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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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OFFICE OF
PESTICIDES AND TOXIC SUBSTANCES

Memorandum

Subject: Fish Action Levels Reevaluation for Six Chlorinated Pesticides: Summary of Residue Data Received from EPA Regional Offices.
No Accession Number
No RCB Number

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OPP is currently undertaking the reevaluation of fish action levels for the 6 chlorinated pesticides listed below.

<u>Pesticide</u>	<u>Action Level (ppm)</u>
Dieldrin	0.3
Aldrin	0.3
DDT	5
Heptachlor	0.3
Chlordane	0.3
Mirex	0.1

In August of 1986 (Ferial S. Bishop, 8/28/86), RD requested that the EPA Regional Offices submit to OPP any fish residue or consumption data, as well as any other pertinent data, which would be helpful in the reevaluation of fish action levels. Additionally, RD requested that the Regions review and comment on the Fish Sampling and Analysis Protocol prepared by RCB (M. Metzger, 5/22/86).

The data received from the EPA Regional Offices are summarized in this memorandum. Some of these data were received prior to RD's 8/28/86 request, and some of the data were received from sources other than the EPA Regions. Only data provided to RCB are included in this summary.

Region 1

Region 1 has not responded to OPP's request for residue data, nor have they commented on the Draft Action Plan for Reevaluation of Fish Action Levels.

Region 2

Region 2 has not responded to OPP's request for residue data, nor have they commented on the Draft Action Plan for Reevaluation of Fish Action Levels.

Region 3

Three documents were submitted by Region 3. Two were submitted prior to the 8/28/86 request.

- (1) "EPA Region III. Guidance on Sampling Aquatic Organisms for Tissue Analysis During FY 1986", Roy L. Smith, PhD., Sept. 1985.

This document describes a protocol designed to standardize fish sampling and handling within Region 3 in order to make the residue data more consistent and useful. Analytical methods were not discussed. No residue data were contained in this paper.

- (2) "Application of EPA's Risk Assessment Methodology to Screen Fish Tissue Data", Elizabeth A. Rhoads, Jan. 1986.

Risk assessment methodology is described in this paper. The document contains no residue data.

- (3) John Ruggero (Chief, Environmental Programs Section, ESD, Region 3) made numerous comments related to RCB's Fish Sampling Protocol in regards to data collection and interpretation and inventory of existing data bases, projects, capabilities and resources.

Summary (Region 3)

No residue data were submitted from Region 3.

Region 4

Region 4 has not responded to OPP's request for residue data, nor have they commented on the Draft Action Plan for Reevaluation of Fish Action Levels.

Region 5

Region 5 submitted the documents discussed below.

(1) Untitled/Undated Document

This document describes PCB levels in fish and estimates of human exposure to PCBs. No data are available for the subject pesticides.

(2) "Contaminant Concentrations and Trends in Coho Salmon", David S. DeVault, USEPA Great Lakes National Programs Office, and Joseph A. Weishaar, USFDA. (Draft Copy).

Coho salmon were collected from the Great Lakes and were analyzed for residues of the following chemicals of interest in this project: DDT (3 of 6 metabolites), dieldrin, chlordane (5 of 9 metabolites), heptachlor epoxide (no analysis for heptachlor) and mirex. Residues of aldrin and several metabolites were not monitored. Skin-on fillets were analyzed using the PAM I Method for most samples. Sample collection and analytical methodology were adequately described.

These data are useful for the purposes of observing trends for some pesticide residues in Salmon from the Great Lakes, and as supplemental data for Action Level reevaluation. The following drawbacks cause the data to be less useful as the principal residue data for Action Level reevaluation:

- (a) The entire residue of concern was not monitored for all of the subject pesticides;
- (b) Recent data are not available (samples collected 1980-1983).

(3) "National Pesticide Monitoring Program: Residues of Organochlorine Chemicals in Freshwater Fish, 1980-1", Christopher J. Schmitt, et. al., Arch. Environ. Contam. Toxicol., 14, 225-260 (1985).

315 composite samples (3-5 whole fish) from throughout the U.S. were collected from 1980-1 and analyzed for several pesticides and pesticide metabolites including

aldrin, dieldrin, heptachlor (and heptachlor epoxide), chlordane (5 of 9 metabolites) and DDT (3 of 6 metabolites)(no validation data presented). A GLC method was used for residue determination. Representative bottom-feeding and predatory fish were sampled.

- (4) U.S. Department of the Interior, Fish and Wildlife Service. Untitled residue studies of pesticides in Smelt from the Great Lakes.

This document consists of a cover letter from the U.S. Department of the Interior and tabulated residue data for the following pesticides in Smelt: DDT (3 of 6 metabolites), dieldrin, heptachlor epoxide and chlordane (5 of 9 metabolites). Sample handling procedures and analytical methodology were not provided, and recent data are not available (samples collected between 1978 and 1982).

- (5) USFDA Data. "Lake Michigan Bloater Chubs- Edible Portion Only".

