systematic soil sampling was initiated and an overall program developed by DEC officials to remove hazardous wastes from the site. DEC and Air Force officials also obtained water samples from the well at the former White Alice site, as well as from several homes in Aniak. All water samples showed no traces of contamination with PCBs.

In the fall of 1979 and winter of 1980, local workmen were hired to gut the communications building at the White Alice site. These workmen drained fluid from power transformers, removed power transformers from the building, and cleaned out all interior structures and pipes. While removing pipes and other materials, a large spill of 300 - 500 gallons of ethylene glycol occurred. The workmen were exposed to ethylene glycol and to PCBs during their employment in the fall of 1979. One year later, ceiling and floor tiles also were removed because of suspected PCB contamination which occurred during demolition and construction activities the previous fall.

The discovery of large quantities of PCBs in Aniak in July 1983, and documentation of PCB contamination of the floor of the White Alice building and PCB contamination of gravel near the building caused great concern

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among village residents, local workmen, and health officials. The vocational school was not opened by the Kuspuk School District which sought assurances that no risk would exist to attending students. An epidemiologic investigation was initiated to assess health risks to local workmen and to perform a risk-assessment for Aniak residents.

#### INVESTIGATION

On September 22, the State Epidemiologist and Mr. Bruce Erickson, DEC, performed a field investigation in Aniak. The White Alice site was inspected, and four local workmen who had been involved in gutting the communications building in 1979-1980 were interviewed, examined, and blood specimens obtained for PCB analysis. Of workmen involved in demolition and construction at the site in 1979-80, these four were still living in Aniak and claimed that their exposure to the power transformer oil, antifreeze, and other materials at the site was the highest among all workmen at the site. Three former workers at the White Alice site who had not been involved in gutting the building in 1979 also were included in the investigation. Local workmen were interviewed about their duties and activities while working at the White Alice site. Additional information was collected about family size, eating habits, and work practices. A medical history was obtained from each individual. Blood was drawn and submitted to Centers for Disease Control, Atlanta, Georgia, for PCB analysis.

#### RESULTS

Inspection of the White Alice site was remarkable for the amount of discarded solid waste abandoned near the communications building. Mr. Erickson was able to point out specific locations where PCBs were discovered in high concentrations. Notable were the discovery of PCBs in the range of 460 - 890 ppm immediately adjacent to the building entrance and concrete pad. Within 50 feet of the building, which was renovated to serve as both a dormitory and vocational school, was an impressive dump site containing material that was removed from the communications building during the winter of 1979. Numerous barrels of antifreeze were discarded at the dump site. Areas which had been excavated to find or remove PCBs were, in general, unmarked. In at least one such area, excavation produced a 5 foot-deep hole which subsequently filled with water. The hole was unmarked and unguarded. No signs were posted anywhere in the vicinity of the White Alice site or the new school construction site to warn of a safety hazard or to warn of PCB or other chemical hazards.

Seven individuals were interviewed, and blood specimens were obtained for PCB analysis. (Attachment 2)

0001. This 46 year-old male was employed in 1979 to help complete demolition and gutting of the interior of the White Alice communications building. During his employment which lasted one month, he worked 8-10 hours-a-day, 6 days-a-week. During attempts to

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remove the power transformers from the building, he tried to drain out the transformer fluids in order to lighten the transformers. He removed plugs from the bottoms of the power transformers, he placed hoses in both the top and bottom, and attempted to siphon the insulating liquid by mouth. The material was very thick and difficult to siphon. Some of the fluid drained onto the floor of the communications building.

Because the fluid did not siphon, he tipped over one transformer and drained fluid onto the floor. He did not cleanup the fluid. A major spill of antifreeze occurred when he and others cut

through pipes in order to remove them. Liquid spread throughout the floor of the building to a depth of 3 - 4 inches, covering the insulating fluid which had leaked from power transformers onto the floor.

