WATER POLLUTION CONTROL RESEARCH SERIES 18050HLA 09/73

WATER QUALITY CRITERIA DATA BOOK

VOLUME 5

EFFECTS OF CHEMICALS ON AQUATIC LIFE

U.S. ENVIRONMENTAL PROTECTION AGENCY

WATER QUALITY CRITERIA DATA BOOK - VOL. 5
EFFECTS OF CHEMICALS ON AQUATIC LIFE
(Compilation From the Literature Dated 1968-1972)

by

Homer T. Kemp
Robert L. Little
Verna L. Holoman
and
Ralph L. Darby

Grant Number R-800942
Project Number 18050 HLA

Project Officer

Robert Andrew
U.S. Environmental Protection Agency
National Water Quality Laboratory
Duluth, Minnesota 55804

for the

OFFICE OF RESEARCH AND DEVELOPMENT
U.S. Environmental Protection Agency
Washington, D.C. 20460

September 1973

For sale by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402

EPA REVIEW NOTICE

ABSTRACT

This report is an extensive compilation of data on the effects of chemicals on aquatic life which were extracted from literature published during the period 1968-1972. It is an update of an earlier report entitled "Water Quality Criteria Data Book, Volume III, Effects of Chemicals on Aquatic Life" (Kemp, et al., 1971). The data are arranged alphabetically by chemical and are concisely presented in a columnar format which includes organism names, type of study, chemical effect, controlled parameters, significant comments on the test, and source of the data. The data were compiled using a program prepared as part of the work.

CONTENTS

Section		Page
I	Recommendations	1
II	Introduction	3
III	Procedure	5
IV	Acknowledgements	9
V	References	11
VI	Appendices	
	A. Chemical Names	A-1
	B. Species Index	B-1
	C. Chemical Index	C-1

SECTION I

RECOMMENDATIONS

In a prior report (Water Quality Criteria Data Book, Volume III. Effects of Chemicals on Aquatic Life, Kemp, H. T., Abrams, J. P., Overbeck, R. C., EPA Contract No. 68-01-0007, Project No. 18050 GWV, 1971, 528 pp), several recommendations were presented. These are restated as follows with any appropriate comments.

(1) Establishment of a Chemical Pollution Effect Information Analysis Center. The Analytical Methodology Information Center (AMIC) sponsored by EPA at Battelle's Columbus Laboratories fills this need.

(2) Preparation of Listings of Chemical Constituents in Effluents by Cooperative Input From Industry. To the authors' knowledge this has not been done nor is there a current attempt to do so.

(3) Development of a Standard Pattern of Laboratory Evaluations for Estimating More Accurately the Effect of Chemicals on Aquatic Life. To the authors' knowledge no standard pattern of laboratory evaluations is widely accepted. Considerable progress has been made recently, however, in particular at the National Water Quality Laboratory (Duluth, Minnesota) and Virginia Polytechnic Institute. Significant efforts to compile bioassay information are in progress by Drs. Seba, Stephans, Tarzwell, and Weber, respectively, located at EPA establishments at Denver (Colo.), Duluth (Minn.), West Kingston (R.I.), and Cincinnati (Ohio). The classic report by McKee and Wolf (1963) is reportedly now being updated.

(4) Development of In Situ Field Bioassay Procedures for More Realistic Results Than Those Obtained in Laboratory Bioassays. Although increased publication of these types of data are apparent, there appears to be no large-scale trend in the published literature toward this approach.

(5) Improved Reporting Would Greatly Enhance the Utility of Chemical Effects Data and Allow More Precise Development of Multivariate Analysis and Mathematical Modeling. There is a large volume of literature on mathematical modeling, a significant amount of which is concerned with environmental pollution problems. For the most part, these models are not refined enough for practical utility in water pollution problems. Improved, more detailed data would assist greatly in verifying these models and enhancing their practical utility. The next few years will be crucial in this development.

SECTION II

INTRODUCTION

This report was prepared to update the document, "Water Quality Criteria Book, Volume 3", published in May, 1971 (Kemp, et al., 1971). This updated version primarily contains extracted information from original published data, but does not critically review bioassay procedures, factors affecting chemical toxicity, and other subject areas important in the study of water pollution by chemicals.

SECTION III

PROCEDURE

The literature search technique primarily involved acquisition of documents cited in selected sections of annual reviews published in the Journal of the Water Pollution Control Federation, for the years 1968-1972. These listings were quite comprehensive, but were supplemented by additional documents identified in routine screening activities of the Analytical Methodology Information Center (AMIC), Battelle's Columbus Laboratories.

The data were prepared on punched paper tape so that the compilation could be prepared by computer. In addition, the format of the data is such that they can be loaded in the Analytical Methodology Information Center data base. Since index terms were added to each line of data, they can be remotely searched on an on-line real-time computer system located at Battelle's Columbus Laboratories. Persons interested in having access to this system should contact the AMIC Project Officer:

Mr. Luther E. Garrett
Data & Information Research Division
Office of Research & Development
Environmental Protection Agency
404 M Street, S.W.
Washington, D.C. 20024

As in the earlier document, extracted data are alphabetically arranged by chemical name (Appendix A). In all cases, chemical names and names (common or scientific) of organisms designated by the authors were used in this report. Nomenclature was not changed or corrected in any manner, that is, when the common name of a fish or a chemical was cited by an author, this and this alone was used. Therefore, in using these data compilations, care should be exercised by the reader to search chemical and biological synonomy. For example, in Appendix B, Species Index, data searches on bluegills (Page B-2) should include the scientific name, Lepomis macrochirus (page B-6) for completeness. Likewise trade names such as Sevin and Carbaryl should be searched for all data on this insecticide.

In the authors' judgment, the most significant toxicity levels in the aquatic studies are those for fish specifically designated 96-hr TL_m. These were usually selected but other values were included when these were not available. 96-hr TL_m is designated as T4 to abbreviate this notation. T2 was used for 48-hr TL_m, and so on. When EC_{50}, LC_{50}, and LD_{50} were judged to be essentially equivalent to TL_m or TL_{50}, then the designation T was used to improve the consistency of data presentation. The authors acknowledge that this is not standard practice and that there may be important differences in these designations.

Experimental conditions noted by authors in column six are denoted in lower case letters (see page A-1) with asterisks to indicate when conditions were controlled. In some cases, authors briefly referred to previous publications as a simple means of describing experimental conditions. No asterisks were included in these instances although some conditions were probably controlled. The letters in footnote 4 were augmented so that additional conditions could be indicated. These were light (q) (r) and (s).

Comments in general are brief, and it is recommended that interested readers consult the original document for more complete information.

The chemical nature of most industrial effluents is very complex and difficult to characterize. Although increased numbers of publications on this type of pollution problem are being published, there is no highly satisfactory technique to include these data in the tabular format used here. For these reasons, this document must be described as primarily containing data on the effect of single chemicals or simple mixtures of chemicals on aquatic life.

There was no attempt to extract data from the various reviews available since these rarely contained descriptive information concerning experimental conditions. Furthermore, only selective data are usually discussed. In the earlier report, more than 83 review papers were cited. To these can be added:

Becker, C. D., Thatcher, T. O., "Toxicity of Power Plant Chemicals to Aquatic Life", Battelle Memorial Institute, Pacific Northwest Laboratories, Richland, Washington, Report Nos. WASH-1249, UC-11, June 1973, 248 pp. AMIC-9135.

Boccardy, J. A., Spaulding, W. M., Jr., "Effects of Surface Mining on Fish and Wildlife in Appalachia", Bureau of Sport Fisheries and Wildlife, Publication No. 65, 1968. AMIC-6389.

Hunt, E. G., Keith, J. O., "Pesticide Analysis in Fish and Wildlife", Analytical Methods for Pesticides, Plant Growth Regulators, and Food Additives, Vol. 5, 1967, p 147. AMIC-5758.

Johnson, D. W., "Pesticides and Fishes - a Review of Selected Literature", Transactions of the American Fisheries Society, Vol. 97, 1968, pp 398-424. AMIC-5463.

Jones, A. N., Howells, W. R., "Recovery of the River Rheidol", Effluent Water Treatment Journal, Vol. 9, 1969, pp 605-610. AMIC-5752.

Seagran, H. L., "Mercury in Great Lakes Fish", Limnos, Vol. 3, No. 2, Summer 1970, pp 3-10. AMIC-153.

Sprague, J. B., "Measurement of Pollutant Toxicity to Fish. I. Bioassay Methods for Acute Toxicity", Water Research, Vol. 3, 1969, pp 793-821. AMIC-137.

Sprague, J. B., "Measurement of Pollutant Toxicity to Fish. II. Utilizing and Applying Bioassay Results", Water Research, Vol. 4, 1970, pp 3-32. AMIC-358.

Swabey, Y. H., "The Autopsy of Fish Collected in Fish Kills", The Ontario Water Resources Commission, Canada, Publication No. 11. 1966, 19 pp.

Not reviewed in this report are bioassay procedures, field assessment techniques, and related topics. A number of recent documents would be useful for this purpose, including:

Bell, M. C., "Fisheries Handbook of Engineering Requirements and Biological Criteria", Fisheries-Engineering Research Program, Corps of Engineers, North Pacific Div., Portland, Oregon, Contract No. DACW57-68-C-0086, 1973, 508 pp.

Cairns, J., Dickson, K. L., "Biological Methods for the Assessment of Water Quality", ASTM Special Technical Publication No. 528, 1973, 262 pp.

Dills, G. G., Rogers, D. T., "Aquatic Community Structure as an Indicator of Pollution", Geological Survey of Alabama, Circular 80, 1972, 25 pp.

Smith, L. S., Saddler, J. B., Cardwell, R. C., et al., "Responses of Teleost Fish to Environmental Stress", University of Washington, Fisheries Research Institute, Seattle, Washington, EPA Grant No. 18050EBK, 1971, 114 pp.

One report by McPhee and Ruelle (1969) was received too late to include in this compilation. In it are summarized toxicity data for 1888 chemicals against five fish species in a piscicide screening program.

It was previously suggested that ecological investigators be encouraged to include in their reports:

- Positive identity of chemicals under test
- Precise description of test organisms
- Use of standard test or field methods, where applicable, or of procedures if standard methods are not used
- Closer definition and control of test conditions

Although papers have generally improved in these regards, not all investigators include all desirable details of their experimentation.

A species index is included as Appendix B. Appendix C is a list of commercial chemicals cited in the data section (Appendix A) and includes, when available, the chemical nature of the compound.

SECTION IV

ACKNOWLEDGEMENTS

The authors wish to express their appreciation to the Project Officer, Mr. Robert Andrew, for his assistance and concern for this work.

Homer T. Kemp
Robert L. Little
Verna L. Holoman
Ralph L. Darby

REFERENCES

Abedi, Z. H., McKinley, W. P.
"ZEBRA FISH EGGS AND LARVAE AS AFLATOXIN BIOASSAY TEST ORGANISMS", Journal of the Association of Official Analytical Chemists, Vol. 51, No. 4, 1968, pp 902-905. AMIC-3712.

Abedi, Z. H., Turton, D. E.
"NOTE ON THE RESPONSE OF ZEBRA FISH LARVAE TO FOLPET AND DIFOLATAN", Journal of the Association of Official Analytical Chemists, Vol. 51, No. 5, 1968, pp 1108-1109. AMIC-3717.

Adelman, I. R., Smith, L. L., Jr.
"EFFECT OF HYDROGEN SULFIDE ON NORTHERN PIKE EGGS AND SAC FRY", Transactions of the American Fisheries Society, Vol. 99, No. 3, 1970, pp 501-509. AMIC-5516.

Alabaster, J. S.
"SURVIVAL OF FISH IN 164 HERBICIDES, INSECTICIDES, FUNGICIDES, WETTING AGENTS AND MISCELLANEOUS SUBSTANCES", International Pest Control, March/April 1969, pp 29-35. AMIC-5425.

Anderson, J. M.
"EFFECT OF SUBLETHAL DDT ON THE LATERAL LINE OF BROOK TROUT, SALVELINUS FONTINALIS", Journal of the Fisheries Research Board of Canada, Vol. 25, No. 12, 1968, pp 2677-2682. AMIC-3768.

Anderson, J. M., Peterson, M. R.
"DDT: SUBLETHAL EFFECTS ON BROOK TROUT NERVOUS SYSTEM", Science, Vol. 164, April 25, 1969, pp 440-441. AMIC-3838.

Anderson, J. M., Prins, H. B.
"EFFECTS OF SUBLETHAL DDT ON A SIMPLE REFLEX IN BROOK TROUT", Journal of the Fisheries Research Board of Canada, Vol. 27, No. 2, 1970, pp 331-334. AMIC-3782.

Arthur, J. W., Leonard, E. N.
"EFFECTS OF COPPER ON GAMMARUS PSEUDOLIMNAEUS, PHYSA INTEGRA, AND CAMPELOMA DECISUM IN SOFT WATER", Journal of the Fisheries Research Board of Canada, Vol. 27, No. 7, July 1970, pp 1277-1283. AMIC-867.

Ashley, L. M.
"ACTION OF IRON SALTS IN SOLUTION ON GOLDFISH", The Progressive Fish-Culturist, Vol. 32, April 1970, p 109. AMIC-5436.

Aubin, A. E., Johansen, P. H.
"THE EFFECTS OF AN ACUTE DDT EXPOSURE ON THE SPONTANEOUS ELECTRICAL ACTIVITY OF GOLDFISH CEREBELLUM", Canadian Journal of Zoology, Vol. 47, No. 2, March 1969, pp 163-166. AMIC-3835.

Bache, C. A., Gutenmann, W. H., Lisk, D. J.
"RESIDUES OF TOTAL MERCURY AND METHYLMERCURIC SALTS IN LAKE TROUT AS A FUNCTION OF AGE", Science, Vol. 172, May 28, 1971, pp 951-952. AMIC-3818.

Bahr, T. G., Ball, R. C.
"ACTION OF DDT ON EVOKED AND SPONTANEOUS ACTIVITY FROM THE RAINBOW TROUT LATERAL LINE NERVE", Comp. Biochem. Physiol., Vol. 38A, 1971, pp 279-284, AMIC-3808.

Baker, J. T. P.
"HISTOLOGICAL AND ELECTRON MICROSCOPICAL OBSERVATIONS ON COPPER POISONING IN THE WINTER FLOUNDER (PSEUDOPLEURONECTES AMERICANUS)", Journal of the Fisheries Research Board of Canada, Vol. 26, No. 11, 1969, pp 2785-2793. AMIC-3763.

Baldridge, H. D., Jr.
"KINETICS OF ONSET OF RESPONSES BY SHARKS TO WATERBORNE DRUGS", Bulletin of Marine Science, Vol. 19, No. 4, 1969, pp 884-892. AMIC-3832.

Ballard, J. A., Oliff, W. D.
"A RAPID METHOD FOR MEASURING THE ACUTE TOXICITY OF DISSOLVED MATERIALS TO MARINE FISHES", Water Research, Vol. 3, 1969, pp 313-333. AMIC-300.

Batterton, J. C., Boush, G. M., Matsumura, F.
"GROWTH RESPONSE OF BLUE-GREEN ALGAE TO ALDRIN, DIELDRIN, ENDRIN AND THEIR METABOLITES", Bulletin of Environmental Contamination and Toxicology, Vol. 6, No. 6, November/December 1971, pp 589-594. AMIC-1471.

Bell, H. L., Nebeker, A. V.
"PRELIMINARY STUDIES ON THE TOLERANCE AQUATIC INSECTS TO LOW pH", Journal of the Kansas Entomological Society, Vol. 42, No. 2, April 1969, pp 230-236. AMIC-5988.

Bender, M. E.
"THE TOXICITY OF THE HYDROLYSIS AND BREAKDOWN PRODUCTS OF MALATHION TO THE FATHEAD MINNOW (PIMEPHALES PROMELAS, RAFINESQUE)", Water Research, Vol. 3, 1969, pp 571-582. AMIC-3787.

