

N60200.AR.009073
NAS CECIL FIELD
5090.3a

LETTER AND COMMENTS FROM U S EPA REGION IV REGARDING RISK ASSESSMENT
FOR FISH INGESTION AT LAKE FRETWELL BASED ON FISH TISSUE SAMPLING 1PRIL
1995 NAS CECIL FIELD FL
6/29/1995
U S EPA REGION IV



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET, N.E.
ATLANTA, GEORGIA 30365

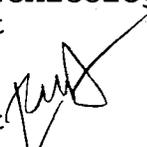
June 29, 1995

4WD-OHA

MEMORANDUM

SUBJECT: Risk Assessment for Fish Ingestion at Lake Fretwell based on Fish Tissue Sampling in April, 1995,
NAS Cecil Field,
Jacksonville, FL

FROM: Ted W. Simon, Ph.D. DABT, Toxicologist
Office of Health Assessment 

THROUGH: Elmer W. Akin, Chief
Office of Health Assessment 

TO: Bart Reedy, Remedial Project Manager
FFB/BRAC

This memorandum constitutes a follow up to the preliminary risk assessment on fish consumption in Lake Fretwell. I performed the preliminary assessment in February, 1995 based on assumed chemical concentrations in fish tissue. This follow up risk assessment is based on measured concentrations in fish filets and supersedes the earlier risk assessment. A copy of the memo detailing the previous findings is attached.

Findings Based on Fish Tissue Sampling:

Three human receptors were considered: (1) an occasional fisherman; (1) a light recreational fisherman; (2) a heavy recreational or avid fisherman; and (3) a subsistence fisherman. The sole receptor for which fish consumption posed a risk above levels deemed protective by the EPA was the subsistence fisherman.

Recommendations:

I suggest that fishing be permitted in Lake Fretwell and tributaries without restriction.

The subsistence fisherman scenario is unlikely. The table below shows the cancer risks and non-cancer hazard from fish ingestion from the various receptors.

Table 1
Cancer Risks and Non-cancer Hazards from consuming fish from Lake Fretwell and Tributaries

Exposure Scenario	Light, Recreational Fisherman	Avid Fisherman	Subsistence Fisherman
Excess Lifetime Cancer Risk	2×10^{-5}	4×10^{-5}	1×10^{-4}
Chemical Hazard Index	0.3	0.6	2.5

The chemical class that contributes most to the cancer risk is PCBs. The non-cancer hazard is due to mercury and several organic chemicals.

This follow up assessment provides the basis for action regarding public fishing in Lake Fretwell.

Acknowledgements

I want to commend Dr. H. Joseph Sekerke of Florida HRS, Department of Environmental Toxicology for his helpful consultation and his appropriate caution during this decision. I also want to thank Dr. Randy Manning of Georgia EPD for supplying Georgia fish tissue concentrations.

Data Analysis of Fish Tissue Concentrations:

I have attached a copy of table I from a memo from Mike Murphy to Rao Angara, both of ABB, the Navy's contractor. For this assessment the maximum concentrations were used with the exceptions of PCBs. The maximum concentration of Arochlor 1260 was 170 $\mu\text{g}/\text{Kg}$ in a bluegill filet. This value was P-qualified meaning that it represented an estimated value that would tend to be higher than the actual value. Because of this qualifier and because the value was found in a smaller fish (bluegill), this value was excluded from the calculation of the Exposure Point Concentration. The EPC for PCBs was determined to be 28 $\mu\text{g}/\text{Kg}$.

An indication that PCB concentrations in fish are low is that PCBs were not detected in the single catfish sampled.

Background Concentrations:

The concentrations of PCBs in fish in Lake Fretwell appear well within the range of background. For example, according to Dr. Randy Manning of the Georgia EPD, fish in Lake Seminole in Georgia, at a similar latitude to Lake Fretwell, have concentrations of PCBs in fish tissue ranging from 19 $\mu\text{g}/\text{Kg}$ to 73 $\mu\text{g}/\text{Kg}$. Georgia does not consider Lake Seminole to be contaminated with PCBs above background. In addition, between 28 and 82 percent of the fish sampled in various Georgia river systems had detectable levels of PCBs in their flesh. Therefore, the EPA considers the levels of PCBs in fish in Lake Fretwell to be within the background concentration range.

According to Mr. Lynn Wellman of the EPA Region IV Office of Health Assessment, mercury is endemic in fish tissue in Florida at levels similar to those found in the fish at Lake Fretwell. Hence, EPA considers the levels of mercury in fish in Lake Fretwell to be within the background concentration range.

Exposure Assessment

This exposure assessment is identical to that presented in my memorandum dated 15 Feb 1995. A copy of this memo is attached.

Toxicity Assessment

The table on the next page presents the oral Cancer Slope Factors and oral Reference Doses for the chemicals at Lake Fretwell. Only oral toxicity values are presented because of the lack of an inhalation pathway.

Chemical	Oral CSF (mg/Kg-day) ⁻¹	Oral RfD (mg/Kg-day)
Aldrin	1.7E+01	3E-05
α -chlordane	1.3E+00	6E-05
α -BHC	6.3E=00	
Arochlor 1260	7.7E+00	
DDD	2.4E-01	
DDE	3.4E-01	
Dieldrin	1.6E+01	5E-05
Endosulfan I and II		6E-03
Heptachlor Epoxide	9.1E+00	1.3E-05
Mercury		3E-04
Methoxychlor		5E-03

Risk Characterization

Intake factors were developed based on the exposure assumptions. The product of the carcinogenic intake factor and the concentration of a given chemical was multiplied by the cancer slope factor to determine the chemical-specific risk. The product of the non-carcinogenic intake factor and the concentration of a given chemical was divided by the oral reference dose to determine the hazard quotient for that chemical. Methods are given in attachment 1, my previous memo.

Uncertainties

The major uncertainty in this risk assessment is the accuracy of the exposure assumptions. The Exposure Frequency was developed in consultation with Mr. Bart Reedy of EPA, Mr. Mike Deliz of FDEP and Mr. Steve Wilson of USN. The basis of these assumptions is a series of informal reports from a Mr. Dukes who fishes regularly in Lake Fretwell.

Other uncertainties that would cause an overestimate of risk are the safety factors built into the toxicity values.

Please let me know if I can be of any further help.

Attachments:

- 1) EPA, 1995, Preliminary Risk Assessment for Fish Ingestion at Lake Fretwell, Simon TW, 15 Feb 95
- 2) Tables 2, 3 and 4 showing fish tissue concentrations from a memorandum from Mike Murphy (ABB) to Rao Angara (ABB)

T.W. Simon/tws:4WD-OHA:1586/06/29/95/A:\DISK_6\JUN95\FRET2.RA