No special clothes were worn during work at the site. Workclothes became impregnated with antifreeze by the end of the work day. The employee would return home each night wearing his workclothes and boots which were washed by his wife. The employee's cotton gloves would become thoroughly drenched with antifreeze each day. He would hang the gloves out to dry overnight. The employee ate his lunch at the site each day; hand washing facilities were not available. After completion of his 4 week employment in 1979, the employee did not return to the site. He reported that at no time was he informed of any hazards which could occur from exposure to oils, antifreeze, or other materials at the site. The employee denied any symptoms of illness which he could attribute to his activities at the White Alice site.

0002. This 37 year-old male was employed in the fall of 1979 and worked 8-10 hours-a-day, 5 days-a-week for a period of 4 weeks at the White Alice site. He was involved in gutting the building and removing the power transformers. Approximately one year later, he was again employed to remove floor and ceiling tiles and to paint the floor of the building. He has continued to work intermittently on the new building since that time.

During his employment in 1979 at the White Alice communications building, he was involved in removing the power transformers from the building. The transformers were very heavy and so the workmen tried to drain them. Because of the thickness of the insulating oil, the material did not readily drain and could not be siphoned. One of the transformers was tipped over, and oil drained out onto the floor. The oil was viscous and very slippery, but the workers did not attempt to clean it up.

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Workers then removed pipe from the building. After one of the pipes was cut, a large spill of antifreeze occurred, covering the floor of the building as well as soaking the workmen. He denied being involved in mopping up the antifreeze. He wore regular workclothes and Bean boots. He ate at the work site. He wore his work clothes and boots home; family members did his laundry.

About one year after the initial demolition of the building, he was involved in removing floor and ceiling tile which was contaminated with PCBs.

He denied any acute or chronic medical problems which he could relate to exposure to the job site. He was not told that hazardous material was present at the White Alice site and was not aware that the fluid in the power transformers contained PCBs.

0003. This 55 year-old male worked at the Aniak White Alice site from 1960 - 1978. He was not involved in the demolition of the White Alice communications building between 1979 and 1980. During his employment as an electronic technician, he drained fluid from the power transformers every six months to analyze the fluids. He denied any medical problems which he attributed to his exposure to transformer oil.

0004. This 23 year-old male was employed in 1979 - 1980 to help gut the White Alice communications building. He helped move power transformers from the building and cleaned up at the site. He was also involved in removing cables from the generators. Approximately one year later he removed ceiling and floor tiles from the building.

He remembers oil spilling from the power transformers to the floor of the communications building during work performed in the fall of 1979. He described the large spill of antifreeze which occurred while workmen removed pipes from the building. He was responsible for cleaning up the antifreeze and remembers his clothes, gloves and boots getting soaked with the fluid. After mopping up the antifreeze and oil from the floor into buckets, he emptied the buckets outside the building. He wore his workclothes, gloves, and boots home each night. His mother washed his clothes. He routinely ate at the site. He remembers washing up before eating and at the end of the day before going home. He described no symptoms of illness which he related to his activities at the White Alice site.

0005. This 32 year-old male was employed in 1979 and 1980 to help gut the building. He worked 7-8 hours-a-day, 5 days-a-week. He was involved in removing the power generators from the building. He

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removed the plugs from the bottom of the power transformers to drain the oil. The oil was very thick and little drained out. He tried to siphon fluid from the power transformers by using a hose and sucking with his mouth. He spit out oil which came through the tube. In an attempt to lighten the transformers, the workmen tipped one over and drained the insulating fluid out onto the floor. He mopped the fluid up and dumped it outside the door of the building. Pipes with antifreeze were cut, causing a large spill of antifreeze. He cleaned up the antifreeze and transformer oil, using mops and squeegees. The employee wore his regular clothes to the worksite. His wife laundered his workclothes. He ate at the site; he did not wash prior to eating. The employee denied any specific medical symptoms or problems which he related to his employment at the White Alice worksite.

0006. This 45 year-old male was employed as a mechanic at the White Alice site from 1968 - 1975. He was not involved in the demolition and gutting of White Alice communications building in 1979 - 1980. His duties included pumping new diesel oil into the engines and removing waste oil. He was a mechanic for the site and frequently worked with drums of oil. He denied frequent contact with the power transformers. The patient denied any symptoms which he felt were related to his employment.