Bender, M. E.
"UPTAKE AND RETENTION OF MALATHION BY THE CARP", The Progressive Fish-Culturist, Vol. 31, July 1969, pp 155-159. AMIC-5731.

Bender, M. E., Eisele, P.
"LONG TERM EFFECTS OF PESTICIDES ON STREAM INVERTEBRATES", University of Michigan, Department of Environmental and Industrial Health, Ann Arbor, Michigan, Project Completion Report, December 1971, 28 pp, PB-206 692. AMIC-3279.

Bennett, H. J., Day, J. W., Jr.
"ABSORPTION OF ENDRIN BY THE BLUEGILL SUNFISH, LEPOMIS MACROCHIRUS", Pesticides Monitoring Journal, Vol. 3, No. 4, March 1970, pp 201-203. AMIC-195.

Berger, B. L., Lennon, R. E., Hogan, J. W.
"LABORATORY STUDIES ON ANTIMYCIN A AS A FISH TOXICANT", U. S. Bureau of Sport Fisheries and Wildlife, Fish Control Laboratory, La Crosse, Wisconsin, Investigations in Fish Control No. 26, February 1969, 21 pp. AMIC-5495.

Bhatia, H. L.
"TOXICITY OF SOME PESTICIDES TO PUNTIUS TICTO (HAMILTON)", Science and Culture, Vol. 37, No. 3, March 1971, pp 160-161. AMIC-5423.

Birdsong, C. L., Avault, J. W., Jr.
"TOXICITY OF CERTAIN CHEMICALS TO JUVENILE POMPANO", The Progressive Fish-Culturist, Vol. 33, No. 2, April 1971, pp 76-80. AMIC-5570.

Boer, H. H., Lever, J.
"THE EFFECT OF AMPHENONE B ON THE EGG PRODUCTION OF LYMNAEA STAGNALIS", Malacologia, Vol. 5, No. 3, 1967, pp 431-444. AMIC-5445.

Brown, V. M., Dalton, R. A.
"THE ACUTE LETHAL TOXICITY TO RAINBOW TROUT OF MIXTURES OF COPPER, PHENOL, ZINC, AND NICKEL", Journal of Fish Biology, Vol. 2, 1970, pp 211-216. AMIC-5994.

Brown, V. M., Jordan, D. H. M., Tiller, B. A.
"THE ACUTE TOXICITY TO RAINBOW TROUT OF FLUCTUATING CONCENTRATIONS AND MIXTURES OF AMMONIA, PHENOL, AND ZINC", Journal of Fish Biology, Vol. 1, 1969, pp 1-9. AMIC-5993.

Brungs, W. A.
"CHRONIC TOXICITY OF ZINC TO THE FATHEAD MINNOW, PIMEPHALES PROMELAS RAFINESQUE", Transactions of the American Fisheries Society, Vol. 98, 1969, pp 272-279. AMIC-5458.

Buhler, D. R., Shanks, W. E.
"INFLUENCE OF BODY WEIGHT ON CHRONIC ORAL DDT TOXICITY IN COHO SALMON", Journal of the Fisheries Research Board of Canada, Vol. 27, No. 2, 1970, pp 347-358. AMIC-3781.

Burton, D. T.
"LACTIC AND PYRUVIC ACID CHANGES IN BLUEGILL SUNFISH (LEPOMIS MACROCHIRUS RAFINESQUE) DURING GRADUAL HYPOXIA AT TWO ACCLIMATION TEMPERATURES (5 AND 20 C)", The ASB Bulletin, Vol. 17, No. 2, April 1970, p 35. AMIC-6385.

Butler, G. W., Ferguson, D. E., Sadler, C. R.
"EFFECTS OF SUBLETHAL PARATHION EXPOSURE ON THE BLOOD OF GOLDEN SHINERS, NOTEMIGONUS CRYSOLEUCAS", Journal of the Mississippi Academy of Science, Vol. 15, 1969, pp 33-36. AMIC-5977.

Cairns, J., Jr., Sparks, R. E.
"THE USE OF BLUEGILL BREATHING TO DETECT ZINC", Virginia Polytechnic Institute and State University, Center for Environmental Studies, Blacksburg, Virginia, Water Pollution Control Research Series 18050 EDQ 12/71, December 1971, 45 pp. AMIC-3232.

Cairns, J., Jr., Waller, W. T.
"THE USE OF FISH MOVEMENT PATTERNS TO MONITOR ZINC", Virginia Polytechnic Institute and State University, Center for Environmental Studies, Blacksburg, Virginia, Water Pollution Control Research Series 18050 EDP 12/71, December 1971, 55 pp. AMIC-3231.

Cairns, J., Loos, J. J.
"CHANGED FEEDING RATE OF BRACHYDANIO RERIO (HAMILTON-BUCHANAN) RESULTING FROM EXPOSURE TO SUBLETHAL CONCENTRATIONS OF ZINC, POTASSIUM DICHROMATE, AND ALKYL BENZENE SULFONATE", Pennsylvania Academy of Science, 1967, pp 47-52. AMIC-5707.

Chen, C. W., Selleck, R. E.
"A KINETIC MODEL OF FISH TOXICITY THRESHOLD", Journal Water Pollution Control Federation, Vol. 41, 1969, pp R294-R304. AMIC-3831.

Coler, R. A., Gunner, H. B., Zuckerman, B. M.
"TUBIFICID SENSITIVITY TO STREPTOMYCIN", Transactions of the American Fisheries Society, Vol. 97, 1968, pp 502-503. AMIC-5460.

Cooke, A. S.
"SELECTIVE PREDATION BY NEWTS ON FROG TADPOLES TREATED WITH DDT", Nature, Vol. 229, January 22, 1971, pp 275-276. AMIC-3814.

Cordone, A. J., Nicola, S. J.
"INFLUENCE OF MOLYBDENUM ON THE TROUT AND TROUT FISHING OF CASTLE LAKE", California Fish and Game, Vol. 56, No. 2, 1970, pp 96-108. AMIC-5750.

Cowmeadow, M. M., Steege, P. T., Pang, P. K. T., Grant, F. B.
"A STUDY OF THE PHYSIOLOGICAL EFFECTS OF SULFISOXAZOLE ON THE KILLIFISH", The Progressive Fish-Culturist, Vol. 31, October 1969, pp 226-228. AMIC-5736.

Davis, H. C., Hindu, H.
"EFFECTS OF PESTICIDES ON EMBRYONIC DEVELOPMENT OF CLAMS AND OYSTERS AND ON SURVIVAL AND GROWTH OF THE LARVAE", U.S. Fish and Wildlife Service Fishery Bulletin, Vol. 67, No. 2, 1969, pp 393-404. AMIC-5990.

Dimond, J. B., Getchell, A. S., Blease, J. A.
"ACCUMULATION AND PERSISTENCE OF DDT IN A LOTIC ECOSYSTEM", Journal of the Fisheries Research Board of Canada, Vol. 28, No. 12, December 1971, pp 1877-1882. AMIC-3291.

Duke, T. W., Lowe, J. I., Wilson, A. J., Jr.
"A POLYCHLORINATED BIPHENYL (AROCLOR 1254) IN THE WATER, SEDIMENT, AND BIOTA OF ESCAMBIA BAY, FLORIDA", Bulletin of Environmental Contamination and Toxicology, Vol. 5, No. 2, March/April 1970, pp 171-180. AMIC-720.

Earnest, R. D.
"THE EFFECT OF PARAQUAT ON FISH IN A COLORADO FARM POND", The Progressive Fish-Culturist, Vol. 33, No. 1, January 1971, pp 27-31. AMIC-5564.

Eaton, J. G.
"CHRONIC MALATHION TOXICITY TO THE BLUEGILL (LEPOMIS MACROCHIRUS RAFINESQUE)", Water Research, Vol. 4, October 1970, pp 673-684. AMIC-1312.

Ebel, W. J.
"SUPERSATURATION OF NITROGEN IN THE COLUMBIA RIVER AND ITS EFFECT ON SALMON AND STEELHEAD TROUT", Fishery Bulletin, Vol. 68, No. 1, 1969, pp 1-9. AMIC-6198.

Eisler, R.
"CADMIUM POISONING IN FUNDULUS HETEROCLITUS (PISCES: CYPRINODONTIDAE) AND OTHER MARINE ORGANISMS", Journal of the Fisheries Research Board of Canada, Vol. 28, No. 9, September 1971, pp 1225-1234. AMIC-1621.

Eller, L. L.
"PATHOLOGY IN REDEAR SUNFISH EXPOSED TO HYDROTHOL 191", Transactions of the American Fisheries Society, Vol. 98, 1969, pp 52-59. AMIC-5459.

Epifanio, C. E.
"EFFECTS OF DIELDRIN IN SEAWATER ON THE DEVELOPMENT OF TWO SPECIES OF CRAB LARVAE, LEPTODIUS FLORIDANUS AND PANOPEUS HERBSTII", Marine Biology, Vol. 11, No. 4, December 1971, pp 356-362. AMIC-2653.

Erickson, S. J., Lackie, N., Maloney, T. E.
"A SCREENING TECHNIQUE FOR ESTIMATING COPPER TOXICITY TO ESTUARINE PHYTOPLANKTON", Journal Water Pollution Control Federation, Vol. 42, No. 8, Part 2, August 1970, pp R270-R278. AMIC-449.

Ferguson, D. E., Ludke, J. L., Finley, M. T., Murphy, G. G.
"INSECTICIDE-RESISTANT FISHES: A POTENTIAL HAZARD TO CONSUMERS", Mississippi Academy of Science Journal, Vol. 13, 1967, pp 138-140. AMIC-5976.

Fletcher, G. L., Hoyle, R. J., Horne, D. A.
"YELLOW PHOSPHORUS POLLUTION: ITS TOXICITY TO SEAWATER-MAINTAINED BROOK TROUT (SALVELINUS FONTINALIS) AND SMELT (OSMERUS MORDAX)", Journal of the Fisheries Research Board of Canada, Vol. 27, No. 8, August 1970, pp 1379-1384. AMIC-839.

Fredeen, F. J. H., Duffy, J. R.
"INSECTICIDE RESIDUES IN SOME COMPONENTS OF THE ST. LAWRENCE RIVER ECOSYSTEM", Pesticides Monitoring Journal, Vol. 3, No. 4, March 1970, pp 219-226. AMIC-534.

Gardner, G. R., Yevich, P. P.
"HISTOLOGICAL AND HEMATOLOGICAL RESPONSES OF AN ESTUARINE TELCOST TO CADMIUM", Journal of the Fisheries Research Board of Canada, Vol. 27, No. 12, 1970, pp 2185-2193. AMIC-3827.

Garrison, R. L.
"THE TOXICITY OF PRO-NOXFISH TO SALMONID EGGS AND FRY", The Progressive Fish-Culturist, Vol. 30, January 1968, pp 35-38. AMIC-5714.

Gibson, J. R., Ludke, J. L., Ferguson, D. E.
"SOURCES OF ERROR IN THE USE OF FISH-BRAIN ACETYLCHOLINESTERASE ACTIVITY AS A MONITOR FOR POLLUTION", Bulletin of Environmental Contamination and Toxicology, Vol. 4, No. 1, 1969, pp 17-23. AMIC-3783.

Gibson, J. R., Ludke, J. L.
"EFFECT OF SESAMEX ON BRAIN ACETYLCHOLINESTERASE INHIBITION BY PARATHION IN FISHES", Bulletin of Environmental Contamination and Toxicology, Vol. 6, No. 2, 1971, pp 97-99. AMIC-3799.

Grant, B. F., Mehrle, P. M.
"CHRONIC ENDRIN POISONING IN GOLDFISH, CARASSIUS AURATUS", Journal of the Fisheries Research Board of Canada, Vol. 27, No. 12, 1970, pp 2225-2232. AMIC-3826.

Grosch, D. S.
"POISONING WITH DDT: SECOND- AND THIRD-YEAR REPRODUCTIVE PERFORMANCE OF ARTEMIA", Pollution - Foundations for Today, Vol. 2, 1971, pp 84-85. AMIC-2090.

Guthrie, J. E., Acres, O. E.
"TOXICITY TO FISH OF TWO ORGANIC REACTOR COOLANTS", Bulletin of Environmental Contamination and Toxicology, Vol. 5, No. 2, March/April 1970, pp 145-151. AMIC-721.

Hanes, D., Krueger, H., Pilcher, K. S.
"PENTACHLOROPHENOL AND CULTURES OF EMBRYONIC CELLS FROM ONCORHYNCHUS KISUTCH", Proceedings of the Western Pharmacological Society, Vol. 13, 1970, pp 62-68. AMIC-5753.

Hansen, D.J., Parrish, P.R., Lowe, J.I., Wilson, A.J., Jr., Wilson, P.D.
"CHRONIC TOXICITY, UPTAKE, AND RETENTION OF AROCLOR 1254 IN TWO ESTUARINE FISHES", Bulletin of Environmental Contamination and Toxicology, Vol. 6, No. 2, March/April 1971, pp 113-119. AMIC-1811.

Hatfield, C. T.
"EFFECTS OF DDT LARVICIDING ON AQUATIC FAUNA OF BOBBY'S BROOK, LABRADOR", Canadian Fish Culturist, Vol. 40, 1969, pp 61-72. AMIC-5770.

Haven, D. S.
"LEVELS OF THE HERBICIDE DIQUAT IN TWO ESTUARINE MOLLUSCS AND IN THE WATER AND MUD", Journal of Science, Vol. 20, 1969, pp 51-53. AMIC-5978.

Hazel, C. R., Meith, S. J.
"BIOASSAY OF KING SALMON EGGS AND SAC FRY IN COPPER SOLUTIONS", California Fish and Game, Vol. 56, No. 2, 1970, pp 121-124. AMIC-5572.

Henderson, C., Inglis, A., Johnson, W. L.
"RESIDUES IN FISH, WILDLIFE, AND ESTUARIES. ORGANOCHLORINE INSECTICIDE RESIDUES IN FISH - FALL 1969 NATIONAL PESTICIDE MONITORING PROGRAM", Pesticides Monitoring Journal, Vol. 5, No. 1, June 1971, pp 1-11. AMIC-1407.

Hiltibran, R. C.
"A PROPOSED BIOCHEMICAL MECHANISM OF THE TOXIC ACTION OF DDT", Transactions of the Illinois Academy of Science, Vol. 64, No. 1, 1971, pp 46-54. AMIC-5975.

Hogan, R. L., Roeloes, E. W.
"CONCENTRATIONS OF DIELDRIN IN THE BLOOD AND BRAIN OF THE GREEN SUNFISH, LEPOMIS CYANELLUS, AT DEATH", Journal of the Fisheries Research Board of Canada, Vol. 28, No. 4, 1971, pp 610-612. AMIC-3824.

Holland, H. T., Coppage, D. L.
"SENSITIVITY TO PESTICIDES IN THREE GENERATIONS OF SHEEPSHEAD MINNOWS", Bulletin of Environmental Contamination and Toxicology, Vol. 5, No. 4, July/August 1970, pp 362-367. AMIC-726.

Houston, A. H., Madden, J. A., Woods, R. J., Miles, H. M.
"VARIATIONS IN THE BLOOD AND TISSUE CHEMISTRY OF BROOK TROUT, SALVELINUS FONTINALIS, SUBSEQUENT TO HANDLING, ANESTHESIA, AND SURGERY", Journal of the Fisheries Research Board of Canada, Vol. 28, No. 5, 1971, pp 635-642. AMIC-3822.