This document consists of a 5-page hand-written table showing residues of dieldrin and chlordane in Chubs from Lake Michigan (1981-4). No other information is provided (analytical methods, sampling methods, units for reported residues, etc.).

- (6) "IJC Great Lakes International Surveillance Program. Open Lake Fish Contaminants (1977-82)".

Representative top predator fish and forage fish species (whole fish) were monitored in 4 of the 5 Great Lakes for Mirex, dieldrin, p,p'-DDE, total DDT (not defined) and other compounds not of interest here. Analytical methods, sampling methods and other similar information are not included.

- (7) "Lake Michigan Fish Analysis", Illinois Dept. of Public Health (6/30/84).

Residues of heptachlor epoxide, "chlordanes", "DDT and analogs", "dieldrin and/or aldrin" and other compounds not of interest here were monitored in trout and salmon

(fillets with skin) taken from Lake Michigan in 1983 (16 samples total). Analytical methods, sampling methods and other similar pertinent information were not provided.

- (8) Indiana State Board of Health, "Lake Michigan Fish Tissue Analysis" (Sept.- Oct. 1984 samples)

33 composite samples of perch, salmon and trout were taken from Lake Michigan and analyzed for residues of aldrin, dieldrin, "DDE", "DDT", "DDP", heptachlor and heptachlor epoxide. Analytical methods, sampling methods and other similar information were not provided.

- (9) "Contaminants in Fish from Great Lakes Harbors and Tributary Mouths", David S. DeVault, Arch. Environ. Contam. Toxicol. 14, 587-94 (1985).

Composite fish samples were obtained from Great Lakes Harbors and Tributary Mouths in 1980 and 1981, and monitored for PCB residues. Residues of the subject pesticides were not monitored.

- (10) Four summary tables from the Michigan Department of Natural Resources or the Michigan Department of Agriculture or unspecified sources.

Residues of total chlordane, total DDT, dieldrin and other compounds not of interest here were monitored in fish from rivers in Michigan. Analytical methods, sampling methods and other pertinent information were not submitted. Samples were obtained from 1971-84.

- (11) "Analysis of Polychlorinated Biphenyl Loading trends in Lake Michigan", Paul W. Rodgers, Wayland R. Swain, J. Great Lakes Res. 9(4), 548-58, 1983.

Only PCB residues were monitored in this study.

- (12) "Contaminant Trends in Lake Trout from the Upper Great Lakes", USEPA, Great Lakes National Program office, March 1985.

Total DDT, dieldrin, oxychlordane and heptachlor residues were monitored in Lake trout from 3 of the 5 Great Lakes between 1970 and 1982. Analytical methods using GLC were described, and sampling and handling methods were adequately discussed.

- (13) "Polychlorinated Dioxins and Polychlorinated Furans in Fish from the Great Lakes and Midwest", USEPA, Great Lakes National Program Office, October 1984.

Residues of the subject pesticides were not monitored in this project.

- (14) Lake Superior Lake Trout. Whole Fish. Apostle Islands.

Computer printout. Whole fish were monitored for heptachlor, aldrin, dieldrin, alpha-chlordane, oxychlordane and "total DDT". Sampling dates and methods are not provided. Analytical methods are not provided.

- (15) Region 5 provided a response to RD's request for review of the Draft Action Plan for Reevaluation of Fish Action Levels.

Summary (Region 5)

Region 5 submitted 18 documents containing a significant amount of data obtained during or prior to 1984. Most of these studies contained residue data reflecting analysis for a portion of the residue of concern for the pesticides of interest in this project. The analytical methods and sampling methods for most of the data submitted were not provided.

Some of these data could be useful for the purpose of determining local problems of high fish residues (most recent data). However, the data presented could be used for Action Level reevaluation only as supplemental information to other data more appropriate for this purpose.

Region 6

Region 6 made no response to OPP's request for available fish residue and consumption data. Region 6 responded to RD's request for review of the Draft Action Plan for the Reevaluation of Fish Action Levels with the following comment:

" We approve of the proposed reassessment of fish tissue action levels and have no further suggestion for improvement."

Region 7

Region 7 provided the following documents in response to OPP's request for fish residue/consumption data and review of the Draft Action Plan.

- (1) "Report of the Analysis of Fishes Collected During 1985 from the Ambient Fish Tissue Monitoring Sites in Iowa. Activity No. ELR 60." USEPA, Region 7, Received 4/22/86.

Whole fish were sampled from 15 sites within Iowa and monitored for residues of chlordane (5 of 9 metabolites and technical chlordane), aldrin, dieldrin, DDT (all metabolites), heptachlor, heptachlor epoxide and mirex. Sampling and handling techniques were adequately discussed. Analytical methodology was referenced (EPA SOP 7221F00).

These data could be useful in identifying local residue problems in Iowa (for most of the subject pesticides).

- (2) "1980-1984 Whole Fish Sampling by EPA Region 7".

Whole fish were sampled from throughout Region 7 and monitored for residues of dieldrin, chlordane, heptachlor epoxide, p,p'-DDP and p,p'-DDE. Summary tables only were provided.