0007. This 53 year-old male was not involved in demolition or subsequent work at the White Alice site after 1978. Between August 1965 and 1978, he worked as a maintenance man at the White Alice site. Annually, he was required to obtain oil samples from each transformer. He removed sampling caps and sampled oil with a small glass container. He never had to replenish transformer fluid. The patient denied any symptoms which he ascribed to his employment.

Blood samples were obtained on September 22, 1983 using procedures and collection containers provided by the Centers For Disease Control. The bloods were frozen and sent to the Centers for Disease Control on dry ice for analysis. Results from all 7 individuals indicated PCBs quantitated against aroclor (AR) 1260 standards ranged from 3 - 12 ppb (Attachment 3). All results are lower than the upper limit of expected values for PCB's (20 ppb) in human serum based on a study of Michigan residents conducted during 1977 - 1982.

#### DISCUSSION

1. Significant environmental contamination with PCBs was documented at multiple sites in and near the White Alice communications building in Aniak. In a cooperative effort, the US Air Force and Alaska Department of Environmental Conservation conducted a methodical environmental sampling clean-up program. While major amounts of contaminated PCBs have

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been removed, additional areas remain contaminated and are scheduled for final clean-up in the spring and summer of 1984.

2. Based on documented environmental samples and detailed occupational histories, local workmen involved in gutting the White Alice site were exposed to PCBs and potentially to other hazardous chemicals at the White Alice site in 1979 - 1980.

3. Blood specimens obtained September 22, 1983 from several workmen who were the most heavily exposed individuals showed low levels of PCBs within the expected range for the population. There is no evidence based on these samples that exposure to PCBs resulted in absorption of PCBs and elevated body burdens of PCBs among these 7 individuals. Medical histories obtained from each of the individuals failed to elicit any history of acute medical problems or chronic medical problems which could be related to or associated with exposure to PCBs or other chemicals as a result of activities at the White Alice site during 1979 - 1980 (Attachment 2).

4. Even though serum samples were obtained almost 4 years after exposure, due to the biological persistence of PCBs in human tissues, significant absorption of PCBs as a result of exposures at the White Alice communication site during construction activities of 1979 - 1980 should be detected by these tests. It is extremely unlikely that significant absorption of PCBs occurred among these workmen. Based on the results of these tests, individuals can be reassured that no future serious medical problems will result from their activities at the White Alice site. None of the individuals involved warrant additional followup.

5. Based on these results, other workers who may have been engaged in activities at the White Alice communication site are not in need of examination or testing for PCBs. No further body burden sampling is necessary among Aniak residents or other workmen involved in activities at Aniak.

6. The level of environmental contamination and the amount of discarded chemical and solid waste material provide potential serious health and safety problems at the White Alice site. The tremendous amounts of discarded chemical and metal material strewn over dozen of acres of land provide an imminent safety hazard to children and students. Excavations performed to remove contaminated material have left hazardous holes which have filled with water. No signs have been posted warning individuals of a PCB hazard or of a general safety hazard associated with the dump site. Attention to rudimentary safety precautions is warranted. The physical dangers from the dump far outweigh any human health risks from PCBs.

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CONCLUSION

The potential for serious health and safety problems at the Aniak site is tremendous; 68 other White Alice sites exist in the State of Alaska. It is quite likely that similar problems with PCBs and other hazardous materials exist at many of these sites. In addition, serious safety problems can be expected to exist from dumps at these sites.

I recommend strongly that the State of Alaska convene a meeting at the highest levels within the Administration to discuss arrangements to ensure that future White Alice sites which may be conveyed to state or local ownership do not have problems similar to those in Aniak. Representatives of the Departments of Health and Social Services and Environmental Conservation might wish to meet with the State's Congressional delegation to ensure that adequate procedures are developed to protect the State of Alaska in the event that future investigation, sampling, monitoring, and clean-up programs at military sites conveyed to state ownership become necessary. Particular important should be provisions to insist that adequate testing and cleanup occur prior to conveyance of these sites to the State.