Houston, A. H., Madden, J. A., Woods, R. J., Miles, H. M.
"SOME PHYSIOLOGICAL EFFECTS OF HANDLING AND TRICAINE METHANE-SULPHONATE ANESTHETIZATION UPON THE BROOK TROUT, SALVELINUS FONTINALIS", Journal of the Fisheries Research Board of Canada, Vol. 28, No. 5, May 1971, pp 625-633. AMIC-3823.

Howland, R. M.
"INTERACTION OF ANTIMYCIN A AND ROTENONE IN FISH BIOASSAYS", The Progressive Fish-Culturist, Vol. 31, January 1969, pp 33-34. AMIC-5725.

Hubschman, J. H.
"EFFECTS OF COPPER ON THE CRAYFISH ORCONECTES RUSTICUS (GIRARD) I. ACUTE TOXICITY", Crustaceana, Vol. 12, 1967, pp 33-42. AMIC-5985.

Huner, J. V., Dowden, B. F., Bennett, H. J.
"THE EFFECTS OF ENDRIN ON THE OXYGEN CONSUMPTION OF THE BLUEGILL SUNFISH LEPOMIS MACROCHIRUS", Louisiana Academy of Sciences, Vol. 30, 1967, pp 80-86. AMIC-5981.

Jackson, D. A., Anderson, J. M., Gardner, D. R.
"FURTHER INVESTIGATIONS OF THE EFFECT OF DDT ON LEARNING IN FISH", Canadian Journal of Zoology, Vol. 48, 1970, pp 577-580. AMIC-3837.

Johnson, B. T., Saunders, C. R., Sanders, H. O.
"BIOLOGICAL MAGNIFICATION AND DEGRADATION OF DDT AND ALDRIN BY FRESHWATER INVERTEBRATES", Journal of the Fisheries Research Board of Canada, Vol. 28, No. 5, 1971, pp 705-709. AMIC-3820.

Kawatski, J. A., Schmulbach, J. C.
"ACCUMULATION OF INSECTICIDE IN FRESHWATER OSTRACODS EXPOSED CONTINUOUSLY TO SUBLETHAL CONCENTRATIONS OF ALDRIN OR DIELDRIN", Transactions of the American Fisheries Society, Vol. 100, No. 3, 1971, pp 565-567. AMIC-5506.

Kihlstrom, J. E., Lundberg, C., Hulth, L.
"NUMBER OF EGGS AND YOUNG PRODUCED BY ZEBRAFISHES (BRACHYDANIO RERIO, HAM.-BUCH.) SPAWNING IN WATER CONTAINING SMALL AMOUNTS OF PHENYLMERCURIC ACETATE", Environmental Research, Vol. 4, No. 4, October 1971, pp 355-359. AMIC-2707.

Konar, S. K.
"TOXICITY OF HEPTACHLOR TO AQUATIC LIFE", Journal Water Pollution Control Federation, Vol. 42, No. 8, Part 2, August 1970, pp R299-R303. AMIC-448.

Konar, S. K.
"EFFECTS OF HEPTACHLOR AND NICOTINE ON THE BARBELS OF A CATFISH (HETEROPNEUSTES FOSSILIS)", The Progressive Fish-Culturist, Vol. 31, 1969, pp 62-63. AMIC-5726.

Konar, S. K.
"NICOTINE AS A FISH POISON", The Progressive Fish-Culturist, Vol. 32, April 1970, pp 103-104. AMIC-5435.

Konar, S. K.
"LABORATORY STUDIES ON TWO ORGANOPHOSPHORUS INSECTICIDES, DDVP AND PHOSPHAMIDON, AS SELECTIVE TOXICANTS", Transactions of the American Fisheries Society, Vol. 98, No. 3, 1969, pp 430-437. AMIC-5453.

Konar, S. K.
"LETHAL EFFECTS OF THE INSECTICIDE DDVP ON THE EGGS AND HATCHLINGS OF THE SNAKE-HEAD, CHANNA PUNCTATUS (Bl) (OPHIOCEPHALIFORMES: OPHIOCEPHALIDAE)", Japanese Journal of Ichthyology, Vol. 15, No. 3, February 15, 1969, pp 130-133. AMIC-6388.

Lane, C. E., Scura, E. D.
"EFFECTS OF DIELDRIN ON GLUTAMIC OXALOACETIC TRANSAMINASE IN POECILIA LATIPINNA", Journal of the Fisheries Research Board of Canada, Vol. 27, No. 10, October 1970, pp 1869-1871. AMIC-1283.

LaRoche, G., Eisler, R., Tarzwell, C. M.
"BIOASSAY PROCEDURES FOR OIL AND OIL DISPERSANT TOXICITY EVALUATION", Journal Water Pollution Control Federation, Vol. 42, No. 11, November 1970, pp 1982-1989. AMIC-445.

Lincer, J. L., Solon, J. M., Nair, J. H., III
"DDT AND ENDRIN FISH TOXICITY UNDER STATIC VERSUS DYNAMIC BIOASSAY CONDITIONS", Transactions of the American Fisheries Society, Vol. 99, No. 1, 1970, pp 13-19. AMIC-5509.

Linn, J. D., Stanley, R. L.
"TDE RESIDUES IN CLEAR LAKE ANIMALS", California Fish and Game, Vol. 55, No. 3, 1969, pp 164-178. AMIC-5521.

Lloyd, R., White, W. R.
"EFFECT OF HIGH CONCENTRATION OF CARBON DIOXIDE ON THE IONIC COMPOSITION OF RAINBOW TROUT BLOOD", Nature, Vol. 216, December 30, 1967, pp 1341-1342. AMIC-3721.

Loeb, H. A., Starkey, R. J.
"SURVIVAL OF BURIED BULLHEADS SUBJECTED TO 4'-IODO-3-NITROSALICYLANILIDE", New York Fish and Game Journal, Vol. 13, No. 2, July 1966, pp 196-205. AMIC-6199.

Lucas, H. F., Jr., Edgington, D. N.
"CONCENTRATIONS OF TRACE ELEMENTS IN GREAT LAKES FISHES", Journal of the Fisheries Research Board of Canada, Vol. 27, No. 4, 1970, pp 677-684. AMIC-3778.

Lyman, L. D., Tompkins, W. A., McCann, J. A.
"RESIDUES IN FISH, WILDLIFE, AND ESTUARIES", Pesticides Monitoring Journal, Vol. 2, No. 3, December 1968, pp 109-122. AMIC-3839.

Macek, K. J.
"REPRODUCTION IN BROOK TROUT (SALVELINUS FONTINALIS) FED SUBLETHAL CONCENTRATIONS OF DDT", Journal of the Fisheries Research Board of Canada, Vol. 25, No. 9, 1968, pp 1787-1796. AMIC-3716.

Macek, K. J., Korn, S.
"SIGNIFICANCE OF THE FOOD CHAIN IN DDT ACCUMULATION BY FISH", Journal of the Fisheries Research Board of Canada, Vol. 27, No. 8, August 1970, pp 1496-1498. AMIC-844.

Macek, K. J., McAllister, W. A.
"INSECTICIDE SUSCEPTIBILITY OF SOME COMMON FISH FAMILY REPRESENTATIVES", Transactions of the American Fisheries Society, No. 1, 1970, pp 20-27. AMIC-5510.

MacPhee, C., Ruelle, R.
"A CHEMICAL SELECTIVELY LETHAL TO SQUAWFISH (PTYCHOCHEILUS OREGONENSIS AND P. UMPQUAE)", Transactions of the American Fisheries Society, Vol. 98, 1969, pp 676-684. AMIC-5450.

Manion, P. J.
"EVALUATION OF LAMPREY LARVICIDES IN THE BIG GARLIC RIVER AND SAUX HEAD LAKE", Journal of the Fisheries Research Board of Canada, Vol. 26, No. 11, 1969, pp 3077-3082. AMIC-3761.

Mann, H.
"BIOLOGICAL EFFECTS OF FATTY ALCOHOLS ON FRESHWATER ANIMALS", Internationale Revue der Gesamten Hydrobiologie, Vol. 56, No. 4, 1971, pp 599-607, AMIC-3079.

Marking, L. L.
"TOXICITY OF METHYLPENTYNOL TO SELECTED FISHES", U. S. Bureau of Sport Fisheries and Wildlife, Fish Control Laboratory, La Crosse, Wisconsin, Investigations in Fish Control No. 30, February 1969, 7 pp. AMIC-5477.

Marking, L. L.
"JUGLONE (5-HYDROXY-1,4-NAPHTHOQUINONE) AS A FISH TOXICANT", Transactions of the American Fisheries Society, Vol. 99, No. 3, 1970, pp 510-514. AMIC-5517.

Marking, L. L.
"TOXICITY OF RHODAMINE B AND FLUORESCEIN SODIUM TO FISH AND THEIR COMPATIBILITY WITH ANTIMYCIN A", The Progressive Fish-Culturist, Vol. 31, July 1969, pp 139-142. AMIC-5729.

Mathur, D. S.
"TOXICITY OF ALDRIN TO CERTAIN FISH", Science and Culture, Vol. 35, No. 8, August 1969, pp 418-419. AMIC-5422.

Mawdesley-Thomas, L. E.
"TOXIC CHEMICALS - THE RISK TO FISH", New Scientist, Vol. 49, No. 734, January 14, 1971, pp 74-75. AMIC-1056.

McIngvale, C. R., Ludke, L., Ferguson, D. E.
"OXYGEN CONSUMPTION OF ENDRIN-SUSCEPTIBLE AND ENDRIN-RESISTANT GAMBUSIA DURING SUBLETHAL AND ACUTE ENDRIN EXPOSURE", Journal of the Mississippi Academy of Science, Vol. 14, 1968, pp 116-121. AMIC-5475.

McKim, J. M., Christensen, G. M., Hunt, E. P.
"CHANGES IN THE BLOOD OF BROOK TROUT (SALVELINUS FONTINALIS) AFTER SHORT-TERM AND LONG-TERM EXPOSURE TO COPPER", Journal of the Fisheries Research Board of Canada, Vol. 27, No. 10, 1970, pp 1883-1889. AMIC-3828.

McKim, J. M., Benoit, D. A.
"EFFECTS OF LONG-TERM EXPOSURES TO COPPER ON SURVIVAL, GROWTH, AND REPRODUCTION OF BROOK TROUT (SALVELINUS FONTINALIS)", Journal of the Fisheries Research Board of Canada, Vol. 28, No. 5, 1971, pp 655-662. AMIC-3821.

McKone, C. E., Young, R. G., Bache, C. A., Lisk, D. J.
"RAPID UPTAKE OF MERCURIC ION BY GOLDFISH", Analytical Chemistry, Vol. 5, No. 11, November 1971, pp 1138-1139. AMIC-1492.

McReynolds, H. E.
"PRACTICALITY OF ENDRIN AS A FISH TOXICANT", Indiana Academy of Science Proceedings, Vol. 79, 1969, pp 148-161. AMIC-108.

Metcalf, R. L., Sangha, G. K., Kapoor, I. P.
"MODEL ECOSYSTEM FOR THE EVALUATION OF PESTICIDE BIODEGRADABILITY AND ECOLOGICAL MAGNIFICATION", Environmental Science and Technology, Vol. 5, No. 8, August 1971, pp 709-713. AMIC-1495.

Minchew, C. D., Ferguson, D. E.
"TOXICITIES OF SIX INSECTICIDES TO RESISTANT AND SUSCEPTIBLE GREEN SUNFISH AND GOLDEN SHINERS IN STATIC BIOASSAYS", Journal of the Mississippi Academy of Science, Vol. 15, 1970, pp 29-32. AMIC-5471.

Mitchum, D. L., Moore, T. D.
"EFFICACY OF DI-N-BUTYL-TIN OXIDE ON AN INTESTINAL FLUKE, CREPIDOSTOMUM FARIONIS, IN GOLDEN TROUT", The Progressive Fish-Culturist, Vol. 31, July 1969, pp 143-148. AMIC-5730.

Morris, R. L., Johnson, L. G.
"DIELDRIN LEVELS IN FISH FROM IOWA STREAMS", Pesticides Monitoring Journal, Vol. 5, No. 1, June 1971, pp 12-16. AMIC-1452.

Moubry, R. J., Helm, J. M., Myrdal, G. R.
"CHLORINATED PESTICIDE RESIDUES IN AN AQUATIC ENVIRONMENT LOCATED ADJACENT TO A COMMERCIAL ORCHARD", Pesticides Monitoring Journal, Vol. 1, No. 4, March 1968, pp 27-29. AMIC-3753.

Mount, D. I., Boyle, H. W.
"PARATHION - USE OF BLOOD CONCENTRATION TO DIAGNOSE MORTALITY OF FISH", Environmental Science and Technology, Vol. 3, No. 11, November 1969, pp 1183-1185. AMIC-11.

Mount, D. I., Stephan, C. E.
"CHRONIC TOXICITY OF COPPER TO THE FATHEAD MINNOW (PIMEPHALES PROMELAS) IN SOFT WATER", Journal of the Fisheries Research Board of Canada, Vol. 26, No. 9, 1969, pp 2449-2457. AMIC-3765.

Munson, T. O.
"CHLORINATED HYDROCARBON RESIDUES IN MARINE ANIMALS OF SOUTHERN CALIFORNIA", Bulletin of Environmental Contamination and Toxicology, Vol. 7, No. 4, April 1972, pp 223-228. AMIC-3096.

Murphy, P. G.
"THE EFFECT OF SIZE ON THE UPTAKE OF DDT FROM WATER BY FISH", Bulletin of Environmental Contamination and Toxicology, Vol. 6, No. 1, January/February 1971, pp 20-23. AMIC-1805.

Murphy, P. G., Murphy, J. V.
"CORRELATIONS BETWEEN RESPIRATION AND DIRECT UPTAKE OF DDT IN THE MOSQUITO FISH GAMBUSIA AFFINIS", Bulletin of Environmental Contamination and Toxicology, Vol. 6, No. 6, November/December 1971, pp 581-588. AMIC-1470.

Naqvi, S. M., Ferguson, D. E.
"LEVELS OF INSECTICIDE RESISTANCE IN FRESH-WATER SHRIMP, PALAEMONETES KADIAKENSIS", Transactions of the American Fisheries Society, No. 4, 1970, pp 696-699. AMIC-5519.

Naqvi, S. M., Ferguson, D. E.
"PESTICIDE TOLERANCES OF SELECTED FRESHWATER INVERTEBRATES", Journal of the Mississippi Academy of Science, Vol. 14, 1969, pp 121-127. AMIC-5979.

Nimmo, D. R., Blackman, R. R., Wilson, A. J., Forester, J.
"TOXICITY AND DISTRIBUTION OF AROCLOR 1254 IN THE PINK SHRIMP PENAEUS DUORARUM", Marine Biology, Vol. 11, No. 3, November 1971, pp 191-197. AMIC-2645.

Nunogawa, J. H., Burbank, N. C., Jr., Young, R. H. F., Lau, L. S.
"RELATIVE TOXICITIES OF SELECTED CHEMICALS TO SEVERAL SPECIES OF TROPICAL FISH", University of Hawaii, Water Resources Research Center, Honolulu, Hawaii, Technical Report No. 40, August 1970, 38 pp, PB-196-312. AMIC-6567.

Otto, N. E.
"ALGAECIDAL EVALUATION AND ENVIRONMENTAL STUDY OF MAT PRODUCTING BLUE-GREEN ALGAE", Bureau of Reclamation, Office of Chief Engineer, Denver, Colorado, Report No. REC-OCE-70-25, July 1970, 31 pp, PB-194 808. AMIC-892.

O'Hara, J.
"ALTERATIONS IN OXYGEN CONSUMPTION BY BLUEGILLS EXPOSED TO SUBLETHAL TREATMENT WITH COPPER", Water Research, Vol. 5, 1971, pp 321-327. AMIC-3793.

Pal, R. N., Gopalakrishnan, V.
"PRELIMINARY TRIALS ON THE TOXICITY OF 'ALGISTAT' TO FISH AND ALGAE", Fishery Technology, Vol. 5, No. 2, July 1968, pp 101-103. AMIC-5754.