- (3) "Final report of an Intensive Water Quality Survey of the Lake of the Woods and the Lagoon in Swope Park, Kansas City, MO.", USEPA, July 1985.

Fillet and whole fish samples (and sediment samples) were collected in May, 1985 from 2 sites in Kansas City, MO. Chlordane (5 of 9 metabolites and "technical grade chlordane"), dieldrin, DDT (2 of 6 metabolites) and heptachlor epoxide were monitored. Sampling and handling procedures are adequately described. Analytical methods are not discussed.

These data could be useful in identifying local residue problems in isolated bodies of water in Kansas City, MO.

- (4) "Chlordane in Various Fish Species from Cedar Lake", August, 1985.

The edible portion of fish from Cedar Lake (near Cedar Rapids, IA) was monitored for residues of chlordane and oxychlordane in the summer of 1985. Sampling procedures and analytical methods are not adequately described.

- (5) "Missouri and Mississippi Rivers- Shovelnose Sturgeon", 9/11/85.

Sturgeon were monitored for residues of chlordane and dieldrin. Residue values only (without units) are provided.

- (6) "Pesticides in Fish from Catfish and Trout Farms",
9/23/85.

Positive findings of p,p'-DDE, p,p'-TDE, dieldrin, technical chlordane, cis- and trans-chlordane and heptachlor epoxide are reported for fish obtained from fish farms in KS and MO. No other information is provided.

- (7) "Human Health Assessment of Chlordane Levels in Fish".

This document contains information regarding risk assessment. No residue data are provided.

- (8) Region 7 provided a 3-page response to RD's request for review of the Draft Action Plan for Reassessment of Fish Action Levels.

Summary (Region 7)

Region 7 submitted several recent (1985) localized residue studies monitoring some of the pesticides of interest. Some of these data could be useful in identifying local residue problems for some of the subject pesticides. Most of these residue data have limited usefulness for Action Level reevaluation for one or more of the following reasons:

- (a) All of the residue of concern for the subject pesticides isn't monitored;
- (b) Analytical and sampling/handling procedures are not addressed; and
- (c) Documentation is not adequate for summary tables.

Region 8

Region 8 provided no residue/consumption data in response to OPP's request.

In response to RD's request for review of the Draft Action Plan for Reassessment of Fish Action Levels, Region 8 provided a brief response suggesting a more extensive monitoring program capable of producing data useful for purposes other than for fish action level reevaluation.

Region 9

Region 9 submitted no residue data in response to OPP's request. The following documents were submitted:

- (1) "Harry Saraydarian's Statement at the Santa Monica Bay Hearing on Feb. 10, 1986."
- (2) Response to the Draft Action Plan for Reevaluation of Fish Action Levels for Chlorinated Pesticides.

Region 10

Region 10 has not responded to OPP/RD requests in any form.

Conclusions

- (1) No information or response was received from the following EPA Regional Offices: 1, 2, 4 and 10.
- (2) The following regions responded to request for review and comment on the Draft Action Plan for Reevaluation of Fish Action Levels, but submitted no residue data: 6, 8, 9 (Region 9 requests that OPP specify the type of data required and the level of detail sought).
- (3) Residue data submitted by Regions 3, 5 and 7 could be used to supplement other more appropriate data. However, these data could not be used as the primary data for fish Action Level reevaluation for one or more of the following reasons:
 - (a) Data were not recent (1984 or older in most cases);
 - (b) All components of the residues of concern for the subject pesticides were not monitored in all studies;
 - (c) Sampling/handling and analytical methods were not adequately discussed;
 - (d) The data received were not adequately documented with sampling dates, residue units, sampling locations and other pertinent information;
 - (e) Residues were not monitored in the edible portion of fish in many cases.
- (4) Some of the data submitted by Region 7 is recent data (1985; all data from other Regions is 1984 or older). They may be useful for determining local residue concerns within Region 7.

- (5) RCB recently reviewed the Work/Quality Assurance Plan for the Bioaccumulation [Toxic Substances in Fish] Study (see M. Metzger, 12/9/86) provided by the EPA Office of Water Regulations and Standards. These data could be used only as supplemental data for Fish Action Reevaluation for one or more of the reasons discussed in (3) above, and for other reasons discussed in the 12/9/86 memorandum. These data could be useful in determining local residue concerns.
- (6) There appears to be little consistency among sampling/handling and analytical methodologies among the 10 EPA Regions evidenced in the material submitted. A questionnaire is being sent to all the Regions to ascertain the degree of consistency in methodology and sampling techniques.

Recommendations

After the response to the questionnaire is received, the Agency (OPP) will determine if appropriate data are available for fish Action Level reevaluation or if additional data need to be generated or obtained from other sources.

cc:Aldrin, Dieldrin, Chlordane, DDT, Heptachlor S.F., R.F.,
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RDI:E.Zager:EZ:1/28/87:RDS:1/28/87
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