JM/cv

Attachments: 3

ATTACHMENT 1

ALASKA DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Inventory of hazardous wastes at Aniak White Alice site August 17, 1983.

<u>ITEM</u>	<u>AMOUNT</u>	<u>CONTAINER CONTROL</u>
1. Trichloroethylene	2-55 gal. barrels	Good
2. Naptha Aliphatic Solvent	6-55 gal. barrels	Fair to Good
3. PD-680	3-55 gal. barrels	Good
4. Carbon Remover	2-20 gal. barrels	Poor
5. PCB Liquids	5-85 gal. barrels	Excellent
6. PCB Contaminated Soil	14-55 gal. barrels	Excellent
7. PCB Contaminated Soil	2-85 gal. barrels	Excellent
8. Conc. H <sub>2</sub> SO <sub>4</sub>	20 gal. Plastic Carboy	Poor



## INVESTIGATION - PCBs - ANIAK, September, 1983

## WORKERS INTERVIEWED

CASE	D.O.B.	SEX	OCCUPATION	Employed in White Alice site bldg. 1979	skin rash/eruptions	eye irritation/discharge	dark spots on skin	weight loss	SYMPTOMS				numbness	tingling	H I G H	W E I G H	9/22/8 PCB as AR 12 ppb	
									nausea	malaise	headaches	Gastrointestinal illness						
0001	3/12/37	M	Foreman laborer	X	0	0	0	0	0	0	0	0	X	0	0	66"	164	6
0002	12/29/46	M	laborer	X	0	0	0	0	0	0	0	0	0	0	0	70"	160	7
0003	9/9/28	M	technician	0	0	0	0	0	0	0	0	0	0	0	0	68"	150	2
0004	12/24/58	M	laborer	X	0	0	0	0	0	0	0	0	0	0	0	70"	168	7
0005	4/19/51	M	laborer	X	0	0	0	X	0	0	0	0	0	0	0	67"	160	12
0006	12/11/38	M	mechanic	0	0	0	0	0	0	0	X	0	0	0	0	68"	175	5
0007	11/18/28	M	technician	0	X	0	0	0	0	0	0	0	0	0	0	69"	150	3



## DEPARTMENT OF HEALTH &amp; HUMAN SERVICES

Public Health Service

Centers for Disease Control  
Atlanta GA 30333

December 6, 1983

RECEIVED  
DEC 14 1983  
DEPT. OF HEALTH & HUMAN SERVICES  
CLINICAL CHEMISTRY DIVISION  
OFFICE

John Middaugh M.D.  
Pouch 6333  
3601 C Street  
Suite 540  
Anchorage, Alaska 99502

Dear Dr. Middaugh:

Given below are the results from our analysis for polychlorinated biphenyls (PCBs) in 7 blood serum specimens collected from individuals in Anchorage, Alaska following possible occupational exposure. The analytical method was that of Needham, et al. JAOAC, 64, 5, 1981.

<u>I.D. Number</u>	<u>PCBs (as AR 1260) ppb</u>
8321-0001	6
8321-0002	7
8321-0003	2
8321-0004	7
8321-0005	12
8321-0006	5
8321-0007	3

The samples were processed in one analytical run long with 4 quality control materials containing PCBs. The 4 controls ranging in values between 9 and 67 ppb were all within the 99% control limits. Review of the quality assurance data associated with the runs indicated that the analytical system was stable and in control.

Values of PCBs quantitated against aroclor (AR) 1260 standards in the seven specimens reported above ranged from 3 to 12 ppb. For comparison, the Clinical Chemistry Division uses a value of 20 ppb as the upper limit of expected values for PCBs in human serum based on a study of Michigan residents conducted during 1977 to 1982. Ninety-five percent of the Michigan residents randomly selected from 700 individuals were found to have PCB values equal to or less than 20 ppb. It would appear that none of the individuals in this report warrant additional follow-up to determine the nature and extent of their exposure.

Sincerely yours,

David D. Bayse, Ph.D.  
Director  
Clinical Chemistry Division  
Center for Environmental Health