Patrick, R., Cairns, J., Jr., Scheier, A.
"THE RELATIVE SENSITIVITY OF DIATOMS, SNAILS, AND FISH TO TWENTY COMMON CONSTITUENTS OF INDUSTRIAL WASTES", The Progressive Fish-Culturist, Vol. 30, January 1968, pp 137-140. AMIC-5720.

Pickering, Q. H., Thatcher, T. O.
"THE CHRONIC TOXICITY OF LINEAR ALKYLATE SULFONATE (LAS) TO PIMEPHALES PROMELAS, RAFINESQUE", Journal Water Pollution Control Federation, Vol. 42, No. 2, Part 1, February 1970, pp 243-254. AMIC-65.

Portmann, J. E., Wilson, K. W.
"THE TOXICITY OF 140 SUBSTANCES TO THE BROWN SHRIMP AND OTHER MARINE ANIMALS", Ministry of Agriculture, Fisheries and Food, Fisheries Laboratory, Burnham-on-Crouch, Essex, England, Shellfish Information Leaflet No. 22, December 1971, 12 pp. AMIC-7701.

Post, G., Schroeder, T. R.
"THE TOXICITY OF FOUR INSECTICIDES TO FOUR SALMONID SPECIES", Bulletin of Environmental Contamination and Toxicology, Vol. 6, No. 2, March/April 1971, pp 144-155. AMIC-1812.

Rabe, F. W., Wissmar, R. C.
"SOME EFFECTS OF ANTIMYCIN IN AN OLIGOTROPHIC LAKE", The Progressive Fish-Culturist, Vol. 31, July 1969, p 163. AMIC-5732.

Rachlin, J. W., Perlmutter, A.
"RESPONSE OF AN INBRED STRAIN OF PLATYFISH AND THE FATHEAD MINNOW TO ZINC", The Progressive Fish-Culturist, Vol. 30, October 1968, pp 103-207. AMIC-5722.

Rachlin, J. W., Perlmutter, A.
"RESPONSE OF RAINBOW TROUT CELLS IN CULTURE TO SELECTED CONCENTRATIONS OF ZINC SULFATE", The Progressive Fish-Culturist, Vol. 31, April 1969, pp 94-98. AMIC-5728.

Ragab, M. T. H.
"GAS CHOMATOGRAPHIC ANALYSIS OF MALATHION IN WATER AND IN FISH", Bulletin of Environmental Contamination and Toxicology, Vol. 3, No. 3, 1968, pp 155-163. AMIC-3728.

Raynes, A. E., Ryback, R. S.
"EFFECT OF ALCOHOL AND CONGENERS ON AGGRESSIVE RESPONSE IN BETTA SPLENDENS", Boston City Hospital, Alcohol Study Unit, Boston, Massachusetts. AMIC-5712.

Ray, J., Stevens, V.
"USING BAYTEX TO CONTROL CRAYFISH IN PONDS", The Progressive Fish-Culturist, Vol. 32, January 1970, pp 58-60. AMIC-5433.

Reinert, R. E.
"PESTICIDE CONCENTRATIONS IN GREAT LAKES", Pesticides Monitoring Journal, Vol. 3, No. 4, March 1970, pp 233-240. AMIC-196.

Risebrough, R. W., Rieche, P., Peakall, D. B., Herman, S. G., Kirven, M. N.
"POLYCHLORINATED BIPHENYLS IN THE GLOBAL ECOSYSTEM", Nature, Vol. 220, December 14, 1968, pp 1098-1102. AMIC-3844.

Rucker, R. R., Amend, D. F.
"ABSORPTION AND RETENTION OF ORGANIC MERCURIALS BY RAINBOW TROUT AND CHINOOK AND SOCKEYE SALMON", The Progressive Fish-Culturist, Vol. 31, October 1969, pp 197-201. AMIC-5733.

Sanders, H. O.
"TOXICITIES OF SOME HERBICIDES TO SIX SPECIES OF FRESHWATER CRUSTACEANS", Journal Water Pollution Control Federation, Vol. 42, No. 8, Part 1, August 1970, pp 1544-1550. AMIC-453.

Savitz, J.
"EFFECT OF M.S. 222 ON NITROGEN EXCRETION OF THE BLUEGILL (LEPOMIS MACROCHIRUS)", Journal of the Elisha Mitchell Scientific Society, Vol. 85, No. 4, 1969, pp 150-151. AMIC-5838.

Shaw, T. L., Brown, V. M.
"HEAVY METALS AND THE FERTILIZATION OF RAINBOW TROUT EGGS", Nature, Vol. 230, No. 5291, March 26, 1971, p 251. AMIC-1444.

Smith, J. W., Grigoropoulos, S. G.
"TOXIC EFFECTS OF TRACE ORGANICS ON FISH", Journal American Water Works Association, Vol. 62, No. 8, August 1970, pp 499-506. AMIC-993.

Solon, J. M., Lincer, J. L., Nair, J. H., III
"THE EFFECT OF SUBLETHAL CONCENTRATION OF LAS ON THE ACUTE TOXICITY OF VARIOUS INSECTICIDES TO THE FATHEAD MINNOW (PIMEPHALES PROMELAS RAFINESQUE)", Water Research, Vol. 3, 1969, pp 767-775. AMIC-3785.

Sonstelie, L. C.
"THE EFFECTS OF DDT ON THE INSECT POPULATION OF TROUT CREEK", University of Utah, Salt Lake City, Utah, Dissertation Abstracts No. 70-3796, 1969, 136 pp. AMIC-964.

Sparks, R. E., Cairns, J., Jr., Cross, F. B.
"SOME EFFECTS OF A NEUTRAL MIXTURE OF CALCIUM OXIDE AND SULFURIC ACID ON CHANNEL CATFISH ICTALURUS PUNCTATUS (RAFINESQUE)", Transactions of the Kansas Academy of Science, Vol. 72, No. 1, Spring 1969, pp 1-15. AMIC-5902.

Sprague, J. B.
"AVOIDANCE REACTIONS OF RAINBOW TROUT TO ZINC SULPHATE SOLUTIONS", Water Research, Vol. 2, 1968, pp 367-372. AMIC-3760.

Stapleton, R. P.
"TRACE ELEMENTS IN TISSUES OF THE CALICO BASS PARALABRAX CLATHRATUS (GIRARD)", Bulletin of the Southern California Academy of Sciences, Vol. 67, No. 1, 1968, pp 49-58. AMIC-5980.

Stock, J. N., Cope, O. B.
"SOME EFFECTS OF TEPA, AN INSECT CHEMOSTERILANT, ON THE GUPPY, POECILIA RETICULATA", Transactions of the American Fisheries Society, Vol. 98, 1969, pp 280-287. AMIC-5457.

Stout, V. F.
"PESTICIDE LEVELS IN FISH OF THE NORTHEAST PACIFIC", Bulletin of Environmental Contamination and Toxicology, Vol. 3, No. 4, 1968, pp 240-246. AMIC-3784.

Tracy, H. B., Lee, R. A., Woelke, C. E., Sanborn, G.
"RELATIVE TOXICITIES AND DISPERSING-EVALUATIONS OF ELEVEN OIL-DISPERSING PRODUCTS", Journal Water Pollution Control Federation, Vol. 41, No. 12, December 1969, pp 2062-2069. AMIC-3834.

Uthe, J. F., Bligh, E. G.
"PRELIMINARY SURVEY OF HEAVY METAL CONTAMINATION OF CANADIAN FRESHWATER FISH", Journal of the Fisheries Research Board of Canada, Vol. 28, No. 5, 1971, pp 786-788. AMIC-3819.

Vaala, S. S., Mitchell, R. B., Anthony, A.
"CYTOPHOTOMETRIC STUDIES OF DNA IN CIRCULATING ERYTHROCYTES OF BROOK TROUT EXPOSED TO ACID pH", Proceedings of the Pennsylvania Academy of Science, Vol. 43, 1969, pp 191-194. AMIC-5709.

Warnick, S. L., Bell, H. L.
"THE ACUTE TOXICITY OF SOME HEAVY METALS TO DIFFERENT SPECIES OF AQUATIC INSECTS", Journal Water Pollution Control Federation, Vol. 41, No. 2, Part 1, February 1969, pp 280-284. AMIC-3767.

Wedemeyer, G.
"THE STRESS OF FORMALIN TREATMENTS IN RAINBOW TROUT (SALMO GAIRDNERI) AND COHO SALMON (ONCORHYNCHUS KISUTCH)", Journal of the Fisheries Research Board of Canada, Vol. 28, No. 12, December 1971, pp 1899-1904. AMIC-3287.

Wedemeyer, G., Ross, A. J., Smith, L.
"SOME METABOLIC EFFECTS OF BACTERIAL ENDOTOXINS IN SALMONID FISHES", Journal of the Fisheries Research Board of Canada, Vol. 26, No. 1, 1969, pp 115-122. AMIC-3774.

Weir, P. A., Hine, C. H.
"EFFECTS OF VARIOUS METALS ON BEHAVIOR OF CONDITIONED GOLDFISH", Archives of Environmental Health, Vol. 20, January 1970, pp 45-51. AMIC-739.

Wellborn, T. L., Jr.
"TOXICITY OF SOME COMPOUNDS TO STRIPED BASS FINGERLINGS", The Progressive Fish-Culturist, Vol. 33, No. 1, January 1971, pp 32-36. AMIC-5571.

Wellborn, T. L., Jr.
"THE TOXICITY OF NINE THERAPEUTIC AND HERBICIDAL COMPOUNDS TO STRIPED BASS", The Progressive Fish-Culturist, Vol. 31, January 1969, pp 27-32. AMIC-5723.

Wildish, D. J.
"THE TOXITY OF POLYCHLORINATED BIPHENYLS (PCB) IN SEA WATER TO GAMMARUS OCEANICUS", Bulletin of Environmental Contamination and Toxicology, Vol. 5, No. 3, 1970, pp 202-204. AMIC-69.

Wilson, D. C., Bond, C. E.
"THE EFFECTS OF THE HERBICIDES DIQUAT AND DICHLOBENIL (CASORON) ON POND INVERTEBRATES. PART I. ACUTE TOXICITY", Transactions of the American Fisheries Society, Vol. 98, 1969, pp 438-443. AMIC-5452.

Wisely, B., Blick, R. A. P.
"MORTALITY OF MARINE INVERTEBRATE LARVAE IN MERCURY, COPPER, AND ZINC SOLUTIONS", Australian Journal of Marine and Freshwater Research, Vol. 18, 1967, pp 63-72. AMIC-5708.

Woodhead, P. M. J.
"AN EFFECT OF THYROXINE UPON THE SWIMMING OF COD", Journal of the Fisheries Research Board of Canada, Vol. 27, No. 12, 1970, pp 2337-2338. AMIC-3825.

Worthley, E. G., Schott, C. D.
"THE COMPARATIVE EFFECTS OF CS AND VARIOUS POLLUTANTS ON FRESH WATER PHYTOPLANKTON COLONIES OF WOLFFIA PAPULIFERA THOMPSON", U.S. Department of the Army, Biomedical Laboratory, Edgewood Arsenal, Maryland, Technical Report EATR 4595, December 1971, p 12. AMIC-3233.

Young, R. G., St. John, L., Lisk, D. J.
"DEGRADATION OF DDT BY GOLDFISH", Bulletin of Environmental Contamination and Toxicology, Vol. 6, No. 4, 1971, pp 351-354. AMIC-3796.

Zillich, J., Wuerthele, M.
"THE TOXIC EFFECTS OF THE LANSING WASTEWATER TREATMENT PLANT EFFLUENT TO THE FATHEAD MINNOW, PIMEPHALES PROMELAS", Michigan Department of Natural Resources, Water Resources Commission, Lansing, Michigan, paper, January 19-20, 1970, 4 pp. AMIC-2899.

Zillich, J., Wuerthele, M.
"THE TOXIC EFFECTS OF THE GRANDVILLE WASTEWATER TREATMENT PLANT EFFLUENT TO THE FATHEAD MINNOW, PIMEPHALES PROMELAS", Michigan Department of Natural Resources, Water Resources Commission, Lansing, Michigan, Report, November 17-21, 1969, 10 pp. AMIC-2898.

Zillich, J.
"THE TOXICITY OF THE WYOMING WASTEWATER TREATMENT PLANT EFFLUENT TO THE FATHEAD MINNOW AND THE WHITE SUCKER - JULY 28 - AUGUST 1, 1969", Michigan Department of Natural Resources, Water Resources Commission, Lansing, Michigan, Paper, 1969, 7 pp. AMIC-2906.

Zillich, J.
"A BIOLOGICAL EVALUATION OF SIX CHEMICALS USED TO DISPERSE OIL SPILLS", Michigan Department of Natural Resources, Water Resources Commission, Lansing, Michigan, Paper, April 1969, 12 pp. AMIC-2909.

Zitko, V., Aiken, D. E., Tibbo, S. N., Besch, K. W. T., Anderson, J. M.
"TOXICITY OF YELLOW PHOSPHORUS TO HERRING (CLUPEA HARENGUS), ATLANTIC SALMON (SALMO SALAR), LOBSTER (HOMARUS AMERICANUS), AND BEACH FLEA (GAMMARUS OCEANICUS)", Journal of the Fisheries Research Board of Canada, Vol. 27, No. 1, 1970, pp 21-29. AMIC-3817.

Zitko, V.
"POLYCHLORINATED BIPHENYLS (PCB) SOLUBILIZED IN WATER BY NONIONIC SURFACTANTS FOR STUDIES OF TOXICITY TO AQUATIC ANIMALS", Bulletin of Environmental Contamination and Toxicology, Vol. 5, No. 3, 1970, pp 279-285. AMIC-23.

Zitko, V.
"POLYCHLORINATED BIPHENYLS AND ORGANOCHLORINE PESTICIDES IN SOME FRESHWATER AND MARINE FISHES", Bulletin of Environmental Contamination and Toxicology, Vol. 6, No. 5, 1971, pp 464-470. AMIC-3715.

SECTION VI

APPENDICES

Abbreviations for Appendix A

Note: Names of chemicals and organisms are as given by the various authors. Readers should search for alternate, common, and/or scientific names of both chemical and aquatic species.

(1) Letters represent:
- B = bioassay, used in combination with S = static, CF = continuous flow, A = acute, and CH = chronic.
- L = laboratory bioassay.
- BOD = biochemical oxygen demand.
- F = field study, used in combination with R = river, stream, creek, etc., L = pond, M - marine, E = estuarine, and O = other (port facility, flooded area, etc.).

(2) Field location is indicated by abbreviation of the state or county.

(3) The number indicates ppm (mg/l), unless otherwise indicated by appropriate designations. The letters within parentheses following indicate T = TL_m, K = kill, SB = sublethal effects, NTE = no toxic effect. The number following these indicates the time in days (unless otherwise noted) at which observations were made. EC_{50}, LC_{50}, and similar designations for 50 percent lethality were all considered as TL_m and designated as such. The numbers within parentheses following these designations indicate the time in days when the effect was observed.

(4) The following indicate (when followed by an asterisk the variable was controlled):
- a = water temperature
- b = ambient air temperature
- c = pH
- d = alkalinity (total, phenolphthalein or caustic)
- e = dissolved oxygen
- f = hardness (total, carbonate, Mg, or CaO)
- g = turbidity
- h = oxidation-reduction potential
- i = chloride as Cl
- j = BOD, 5 day; (J) = BOD, short-term
- k = COD
- l = nitrogen (as NO_2 or NO_3)
- m = ammonia nitrogen as NH_3
- n = phosphate (total, ortho-, or poly)
- o = solids (total, fixed, volatile, or suspended)
- p = CO_2
- q = light
- r = flow rate
- s = sound

(5) Other miscellaneous abbreviations are:
- SM = sterilized media
- SSM = synthetic seawater medium
- NSW = natural seawater
- MSC = maximum safe concentration

The AMIC-xxxx number following each reference is the accession number which was assigned by the Analytical Methodology Information Center to facilitate location of original documents.

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
ABS	Brachydanio rerio	BSA	--	32 (SB4)	a,e, and synthetic dilution water	Feeding behavior was affected by zinc, chromium, and ABS in that more time was required for consuming measured amounts of food. Feeding response was also affected by aeration, feeding schedule, light intensity, and outside disturbances. The authors note that much more work is needed to establish the reliability of this procedure.	Cairns, et al (1967), AMIC-5707
ABS	Lepomis macrochirus	BSA, L	--	17.4 (T4)	a*,e, and synthetic dilution water	This study was conducted to determine the relative toxicities of 20 common constituents of industrial wastes to a fish, an alga, and an invertebrate. The experiments were conducted over a 10-year period for varied purposes. The authors recommend bioassays with at least three components of the food web.	Patrick, et al (1968), AMIC-5720
ABS	Nitzschia linearis	BSA, L	--	10 (T5)	a*,e, and synthetic dilution water	same as above	Patrick, et al (1968), AMIC-5720
ABS	Physa heterostropha	BSA, L	--	34.2 (T4)	a*,e, and synthetic dilution water	same as above	Patrick, et al (1968), AMIC-5720
Acetaldehyde	Lepomis macrochirus	BSA, L	--	53 (T4)	a*,e, and synthetic dilution water	This study was conducted to determine the relative toxicities of 20 common constituents of industrial wastes to a fish, an alga, and an invertebrate. The experiments were conducted over a 10-year period for varied purposes. The authors recommend bioassays with at least three components of the food web.	Patrick, et al (1968), AMIC-5720
Acetaldehyde	Nitzschia linearis	BSA, L	--	236.6 (T5)	a*,e, and synthetic dilution water	same as above	Patrick, et al (1968), AMIC-5720
Acetaldehyde	Crangon crangon	BSA	--	greater than 100 (T2)	a*(continuous, aeration, sea-	same as above	Portmann, et al(1971), AMIC-7701

					water, and daily solution renewal)		
Acetic acid	Lepomis macrochirus	BSA, L	--	75 (T4)	a*,e, and synthetic dilution water	This study was conducted to determine the relative toxicities of 20 common constituents of industrial wastes to a fish, an alga, and an invertebrate. The experiments were conducted over a 10-year period for varied purposes. The authors recommend bioassays with at least three components of the food web.	Patrick, et al (1968), AMIC-5720
Acetic acid	Nitzschia linearis	BSA, L	--	74 (T5)	a*,e, and synthetic dilution water	same as above	Patrick, et al (1968), AMIC-5720
Acetic acid	Carcinus maenas	BSA	--	180 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701
Acetic acid	Crangon crangon	BSA	--	greater than 100 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Acetone	Rasbora heteromorpha	BCFA and BSA	--	4,000 (T2)	a*,c,e,f, hard(HW) or soft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was	Alabaster (1969), AMIC-5425

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
						found to be essential.	
Acetone	Lepomis macrochirus	BSA, L	--	8,300 (T4)	a*,e, and synthetic dilution water	This study was conducted to determine the relative toxicities of 20 common constituents of industrial wastes to a fish, an alga, and an invertebrate. The experiments were conducted over a 10-year period for varied purposes. The authors recommend bioassays with at least three components of the food web.	Patrick, et al (1968), AMIC-5720
Acetone	Nitzschia linearis	BSA, L	--	11,493 (T5)	a*,e, and synthetic dilution water	same as above	Patrick, et al (1968), AMIC-5720
Acetone	Mercenaria mercenaria (eggs)	L	--	greater than 100.0 (T2)	--	The effect of 52 pesticides on embryonic development of clams and oysters was reported. Synergistic effects with solvents were also reported. Most of the compounds affected development more than survival. Some, however, drastically reduced larval growth. The authors point out the necessity of evaluating the effects of pesticides on all life stages of an organism and note the possibility of selecting chemicals for pest control that would not have serious effect on shellfish.	Davis, et al(1969), AMIC-5990
Acetone	Mercenaria mercenaria (larvae)	L	--	greater than 100.0 (T12)	--	same as above	Davis, etal (1969), AMIC-5990
Acetone	Crassostrea virginica (eggs)	L	--	greater than 100.0 (T2)	--	same as above	Davis, et al(1969), AMIC-5990
Acetone	Phormidium ambiguum	L	--	0.5-10.0 (NTE)	--	Of 74 chemicals evaluated as algicides, only 9 were more toxic than $CuSO_4$. None inhibited growth of mat-forming algae for more than 2 weeks. $CuSO_4$ formulated with certain wetting agents was more toxic than $CuSO_4$ alone.	Otto (1970), AMIC-892

						Copper chloramine was also found to be more toxic than $CuSO_4$. No wetting agents were found to be inhibitory at the concentrations investigated (0.05 and 0.005 ppm). Also reported are factors affecting growth of algae in canals to determine whether there were leads to controlling algae by environmental management. No practical environmental means were found.	
Acriflavine (neutral)	Morone saxatilis (fingerlings)	BSA	--	16.4 (T4)	a,c,d,e,f, p	All compounds were investigated because of their probable usage in hatchery production of white bass. Compounds that can be used at recommended concentrations were Aquathol, Casaron, Lindane, and Terramycin concentrate. Those that should not be used were Acriflavine, Bayluscide, Malachite green oxalate, and Malathion.	Wellborn (1971), AMIC-5571
Acriflavine	Trachinotus carolinus (juvenile)	BSA	--	114-118 (T4)	a,c,e,f,i, and sulfate, sodium, calcium, potassium, magnesium, carbonate, bicarbonate, salinity	In this study of pompano salinity was controlled at 10, 20, and 30 ppt and investigated as a variable. Acriflavin, formalin, and potassium permanganate were slightly more toxic at the highest salinity, while copper sulfate was slightly less toxic. These compounds are used as prophylactic bacterial treatments. All appeared to be reasonably safe to use except possibly potassium permanganate.	Birdsong, et al (1971), AMIC-5570
Acrolein	Rasbora heteromorpha	BCFA and BSA	--	0.06 (T2)	a*,c,o,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425
Acrylonitrile	Crangon crangon	BSA	--	10-33 (T1)	a*(continuous aeration, seawater, and daily	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine	Portmann, et al (1971), AMIC-7701

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
					solution renewal)	organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	
Actusol	Steelhead trout (fingerlings)	BSA	--	24.0 (T4)	--	Evaluation of 11 oil dispersants resulted in a ranking for each and a recommendation for use according to the ranking. Ranking was based on toxicity and oil dispersal effectiveness. Corexit 7764 appeared to have the least toxicity with fair to good oil dispersion capability.	Tracy, et al(1969), AMIC-3834
Actusol	Coho salmon (fingerlings)	BSA in situ	Hood Canal, Hoodsport, Wash.	40.0 (K)	--	same as above	Tracey, et al (1969), AMIC-3834
Actusol	Pacific oyster (larvae)	BSA	--	20.0-40.0 (S)	--	same as above	Tracy, et al(1969), AMIC-3834
Aflatoxin B1	Brachydanio rerio (eggs)	--	--	1.0 (K)	a*	This fungal toxin was acutely toxic to Brachydanio rerio embryos and larvae, especially the latter. The authors suggest this response as an easily performed assay for aflatoxin.	Abedi,et al (1968), AMIC-3712
Agridip	Rasbora heteromorpha	BCFA and BSA	--	1.9 (T2)	a*,c,e,f, hard (HW)or soft (SW) synthetic dilution water, or seawater for some species	same as above	Alabaster, (1969),AMIC-5425
Aldrin (C-14 labelled)	Daphnia magna (adult)	BCF	--	2.4 (residue)	a*	Magnification of DDT and Aldrin tagged with C-14 occurred rapidly. Biological magnification factors of 2900 to 114,100 depending on the species were found for DDT, and 22,800 to 141,000 for Aldrin. Marked degradation of DDT as determined by analysis for DDT metabolites occurred. The authors conclude that aquatic invertebrates influence quality and quantity of insecticide residue passed via the fish	Johnson,et al (1971), AMIC-3820

						food chain.	
Aldrin (C-14 labelled)	Hexagenia bilineata (nymph)	BCF	--	0.7 (residue)	a*	same as above	Johnson, et al (1971), AMIC-3820
Aldrin (C-14 labelled)	Chironomus sp. (larva)	BCF	--	0.5 (residue)	a*	same as above	Johnson,et al (1971), AMIC-3820
Aldrin (C-14 labelled)	Daphnia magna (adult)	BCF	--	0.0001 (SB3)	a*	same as above	Johnson,et al (1971), AMIC-3820
Aldrin (C-14 labelled)	Hexagenia bilineata (nymph)	BCF	--	0.0001 (SB3)	a*	same as above	Johnson, et al (1971), AMIC-3820
Aldrin (C-14 labelled)	Chironomus sp. (larva)	BCF	--	0.0001(SB3)	a*	same as above	Johnson,et al (1971), AMIC-3820
Aldrin	Fish (not specified)	--	--	greater than 0.001-0.01 (K)	--	Approximate toxicities of numerous pesticides commonly used in Britain were summarized. An excellent brief, general discussion of toxicity testing is also present.	Mawdesley-Thomas (1971),AMIC-1056
Aldrin	Ictalurus punctatus	FRLO	Iowa	0.91 (accumulation, SB)	--	Edible flesh of fish collected from rivers, lakes, ponds, and reservoirs was analyzed. Fish taken in areas receiving agricultural runoff showed highest accumulation, especially in bottom feeding fish.	Morris, et al(1971), AMIC-1452
Aldrin	Wolffia papulifera	L	--	1000 (K)	Hunter's medium diluted 1:5	All compounds were harmful to duckweed to some degree. Decreased populations were noted at non-lethal concentrations and some compounds (Malathion and 2,4-D) caused teratogenic effects at concentrations as low as 1 ppm.	Worthley, et al (1971), AMIC-3233
Aldrin	Anacystis nidulans	L	--	NTE	a*,c*,r SM	Metabolic products of Aldrin, Dieldrin, and Endrin can be as toxic as the parent compounds, as shown by OD measurement.	Batterton, et al (1971), AMIC-1471
Aldrin	Agmenellum quadrup-licatum	L	--	NTE	a*,c*,r SM	same as above	Batterton, et al (1971),AMIC-1471
Aldrin	Channa punctata	BSA	--	0.000166 (K 2 hr)	a*,c	Aldrin was shown to be more toxic than DDT, BHC, dieldrin, and lindane. Behavioral responses prior to death were recorded in some detail.	Mathur (1969), AMIC-5422
Aldrin	Channa punctata	BSA	--	0.000333 (K 30 min)	a*,c	same as above	Mathur (1969),AMIC-

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
							5422
Aldrin	Puntius sophore	BSA	--	0.000166 (K 1.5 hr)	a*,c	same as above	Mathur (1969),AMIC-5422
Aldrin	Puntius sophore	BSA	--	0.000333 (K 30 min)	a*,c	same as above	Mathur (1969),AMIC-5422
Aldrin	Chlamydotheca arcuata	BSCH and A	--	0.00001-0.001 (120-1700 ppbresidue 64 wk)	--	The organisms were exposed to 0.01 and 0.1 ppb of the toxicants for 25 weeks after which time the amounts added each week were increased ten-fold over the initial amounts. Ulothrix occurred spontaneously in the test tanks. The results show that chronic accumulations in Chlamydotheca exceeded levels which were toxic in acute tests. Residues in Chlamydotheca ranged from 12,000 to 260,000 times greater than the theoretical concentrations in the water; those in Ulothrix were 235-3,000 times exposure levels.	Kawatski, et al (1971), AMIC-5506
Aldrin	Chlamydotheca arcuata	BSCH and A	--	0.0015 (T1)	--	same as above	Kawatski, et al (1971),AMIC-5506
Aldrin	Ulothrix sp.	BSCH	--	0.00001-0.001 (120-1700 ppb residue 33-48 wk)	--	same as above	Kawatski, et al (1971), AMIC-5506
Aldrin	Tubifex tubifex	FL and BSA	Belzoni, Miss.	3.0 (NTE)	--	The response of pesticide-resistant aquatic organisms to various pesticides was compared to the response of non-resistant species. Pesticide-resistant species were collected at Belzoni and non-resistant species at State College. Copepods, clams, snails, and sludge worms from Belzoni were considerably more tolerant to pesticides than the non-resistant organisms. The authors note that the effect of increased tolerance in the organisms is an increase in the amount of pesticide residues available to animals of higher trophic levels.	Naqvi, et al (1969),AMIC-5979

Aldrin	Mercenaria mercenaria (eggs)	L	--	greater than 10.0 (T2)	--	The effect of 52 pesticides on embryonic development of clams and oysters was reported. Synergistic effects with solvents were also reported. Most of the compounds affected development more than survival. Some, however, drastically reduced larval growth. The authors point out the necessity of evaluating the effects of pesticides on all life stages of an organism and note the possibility of selecting chemicals for pest control that would not have serious effect on shellfish.	Davis, et al (1969), AMIC-5990
Aldrin	Mercenaria mercenaria (larvae)	L	--	0.41 (T 12)	--	same as above	Davis, et al (1969),AMIC-5990
Algistat	Cyprinus carpio	L	--	0.66 (K)	--	The results are described as preliminary and the authors state that further testing should be conducted before Algistat is used in hatcheries and rearing ponds.	Pal, et al (1968), AMIC-5754
Algistat	Spirogyra	L	--	0.8 (K)	--	same as above	Pal, et al (1968), AMIC-5754
Algistat	Oscillatoria	L	--	0.66 (K)	--	same as above	Pal, et al (1968),AMIC-5754
Algistat	Anabaena	L	--	0.66 (K)	--	same as above	Pal, et al (1968), AMIC-5754
Algistat	Microcystis	L	--	0.66 (K)	--	same as above	Pal, et al (1968), AMIC-5754
Algistat	Euglena	L	--	1.0 (NTE)	--	same as above	Pal, et al (1968), AMIC-5754
Alkyl dimethyl benzylammonium chloride	Phormidium ambiguum	L	--	0.5-10.0 (33percent growth inhibited 14)	--	Of 74 chemicals evaluated as algicides, only 9 were more toxic than CuSO4. None inhibited growth of mat-forming algae for more than 2 weeks. CuSO4 formulated with certain wetting agents was more toxic than CuSO4 alone. Copper chloramine was also found to be more toxic than CuSO4. No wetting agents were found to be inhibitory at the concentrations investigated (0.05 and 0.005 ppm). Also reported are factors affecting growth of algae in canals to	Otto (1970), AMIC-892

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
						determine whether there were leads to controlling algae by environmental management. No practical environmental means were found.	
Allidene diacetate	Phormidium ambiguum	L	--	0.5-10.0 (NTE)	--	same as above	Otto(1970), AMIC-892
Allyl alcohol	Mercenaria mercenaria (eggs)	L	--	1.03 (T2)	--	The effect of 52 pesticides on embryonic development of clams and oysters was reported. Synergistic effects with solvents were also reported. Most of the compounds affected development more than survival. Some, however, drastically reduced larval growth. The authors point out the necessity of evaluating the effects of pesticides on all life stages of an organism and note the possibility of selecting chemicals for pest control that would not have serious effect on shellfish.	Davis, et al (1969),AMIC-5990
Allyl alcohol	Mercenaria mercenaria (larvae)	L	--	less than 0.25 (T12)	--	same as above	Davis,et al (1969), AMIC-5990
Allyl alcohol	Asterias rubens	BSA	--	10-33 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701
Allyl alcohol	Cardium edule	BSA	--	greater than 100 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Allyl alcohol	Crangon	BSA	--	greater than	a*(contin-	same as above	Portmann, et

	crangon			100 (T2)	uous aer-ation, sea-water, and daily solution renewal)		al (1971), AMIC-7701
alpha-amino-2,6-dichlorobenzal-doxine HCl	Rasbora heteromorpha	BCFA and BSA	--	190 (T2)	a*,c,e,f, hard (HW) or soft (SW) syn-thetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425
alpha-amino-2,6 dichlorobenzaldoxine	Rasbora heteromorpha	BCFA and BSA	--	440 (T2)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	same as above	Alabaster (1969), AMIC-5425
Aluminum	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles,Cal.	25 (dorsal muscle residue)	--	Fish collected from an effluent pipe of a steam plant and from offshore waters of Catalina Island were analyzed for trace element content. Trace element content of the effluent water was at least 5 times greater than that of normal sea water for cadmium, copper, nickel, zinc, and chromium. Livers of fish from the effluent were nearly twice the size of those from the ocean. Greatest differences in concentration occurred with aluminum, cadmium, and nickel. Silver, barium, lithium, and lead showed the least differences. The author concluded that trace element analysis of tissues could be used to determine the effect of pollutants on marine organisms.	Stapleton (1968),AMIC-5980
Aluminum	Paralabrax clathratus	FM	Catalina Island, Cal.	8 (dorsal muscle residue)	--	same as above	Stapleton (1968),

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
							AMIC-5980
Aluminum	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	25 (ventral muscle residue)	--	same as above	Stapleton (1968), AMIC-5980
Aluminum	Paralabrax clathratus	FM	Catalina Island, Cal.	8 (ventral muscle residue)	--	same as above	Stapleton (1968), AMIC-5980
Aluminum	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	28 (gonads residue)	--	same as above	Stapleton (1968), AMIC-5980
Aluminum	Paralabrax clathratus	FM	Catalina Island, Cal.	38 (gonads residue)	--	same as above	Stapleton (1968), AMIC-5980
Aluminum	Paralabrax clathratus (gravid females)	FM	Catalina Island, Cal.	22 (gonads residue)	--	same as above	Stapleton (1968), AMIC-5980
Aluminum	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	28 (liver residue)	--	same as above	Stapleton (1968), AMIC-5980
Aluminum	Paralabrax clathratus	FM	Catalina Island, Cal.	25 (liver residue)	--	same as above	Stapleton (1968), AMIC-5980
Aluminum	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	69 (integument residue)	--	same as above	Stapleton (1968), AMIC-5980
Aluminum	Paralabrax clathratus	FM	Catalina Island, Cal.	23 (integument residue)	--	same as above	Stapleton (1968), AMIC-5980
Aluminum	Paralabrax clathratus	FM	Scattergood Steam Plant, Los	16 (heart residue)	--	same as above	Stapleton (1968), AMIC-5980

			Angeles,Cal.				
Aluminum	Paralabrax clathratus	FM	Catalina Island, Cal.	4 (heart residue)	--	same as above	Stapleton (1968), AMIC-5980
Aluminum	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles,Cal.	33 (eyeball residue)	--	same as above	Stapleton (1968), AMIC-5980
Aluminum	Paralabrax clathratus	FM	Catalina Island, Cal.	34 (eyeball residue)	--	same as above	Stapleton (1968), AMIC-5980
Aminotriazole	Fish (not specified)	--	--	greater than 1000 (K)	--	Approximate toxicities of numerous pesticides commonly used in Britain were summarized. An excellent brief, general discussion of toxicity testing is also present.	Mawdesley-Thomas (1971),AMIC-1056
Amitrol-T	Crassostrea virginica (eggs)	L	--	greater than 10 (T2)	--	The effect of 52 pesticides on embryonic development of clams and oysters was reported. Synergistic effects with solvents were also reported. Most of the compounds affected development more than survival. Some, however, drastically reduced larval growth. The authors point out the necessity of evaluating the effects of pesticides on all life stages of an organism and note the possibility of selecting chemicals for pest control that would not have serious effect on shellfish.	Davis, et al(1969), AMIC-5990
Amitrol-T	Crassostrea virginica (larvae)	L	--	greater than 10(T14)	--	same as above	Davis, etal (1969), AMIC-5990
Amitrol-T	Gammarus fasciatus	BSA	--	greater than 100.0 (T2)	a*	Of the aquatic weed herbicides evaluated, Diclone was the most toxic, Daphnia was generally the most sensitive organism. All of the crustacea were affected by much lower concentration levels of herbicides than indicated by the TL sub 50 values. All of the animals represent important food chain links.	Sanders (1970),AMI 453
Amitrol-T	Paleomontes kadiakensis	BSA	--	greater than 100.0 (T2)	a*	same as above	Sanders (1970),AMIC-453

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
Amitrol-T	Asellus brevicaudus	BSA	--	greater than 100.0 (T2)	a*	same as above	Sanders (1970), AMIC-453
Amitrol-T	Orconectes nais	BSA	--	greater than 100.0 (T2)	a*	same as above	Sanders (1970), AMIC-453
Amitrol-T	Daphnia magna	BSA	--	30.0 (T2)	a*	same as above	Sanders (1970), AMIC-453
Amitrol-T	Cypridopsis vidua	BSA	--	32.0 (T2)	a*	same as above	Sanders (1970), AMIC-453
Amitrol-T	Lepomis macrochirus	BSA	--	greater than 100.0 (T2)	a*	same as above	Sanders (1970), AMIC-453
Amitrol	Crassostrea virginica (eggs)	L	--	733.7 (T2)	--	The effect of 52 pesticides on embryonic development of clams and oysters was reported. Synergistic effects with solvents were also reported. Most of the compounds affected development more than survival. Some, however, drastically reduced larval growth. The authors point out the necessity of evaluating the effects of pesticides on all life stages of an organism and note the possibility of selecting chemicals for pest control that would not have serious effect on shellfish.	Davis, et al (1969), AMIC-5990
Amitrol	Crassostrea virginica (larvae)	L	--	255.4 (T14)	--	same as above	Davis, et al (1969), AMIC-5990
Ammonia (plus phenol and zinc)	Salmo gairdneri	BSA	--	0.5-2.54 (T2)	a,c*,d,e*, f,m	Rainbow trout were exposed to concentrations of fluctuating levels of ammonia, phenol, and zinc and to constant mixtures of the three. Tests with fluctuating levels of toxicants showed that LC50 values were similar to those for constant concentrations as long as the periodicity of the fluctuation did not exceed the resistance time for the poison. Except when zinc predominated in the mixtures, the fractional toxicities could be summed to give the toxicity of the mixture.	Brown, et al (1969), AMIC-5993

Ammonia	Salmo gairdneri	BSA	--	22.5-67.5 (fluctuating conc, T 370-greaterthan 700 min)	a,c*,d,e*, f,m	same as above	Brown, et al (1969), AMIC-5993
Ammonia	Salmo gairdneri	BSA	--	45.0 (T greater than 700 min)	a,c*,d,e*, f,m	same as above	Brown, et al (1969), AMIC-5993
Ammonium carbonate plus Copper sulfate	Phormidium ambiguum	L	--	0.5-10.0 (100 percent growth inhibited 14)	--	Of 74 chemicals evaluated as algicides, only 9 were more toxic than CuSO4. None inhibited growth of mat-forming algae for more than 2 weeks. CuSO4 formulated with certain wetting agents was more toxic than CuSO4 alone. Copper chloramine was also found to be more toxic than CuSO4. No wetting agents were found to be inhibitory at the concentrations investigated (0.05 and 0.005 ppm). Also reported are factors affecting growth of algae in canals to determine whether there were leads to controlling algae by environmental management. No practical environmental means were found.	Otto (1970), AMIC-892
Ammonium chloride plus Copper sulfate (1:2)	Phormidium ambiguum	L	--	0.5-10.0 (100 percent growth inhibited 14)	--	same as above	Otto (1970), AMIC-892
Ammonium hydroxide (as NH3)	Phormidium ambiguum	L	--	0.5-10.0(NTE)	--		Otto (1970), AMIC-892
Ammonium sulfamate	Rasbora heteromorpha	BCFA and BSA	--	1,100 (T1, hardwater)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425
Ammonium sulfamate	Rasbora heteromorpha	BCFA and BSA	--	700 (T1, softwater)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	same as above	Alabaster (1969), AMIC-5425
Ammonium sulfamate	Rasbora	BCFA	--	3,200 (T1, pH	a*,c,e,f,	same as above	Alabaster

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
	heteromorpha	and BSA		5.7)	hard (HW) or soft (SW) synthetic dilution water, or seawater for some species		(1969), AMIC-5425
Ammonium sulfamate	Rasbora heteromorpha	BCFA and BSA	--	510 (T1, pH 7.1)	a*, c, e, f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	same as above	Alabaster (1969), AMIC-5425
Ammonium sulfamate	Rasbora heteromorpha	BCFA and BSA	--	55 (T1, pH 8.0)	a*, c, e, f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	same as above	Alabaster (1969), AMIC-5425
Ammonium (as NH3)	Lepomis macrochirus	BSA, L	--	3.4 (T4)	a#, e, and synthetic dilution water	This study was conducted to determine the relative toxicities of 20 common constituents of industrial wastes to a fish, an alga, and an invertebrate. The experiments were conducted over a 10-year period for varied purposes. The authors recommend bioassays with at least three components of the food web.	Patrick, et al (1968), AMIC-5720
Ammonium (as NH3)	Nitzschia linearis	BSA, L	--	420 (SB5)	a#, e, and synthetic dilution water	same as above	Patrick, et al (1968), AMIC-5720

Ammonium (as NH3)	Physa heterostropha	BSA, L	--	90.0 (T4)	a#, e, and synthetic dilution water	same as above	Patrick, et al (1968), AMIC-5720
Amphenone B	Lymnaea stagnalis (adults)	L	--	10.0 (SB7)	a*, q	This compound markedly reduced egg viability, production, and laying frequency of this basommatophoran snail. Oogenesis and spermatogenesis appeared to be retarded. The authors conclude that amphenone B can be regarded as an effective molluscicide for Lymnaea stagnalis.	Boer, et al (1967), AMIC-5445
Antimony	Coregonus clupeaformis	FL	Moose Lake, Can.	0.002 (residue)	--	Concentrations of 13 toxic elements in dressed fish from heavily industrialized and non-industrialized areas were determined. Only mercury exceeded regulatory limits, and concentrations of most elements were essentially the same in fish from both areas.	Uthe, etal (1971), AMIC-3819
Antimony	Coregonus clupeaformis	FL	Lake Ontario, Can.	0.003 (residue)	--	same as above	Uthe, etal (1971), AMIC-3819
Antimony	Esox lucius	FL	Moose Lake, Can.	0.003 (residue)	--	same as above	Uthe, et al (1971), AMIC-3819
Antimony	Esox lucius	FL	Lake St. Pierre, Can.	0.004 (residue)	--	same as above	Uthe, et AL (1971), AMIC-3819
Antimony	Esox lucius	FL	Lake Erie, Can.	0.004 (residue)	--	same as above	Uthe, et al (1971), AMIC-3819
Antimony	Osmerus mordax	FL	Lake Erie, Can.	0.004 (residue)	--	same as above	Uthe, et al (1971), AMIC-3819
Antimony	Perca flavescens	FL	Lake Erie, Can.	0.003 (residue)	--	same as above	Uthe, et AL (1971), AMIC-3819
Antimycin A	Lepisosteus platostomus	BSA, FO	--	0.00048 (T4)	a, c, e, f, g, deionized water	Liquid and sand formulations of antimycin A were tested as a fish toxicant in lab waters of various temperature, hardness, pH, and turbidity against 31 species of freshwater fish of various sizes and life stages. Each formulation of toxicant was lethal under all water conditions to fish eggs, fry, fingerlings, and adult fish. Trout were the most sensitive and catfishes the least sensitive. Of the 31 species, 24	Berger, et al (1969), AMIC-5495

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
						succumbed to 0.005 ppm or less of the toxicant; only certain catfishes survived 0.025 ppm.	
Antimycin A	Amia calva	BSA, FO	--	0.015 (60 percent K4)	a,c,e,f,g, deionized water	same as above	Berger, et al (1969), AMIC-5495
Antimycin A	Salmo gairdneri	BSA, FO	--	0.00003-0.00008 (T4)	a,c,e,f,g, deionized water	same as above	Berger, et al (1969), AMIC-5495
Antimycin A	Salmo trutta	BSA, FO	--	0.005 (K3)	a,c,e,f,g, deionized water	same as above	Berger,et al (1969), AMIC-5495
Antimycin A	Salvelinus fontinalis	BSA, FO	--	0.00003-0.00006 (T4)	a,c,e,f,g, deionized water	same as above	Berger, et al (1969), AMIC-5495
Antimycin A	Salvelinus namaycush	BSA, FO	--	0.00007 (T4)	a,c,e,f,g, deionized water	same as above	Berger, et al (1969), AMIC-5495
Antimycin A	Esox lucius	BSA, FO	--	0.00011-0.00055 (T4)	a,c,e,f,g, deionized water	same as above	Berger, et al (1969), AMIC-5495
Antimycin A	Carassius auratus	BSA, FO	--	0.00020-0.001 (T4)	a,c,e,f,g, deionized water	same as above	Berger, et al (1969), AMIC-5495
Antimycin A	Chrosomus eos	BSA,	--	0.00009-0.00052	a,c,e,f,g,	same as above	Berger, et

Antimycin A	Lepomis gibbosus	BSA, FO	--	0.00005-0.00024 (T4)	a,c,e,f,g, deionized water	same as above	Berger, et al (1969), AMIC-5495
Antimycin A	Lepomis macrochirus	BSA, FO	--	0.00006-0.0005 (T4)	a,c,e,f,g, deionized water	same as above	Berger, et al (1969), AMIC-5495
Antimycin A	Lepomis megalotis	BSA, FO	--	0.00008 (T4)	a,c,e,f,g, deionized water	same as above	Berger, et al (1969), AMIC-5495
Antimycin A	Lepomis microlophus	BSA, FO	--	0.00009 (T4)	a,c,e,f,g, deionized water	same as above	Berger, et al (1969), AMIC-5495
Antimycin A	Micropterus dolomieui	BSA, FO	--	0.00004-0.0000[illegible] (T4)	a,c,e,f,g, dilution water	same as above	Berger, et al (1969), AMIC-5495
Antimycin A	Micropterus salmoides	BSA, FO	--	0.00009-0.00014 (T4)	a,c,e,f,g, deionized water	same as above	Berger, et al (1969), AMIC-5495
Antimycin A	Pomoxis nigro-maculatus	BSA, FO	--	0.001 (43 percent K)	a,c,e,f,g, deionized water	same as above	Berger, et al (1969), AMIC-5495
Antimycin A	Perca flavescens	BSA, FO	--	0.00003-0.00012 (T4)	a,c,e,f,g, deionized water	same as above	Berger, et al (1969), AMIC-5495
Antimycin A	Stizostedion vitreum	BSA, FO	--	0.00002-0.00004 (T4)	a,c,e,f,g, dilution water	same as above	Berger, et al (1969), AMIC-5495
Antimycin A	Aplodinotus grunniens	BSA, FO	--	0.00002-0.00014 (T4)	a,c,e,f,g, deionized water	same as above	Berger, et al (1969), AMIC-5495
Antimycin A	Cyprinus carpio	BSA, FO	--	0.00012-0.00043 (T4)	a,c,e,f,g, deionized water	same as above	Berger, et al (1969), AMIC-5495

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
Antimycin A	Pimephales promelas	BSA, FO	--	0.00006-0.00020 (T4)	a,c,e,f,g, deionized water	same as above	Berger, et al (1969), AMIC-5495
Antimycin A	Carpiodes cyprinus	BSA, FO	--	0.003 (K)	a,c,e,f,g, deionized water	same as above	Berger, et al (1969), AMIC-5495
Antimycin A	Catostomus commersoni	BSA, FO	--	0.005 (K4)	a,c,e,f,g, deionized water	same as above	Berger, et al (1969), AMIC-5495
Antimycin A	Ictiobus cyprinellus	BSA, FO	--	0.005 (K4)	a,c,e,f,g, deionized water	same as above	Berger, et al (1969), AMIC-5495
Antimycin A	Minytrema melanops	BSA, FO	--	0.002 (K)	a,c,e,f,g, deionized water	same as above	Berger,et al (1969), AMIC-5495
Antimycin A	Ictalurus catus	BSA, FO	--	0.2 (K4)	a,c,e,f,g, deionized water	same as above	Berger, et al (1969), AMIC-5495
Antimycin A	Ictalurus melas	BSA, FO	--	0.021-0.088 (T4)	a,c,e,f,g, deionized water	same as above	Berger, et al (1969), AMIC-5495
Antimycin A	Ictalurus punctatus	BSA, FO	--	0.0052-0.0105 (T4)	a,c,e,f,g, dilution water	same as above	Berger, et al (1969), AMIC-5495
Antimycin A	Pilodictis olivaris	BSA, FO	--	0.2 (K4)	a,c,e,f,g, deionized water	same as above	Berger, et al (1969), AMIC-5495
Antimycin A	Eucalia inconstans	BSA, FO	--	0.00004-0.00055 (T4)	a,c,e,f,g, deionized water	same as above	Berger, et al (1969), AMIC-5495
Antimycin A	Lepomis cyanellus	BSA, FO	--	0.00011-0.0005 (T4)	a,c,e,f,g, deionized water	same as above	Berger, et al (1969), AMIC-5495

		FO		(T4)	deionized water		al (1969), AMIC-5495
Antimycin A	Salmo gairdneri	L	--	0.00003 (T4)	a*	The piscicides Antimycin A and Rotenone were found to be compatible when mixed and furthermore appeared to have an additive effect in cmbination. That is both compounds were more toxic in the presence of the other than alone.	Howland (1969), AMIC-5725
Antimycin A	Lepomis macrochirus	L	--	0.00016 (T4)	a*	same as above	Howland (1969), AMIC-5725
Antimycin A	Salmo clarki	FL	Copper Lake, Idaho	0.005 (K)	a,c,d,e	Rapid fish kill occurred in a oligotrophic situation and toxicity persisted for at least 10 days following application. Plankton was also reduced. Later the lake was successfully stocked with cutthroat trout. The rapidity of kill and persistence indicated that the Antimycin concentration was higher than necessary. The authors recommended further research.	Rabe, et al (1969), AMIC-5732
Antimycin A	Salmo gairdneri	BSA	--	0.00005 (T4)	a*	The dyes Rhodamine B and Fluorescein sodium were found to be relatively non-toxic in ppm concentrations while antimycin was toxic at ppb levels. The author states that neither dye at field use concentrations should significantly influence the activity of Antimycin A against fish.	Marking (1969), AMIC-5729
Antimycin A	Ictalurus punctatus	BSA	--	0.0147 (T4)	a*	same as above	Marking (1969), AMIC-5729
Antimycin A	Lepomis macrochirus	BSA	--	0.00014 (T4)	a*	same as above	Marking (1969), AMIC-5729
Aphitox	Rasbora heteromorpha	BCFA and BSA	--	27 (T2)	a*,c,e,f, hard (HW) or soft (SW) synthetic water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes	Alabaster (1969), AMIC-5425

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
					species	pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	
Aquaclene 100	Pimephales promelas	BSA	--	25.0 (T4)	c,d,e,f	Toxicity of six oil spill dispersants was determined along with BOD values. Pond water was used as diluent and oil was included in the experiment. Oil markedly reduced toxicity of all dispersants. Data are given as "most probable" 96-hr TL sub m.	Zillich (1969),AMIC-2909
Aquaclene 100	Pimephales promelas	BSA	--	4.2 (MSC)	c,d,e,f	same as above	Zillich (1969),AMIC-2909
Aquaclene 100	Biochemical oxygen demand	L	--	840,00	c,d,e,f	same as above	Zillich (1969),AMIC-2909
Aquaclene	Cardium edule	BSA	--	33-100 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701
Aquaclene	Crangon crangon	BSA	--	100-330 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann,et al (1971), AMIC-7701
Aquathol	Morone saxatilis (fingerlings)	BSA	--	710 (T4)	a,c,d,e,f, r	All compounds were investigated because of their probable usage in hatchery production of white bass. Compounds that can be used at recommended concentrations were Aquathol, Casaron, Lindane, and Terramycin concentrate. Those that should not be used were Acriflavine, Bayluscide, Malachite green oxalate, and Malathion.	Wellborn (1971), AMIC-5571

AQ	Nereis virens	BSA	--	0.00011-0.00044 (T4)	a*,c,e, and synthetic seawater	A laboratory procedure based on Standard Methods for 96-hr toxicity determinations of crude oil and oil-dispersant mixtures was described. The dispersants varied considerably in toxicity, ranging from 0.01 to 7.1 ml/l, TL50 for 96 hr. These did not differ significantly from 240 hr values. The dispersants were designated as CX, DO, CI, OD, AQ, PC, MH, TN, BP, and NA with no further description of their chemical nature or source. Only a few bioassays were conducted with shrimp. Mollusks and echinoderms were suggested as suitable test animals. The authors stated that the method could be used to test any product for toxicity in seawater.	LaRoche,et al (1970), AMIC-445
AQ	Fundulus heteroclitus	BSA	--	0.00032-0.00035 (T4)	a*,c,e,and synthetic seawater	same as above	LaRoche, et al (1970), AMIC-445
Arkotine DDT	Rasbora heteromorpha	BCFA and BSA	--	0.17 (T2)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater forsome species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster, (1969),AMIC-5425
Aroclor 1221 (plus Corexit 7664)	Salmo salar (parr)	L	--	4 (K 5 hr)	a*,e (mixed tap or seawater)	Aroclors 1254 and 1221 were evaluated for toxic effect with Corexit 7664 (weight ratio 1:19) as an emulsifying agent. Since only two fish were used for each exposure, the author notes that the results are only preliminary. However, PCB"s appeared to be less toxic to Atlantic salmon parr than chlorinated hydrocarbon pesticides.	Zitko (1970), AMIC-23
Aroclor 1242	Agonus cataphractus	BSA	--	greater than 10 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701
Aroclor 1242	Crangon crangon	BSA	--	1.0 (T2)	a*(continuous aeration, seawater, and daily	same as above	Portmann, et al (1971), AMIC-7701

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
					solution renewal)		
Aroclor 1248	Agonus cataphractus	BSA	--	greater than 10 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Aroclor 1248	Cardium edule	BSA	--	greater than 10 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Aroclor 1248	Crangon crangon	BSA	--	0.03-1.0 (T2)'	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Aroclor 1254 (plus Corexit 7664)	Salmo salar (parr)	L	--	4 (K 90 hr)	a*,e (mixed tap or seawater)	Aroclors 1254 and 1221 were evaluated for toxic effect with Corexit 7664 (weight ratio 1:19) as an emulsifying agent. Since only two fish were used for each exposure, the author notes that the results are only preliminary. However, PCB"s appeared to be less toxic to Atlantic salmon parr than chlorinated hydrocarbon pesticides.	Zitko (1970), AMIC-23
Aroclor 1254 (with corexit 7664, colloidal solution)	Gammarus oceanicus	BSA	--	0.001-0.01 (threshold concentration)	a*(weekly solution change, seawater)	Aroclor 1254 solutions or suspensions with Corexit 7664 at varied concentrations in seawater resulted in varying toxicity of the Aroclor. Corexit was not lethal at 1900 ppm but caused	Wildish (1970), AMIC-69

						sublethal brnchial edema at concentrations down to 0.19 ppm. The author notes a possible synergistic effect between the two compounds.	
Aroclor 1254 (with corexit 7664, emulsion)	Gammarus oceanicus	BSA	--	0.01-0.10(thres hold concentration)	a* (weekly solution change, seawater)	same as above	Wildish (1970), AMIC-69
Aroclor 1254	Lagodon rhomboides (juvenile)	BCFCH	--	0.005 (K 14-15)	a, salinity	Exposure of spot and pinfish to this PCB increased susceptibility to disease as well as being toxic at .005 ppm. The compound was rapidly stored in tissues, persisting for approximately 3 mo. The authors recommended further chronic exposure studies.	Hansen, et al (1971), AMIC-1811
Aroclor 1254	Leiostomus xanthurus	BCFCH	--	0.005 (K 14-15)	a, salinity	same as above	Hansen, et al (1971), AMIC-1811
Aroclor 1254	Leiostomus xanthurus	BCFCH	--	0.001 (SB56)	a, salinity	same as above	Hansen,et al (1971), AMIC-1811
Aroclor 1254	Leiostomus xanthurus	BCFCH	--	0.001 (8.3 ppm brain residue 56 d)	a, salinity	same as above	Hansen, et al (1971), AMIC-1811
Aroclor 1254	Leiostomus xanthurus	BCFCH	--	0.001 (46 ppm gills residue 56 d)	a, salinity	same as above	Hansen, et al (1971), AMIC-1811
Aroclor 1254	Leiostomus xanthurus	BCFCH	--	0.001 (13 ppm heart residue 56 d)	a, salinity	same as above	Hansen, et al (1971), AMIC-1811
Aroclor 1254	Leiostomus xanthurus	BCFCH	--	0.001 (83 ppm liver residue 56 d)	a, salinity	same as above	Hansen, et al (1971), AMIC-1811
Aroclor 1254	Leiostomus xanthurus	BCFCH	--	0.001 (65 ppm muscle residue 56 d)	a, salinity	same as above	Hansen, et al (1971), AMIC-1811
Aroclor 1254	Leiostomus xanthurus	BCFCH	--	0.001 (27 ppm whole body residue 56 d)	a, salinity	same as above	Hansen, et al (1971), AMIC-1811
Aroclor 1254	Penaeus duorarum	L (ACF)	--	1.0 ppb(K15, juvenile)	a*	In addition to mortality, Arochlor accumulation in shrimp	Nimmo, et al (1971),

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
	(juvenile)					hepatopancreas was marked (up to 510 PPM). The biological half-life for this chemical was found to be 17 days with tissue distribution in the shrimp being similar to that of DDT. Delayed mortality with no prior poisoning symptoms was also observed. Considerable additional data are presented.	AMIC-2645
Aroclor 1254	Agonus cataphractus	BSA	--	greater than 10 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701
Aroclor 1254	Cardium edule	BSA	--	greater than 10 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Aroclor 1254	Crangon crangon	BSA	--	3-10 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971),AMIC-7701
Aroclor 1254	Paralichthys sp.	FM	Escambia Bay, Fla.	4.5-184 (residue)	--	Residue analysis of dead and dying animals led to the source of the PCB which was an accidental leakage from an industrial plant. The concentrations of the PCB in water and sediment were less than 0.03-486 and less than 0.001 ppm, respectively. Bioassays showed juvenile shrimp to be the most susceptible species, but inhibition of shell growth of oysters was the most sensitive parameter studied. Continued surveillance and long-term testing at sublethal concentrations were pointed out as urgently needed.	Duke, et al (1970), AMIC-720

Aroclor 1254	Lagodon rhomboides (juvenile)	BSA	--	17 (residue)	--	same as above	Duke, et AL(1970), AMIC-720
Aroclor 1254	Penaeus duorarum (juvenile)	BSA	--	3.9 (residue)	--	same as above	Duke, et AL(1970), AMIC-720
Aroclor 1254	Crassostrea virginica	BSA	--	0.1 (SB4)	--	same as above	Duke, et al (1970),AMIC-720
Aroclor 1254	Penaeus duorarum (juvenile)	BCHCF	--	0.005 (72 percent K20)	--	same as above	Duke, et al (1970), AMIC-720
Aroclor 1254	Penaeus duorarum (juvenile)	BCHCF	--	0 (residue)	--	same as above	Duke, et AL(1970), AMIC-720
Aroclor 1254	Callinectes sapidus (juvenile)	BCHCF	--	0.005 (5percent K20)	--	same as above	Duke, et al (1970), AMIC-720
Aroclor 1254	Callinectes sapidus (juvenile)	BCHCF	--	23 (residue)	--	same as above	Duke, et AL(1970), AMIC-720
Aroclor 1254	Micropogon undulatus	FM	Escambia Bay, Fla.	12 (residue)	--	same as above	Duke, et al (1970), AMIC-720
Aroclor 1254	Brevoortia patronus	FM	Escambia Bay, Fla.	5.7-11(residue)	--	same as above	Duke, et al (1970), AMIC-720
Aroclor 1254	Lagodon rhomboides	FM	Escambia Bay, Fla.	10 (residue)	--	same as above	Duke, et al (1970), AMIC-720
Aroclor 1254	Cynoscion nebulosus	FM	Escambia Bay, Fla.	7.5-20(residue)	--	same as above	Duke, et al (1970), AMIC-720
Aroclor 1254	Penaeus setiferus	FM	Escambia Bay, Fla.	1.5-2.5 (residue)	--	same as above	Duke, et al (1970),

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
							AMIC-720
Aroclor 1254	Callinectes sapidus	FM	Escambia Bay, Fla.	1.0-7.0 (residue)	--	same as above	Duke, et al (1970), AMIC-720
Aroclor 1254	Lagodon rhomboides (juvenile)	BSA	--	0.1 (NTE)	--	same as above	Duke, et AL(1970), AMIC-720
Aroclor 1254	Penaeus duorarum (juvenile)	BSA	--	0.01 (K2)	--	same as above	Duke, et AL(1970), AMIC-720
Aroclor 1260	Agonus cataphractus	BSA	--	less than 10 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701
Aroclor 1260	Cardium edule	BSA	--	less than 10 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Aroclor 1260	Crangon crangon	BSA	--	less than 10 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Aroclor 1262	Agonus cataphractus	BSA	--	less than 10 (T2)	a*(continuous aeration, seawater, and	same as above	Portmann, et al (1971), AMIC-7701

					daily solution renewal)		
Aroclor 1262	Cardium edule	BSA	--	less than 10 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Aroclor 1262	Crangon crangon	BSA	--	less than 10 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Arsenic	Alosa pseudoharengus	FL	Great Lakes - Superior, Michigan, and Erie	0.023(residue)	--	Trace element content of fish from Lakes Superior, Michigan, and Erie was determined by activation analysis. Whole body and liver residues were determined. Concentrations varied with species and lake. Other elements found were: antimony - 5 to 100 ppb, barium - 0.2 ppm, cesium - 3 ppb, lanthanum - 1 to 20 ppb, mercury - 10 ppb, rhenium - 0.5 to 5 ppb, rubidium - 0.06 to 6 ppm, scandium - 2 ppb, selenium - 0.1 to 2 ppb, silver - 0.001 ppb.	Lucas, et al (1970), AMIC-3778
Arsenic	Coregonus artedii	FL	Great Lakes - Superior, Michigan, and Erie	0.069(residue)	--	same as above	Lucas, et al (1970), AMIC-3778
Arsenic	Coregonus clupeaformis	FL	Great Lakes - Superior, Michigan, and Erie	0.014(residue)	--	same as above	Lucas, et al (1970), AMIC-3778
Arsenic	Coregonus hoyi	FL	Great Lakes - Superior, Michigan, and Erie	0.063(residue)	--	same as above	Lucas, et al (1970), AMIC-3778
Arsenic	Prosopium cylindraceum	FL	Great Lakes - Superior,	0.0056(residue)	--	same as above	Lucas, et al (1970),

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
			Michigan, and Erie				AMIC-3778
Arsenic	Salvelinus namaycush	FL	Great Lakes - Superior, Michigan, and Erie	0.049(residue)	--	same as above	Lucas, et al (1970), AMIC-3778
Arsenic	Osmerus mordax	FL	Great Lakes - Superior, Michigan, and Erie	0.020(residue)	--	same as above	Lucas, et al (1970), AMIC-3778
Arsenic	Carassius auratus	FL	Great Lakes - Superior, Michigan, and Erie	0.006(residue)	--	same as above	Lucas, et al (1970), AMIC-3778
Arsenic	Notropis hudsonius	FL	Great Lakes - Superior, Michigan, and Erie	0.0035(residue)	--	same as above	Lucas, et al (1970), AMIC-3778
Arsenic	Percopsis omiscomaycus	FL	Great Lakes - Superior, Michigan, and Erie	0.025(residue)	--	same as above	Lucas, et al (1970), AMIC-3778
Arsenic	Roccus chrysops	FL	Great Lakes - Superior, Michigan, and Erie	0.098(residue)	--	same as above	Lucas, et al (1970), AMIC-3778
Arsenic	Perca flavescens	FL	Great Lakes - Superior, Michigan, and Erie	0.007(residue)	--	same as above	Lucas, et al (1970), AMIC-3778
Arsenic	Stizostedion vitreum vitreum	FL	Great Lakes - Superior, Michigan, and Erie	0.098(residue)	--	same as above	Lucas, et al (1970), AMIC-3778
Arsenic	Coregonus clupeaformis	FL	Moose Lake, Can.	0.09 (residue)	--	Concentrations of 13 toxic elements in dressed fish from heavily industrialized and non-industrialized	Uthe, et al (1971), AMIC-3819

						areas were determined. Only mercury exceeded regulatory limits, and concentrations of most elements were essentially the same in fish from both areas.	
Arsenic	Coregonus clupeaformis	FL	Lake Ontario, Can.	0.7 (residue)	--	same as above	Uthe, etal (1971), AMIC-3819
Arsenic	Esox lucius	FL	Moose Lake, Can.	0.05 (residue)	--	same as above	Uthe, et al (1971),AMIC-3819
Arsenic	Esox lucius	FL	Lake St. Pierre, Can.	0.09 (residue)	--	same as above	Uthe, et AL(1971), AMIC-3819
Arsenic	Esox lucius	FL	Lake Erie, Can.	0.05 (residue)	--	same as above	Uthe, et al (1971),AMIC-3819
Arsenic	Osmerus mordax	FL	Lake Erie, Can.	0.15 (residue)	--	same as above	Uthe, et al (1971),AMIC-3819
Arsenic	Perca flavescens	FL	Lake Erie, Can.	0.05 (residue)	--	same as above	Uthe, et AL(1971), AMIC-3819
Asulum (K salt)	Rasbora heteromorpha	BCFA and BSA	--	5,260 (T1, hardwater)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster(1969), AMIC-5425
Asulum (K salt)	Rasbora heteromorpha	BCFA and BSA	--	1,700 (T1, softwater)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater	same as above	Alabaster(1969), AMIC-5425

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
					for some species		
Asuntol (sheep dip)	Rasbora heteromorpha	BCFA and BSA	--	0.046 (T2)	a*, c, e, f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	same as above	Alabaster, (1969), AMIC-5425
Atlas 1901	Cardium edule	BSA	--	33-100 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701
Atlas 1901	Crangon crangon	BSA	--	100-330 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Atlas 1901	Pandalus montagui	BSA	--	33-100 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Atlavar	Rasbora heteromorpha	BCFA and BSA	--	1,300 (T2)	a*, c, e, f, hard (HW) or soft (SW) syn-	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders	Alabaster (1969), AMIC-5425

					thetic dilution water, or seawater for some species	of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	
Atrazine	Carcinus maenas	BSA	--	greater than 100 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701
Atrazine	Cardium edule	BSA	--	greater than 100 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Atrazine	Crangon crangon	BSA	--	10-33 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Avadex BW	Rasbora heteromorpha	BCFA and BSA	--	6 (T2)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
Avadex	Rasbora heteromorpha	BCFA and BSA	--	8.2 (T2)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	same as above	Alabaster (1969), AMIC-5425
Azinphosmethyl	Fish (not specified)	--	--	greater than 0.01-0.1 (K)	--	Approximate toxicities of numerous pesticides commonly used in Britain were summarized. An excellent brief, general discussion of toxicity testing is also present.	Mawdesley-Thomas(1971) AMIC-1056
Azinphosmethyl	Carcinus maenas	BSA	--	0.033-0.1 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701
Azinphosmethyl	Cardium edule	BSA	--	greater than 10 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Azinphosmethyl	Crangon crangon	BSA	--	0.0003-0.001 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Azinphosmethyl	Limanda	BSA	--	0.01-0.03 (T2)	a*(contin-	same as above	Portmann, et

	limanda				uous aeration, seawater, and daily solution renewal)		al (1971), AMIC-7701
Azinphosmethyl	Pandalus montagui	BSA	--	0.0003-0.001 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Azinphos methyl	Rasbora heteromorpha	BCFA and BSA	--	0.076 (T2)	a*,c,e,f, hard (HW) orsoft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425
Bacterial endotoxins	Salmo gairdneri (400-500 g)	L	--	10 (NTE)	--	Salmon and trout were injected with endotoxins prepared from Escherichia coli and Aeromonas salmonicida. No significant cardiovascular response or effect on liver tryptophan pyrrolase activity in vitro occurred. It was concluded that metabolic effects of bacterial endotoxins in salmonids are qualitatively different from those of higher vertebrates.	Wedemeyer, et al (1968), AMIC-3774
Bacterial endotoxins	Oncorhynchus kisutch (400-500 g)	L	--	10 (NTE)	--	same as above	Wedemeyer,et al (1968), AMIC-3774
Balan	Gammarus fasciatus	BSA	--	1.1 (T4)	a*	Of the aquatic weed herbicides evaluated, Diclone was the most toxic. Daphnia was generally the most sensitive organism. All of the crustacea were affected by much lower concentration levels of herbicides than indicated by the TL sub 50 values. All of the animals	Sanders (1970), AMIC-453

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
						represent important food chain links.	
Banner OG01	Crangon crangon	BSA	--	10-33 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701
Banner OG02	Crangon crangon	BSA	--	10 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Banner OG03	Crangon crangon	BSA	--	10-33 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Banner OG04	Crangon crangon	BSA	--	10-33 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Barban	Rasbora heteromorpha	BCFA and BSA	--	0.91 (T2)	a*,c,e,f, hard (HW) or SOFT(SW) synthetic dilution	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a	Alabaster (1969), AMIC-5425

					water, or seawater for some species	formulation did not result in easy *predictability of the toxicity of a* mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	
Barium	Paralabrax clathratus	FM	Scattergood Steam Plant, LosAngeles, Cal.	2 (dorsal muscle residue)	--	Fish collected from an effluent pipe of a steam plant and from offshore waters of Catalina Island were analyzed for trace element content. Trace element content of the effluent water was at least 5 times greater than that of normal sea water for cadmium, copper, nickel, zinc, and chromium. Livers of fish from the effluent were nearly twice the size of those from the ocean. Greatest differences in concentration occurred with aluminum, cadmium, and nickel. Silver, barium, lithium, and lead showed the least differences. The author concluded that trace element analysis of tissues could be used to determine the effect of pollutants on marine organisms.	Stapleton (1968), AMIC-5980
Barium	Paralabrax clathratus	FM	Catalina Island, Cal.	1.7 (dorsal muscle residue)	--	same as above	Stapleton (1968), AMIC-5980
Barium	Paralabrax clathratus	FM	Scattergood Steam Plant, LosAngeles, Cal.	1.4 (ventral muscle residue)	--	same as above	Stapleton (1968), AMIC-5980
Barium	Paralabrax clathratus	FM	Catalina Island, Cal.	1.3 (ventral muscle residue)	--	same as above	Stapleton (1968), AMIC-5980
Barium	Paralabrax clathratus	FM	Scattergood Steam Plant, LosAngeles, Cal.	2.8 (gonads residue)	--	same as above	Stapleton (1968), AMIC-5980
Barium	Paralabrax clathratus	FM	Catalina Island, Cal.	2.6 (gonads residue)	--	same as above	Stapleton (1968), AMIC-5980
Barium	Paralabrax clathratus (gravid females)	FM	Catalina Island, Cal.	2.2 (gonads residue)	--	same as above	Stapleton (1968), AMIC-5980

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
Barium	Paralabrax clathratus	FM	Scattergood Steam Plant, LosAngeles, Cal.	1.4 (liver residue)	--	same as above	Stapleton (1968), AMIC-5980
Barium	Paralabrax clathratus	FM	Catalina Island, Cal.	1.8 (liver residue)	--	same as above	Stapleton (1968), AMIC-5980
Barium	Paralabrax clathratus	FM	Scattergood Steam Plant, LosAngeles, Cal.	2.8 (integument residue)	--	same as above	Stapleton (1968), AMIC-5980
Barium	Paralabrax clathratus	FM	Catalina Island, Cal.	1.6 (integument residue)	--	same as above	Stapleton (1968), AMIC-5980
Barium	Paralabrax clathratus	FM	Scattergood Steam Plant, LosAngeles, Cal.	1.2 (heart residue)	--	same as above	Stapleton (1968), AMIC-5980
Barium	Paralabrax clathratus	FM	Catalina Island, Cal.	2 (heart residue)	--	same as above	Stapleton (1968), AMIC-5980
Barium	Paralabrax clathratus	FM	Scattergood Steam Plant, LosAngeles, Cal.	5.8 (eyeball residue)	--	same as above	Stapleton (1968), AMIC-5980
Barium	Paralabrax clathratus	FM	Catalina Island, Cal.	9.1 (eyeball residue)	--	same as above	Stapleton (1968), AMIC-5980
Basol AD6	Crangon crangon	BSA	--	10-33 (T2)	a#(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971),AMIC-7701

Basol 99	Rasbora heteromorpha	BCFA and BSA	--	42 (T2, hardwater)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969),AMIC-5425
Basol 99	Rasbora heteromorpha	BCFA and BSA	--	32 (T2, softwater)	a*,c,e,f, hard (HW) or soft (SW) synthetic water, or seawater for some species	same as above	Alabaster (1969), AMIC-5425
Bayer 39007	Rasbora heteromorpha	BCFA and BSA	--	14 (T2, hardwater)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	same as above	Alabaster (1969), AMIC-5425
Bayer 39007	Rasbora heteromorpha	BCFA and BSA	--	7.5 (T2, softwater)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	same as above	Alabaster (1969), AMIC-5425
Bayluscide	Morone saxatilis (fingerlings)	BSA	--	0.78 (T3)	a,c,d,e,f, p	All compounds were investigated because of their probable usage in hatchery production of white bass. Compounds that can be used at recommended concentrations were Aquathol, Casaron, Lindane, and Terramycin concentrate.	Wellborn (1971), AMIC-5571

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
						Those that should not be used were Acriflavine, Bayluscide, Malachite green oxalate, and Malathion.	
Baytex	Orconectes nais	FP	Pratt, Kansas	0.1 (K4)	a,b,c,d,e, f,g,p	Baytex applied at various rates up to 250 ppb resulted in significant reduction of crayfish. Ponds treated at less than 100 ppb had to be retreated to eradicate crayfish. This chemical appears to have utility in fish culture for controlling crayfish.	Ray, et al (1970), AMIC-5433
Baytex	Procambarus simulans	FP	Pratt, Kansas	0.1 (K4)	a,b,c,d,e, f,g,p	same as above	Ray, etal (1970), AMIC-5433
Baytex	Channel catfish	FP	Pratt, Kansas	0.1 (NTE4)	a,b,c,d,e, f,g,p	same as above	Ray, et al(1970), AMIC-5433
Baytex	Roccus saxatilis	FP	Pratt, Kansas	0.1 (NTE4)	a,b,c,d,e, f,g,p	same as above	Ray, et al(1970), AMIC-5433
Baytex	Dragonflies (larvae)	FP	Pratt, Kansas	0.1 (K4)	a,b,c,d,e, f,g,p	same as above	Ray, et al(1970), AMIC-5433
Baytex	Whirligig beetles	FP	Pratt, Kansas	0.1 (K4)	a,b,c,d,e, f,g,p	same as above	Ray, et al(1970), AMIC-5433
Baytex	Backswimmers	FP	Pratt, Kansas	0.1 (K4)	a,b,c,d,e, f,g,p	same as above	Ray, et al (1970),AMIC-5433
Baytex	Ictalurus punctatus	BSA	--	1.68 (T4)	a, synthetic test water	Organochlorine insecticides were the most toxic compounds, organophosphates intermediate, carbamates the least toxic. Brown trout was the species most susceptible to organochlorines, coho salmon the most susceptible to carbamates, and goldfish were the least susceptible of all species. Safe concentrations established by bioassays with salmonids or	Macek,et al (1970), AMIC-5510

						centrarchids would likely be safe for cyprinids and ictalurids. Safe levels for ictalurids or cyprinids would probably be hazardous for centrarchids and salmonids. The use of goldfish in bioassays was discouraged.	
Baytex	Ictalurus melas	BSA	--	1.62 (T4)	a, synthetic test water	same as above	Macek, et al(1970), AMIC-5510
Baytex	Carassius auratus	BSA	--	3.40 (T4)	a, synthetic test water	same as above	Macek, et al(1970), AMIC-5510
Baytex	Cyprinus carpio	BSA	--	1.16 (T4)	a, synthetic test water	same as above	Macek, et al(1970), AMIC-5510
Baytex	Pimephales promelas	BSA	--	2.44 (T4)	a, synthetic test water	same as above	Macek, et al(1970), AMIC-5510
Baytex	Lepomis macrochirus	BSA	--	1.38 (T4)	a, synthetic test water	same as above	Macek, et al(1970), AMIC-5510
Baytex	Lepomis microlophus	BSA	--	1.88 (T4)	a, synthetic test water	same as above	Macek, et al(1970), AMIC-5510
Baytex	Micropterus salmoides	BSA	--	1.54 (T4)	a, synthetic test water	same as above	Macek, et al(1970), AMIC-5510
Baytex	Salmo gairdneri	BSA	--	0.93 (T4)	a, synthetic test water	same as above	Macek, et al(1970), AMIC-5510
Baytex	Salmo trutta	BSA	--	1.33 (T4)	a, synthetic test water	same as above	Macek, et al(1970), AMIC-5510
Baytex	Oncorhynchus kisutch	BSA	--	1.32 (T4)	a, synthetic test water	same as above	Macek, etal (1970), AMIC-5510
Baytex	Perca flavescens	BSA	--	1.65 (T4)	a, synthetic test water	same as above	Macek, et al(1970), AMIC-5510
Baywood 43	Rasbora	BCFA	--	880 (T2)	a*,c,e,f,	One hundred sixty-four	Alabaster

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
	heteromorpha	and BSA			hard (HW) or SOFT(SW) synthetic dilution water, or seawater for some species	pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity soanning 12 orders of magnitude. Knowing the toxicity and percentage of all comoonents of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	(1969), AMIC-5425
Benazolin	Rasbora heteromorpha	BCFA and BSA	--	325 (T2)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425
Bensulide	Gammarus fasciatus	BSA	--	1.4 (T4)	a*	Of the aquatic weed herbicides evaluated, Diclone was the most toxic, Daphnia was generally the most sensitive organism. All of the crustacea were affected by much lower concentration levels of herbicides than indicated by the TL sub 50 values. All of the animals represent important food chain links.	Sanders (1970), AMIC-453
BHC (plus lindane)	White sucker	FRL	Misc. states	0.01-0.22 residue (SB)	--	The Bureau of Sport Fisheries continued its fish monitoring program by collecting 147 composite fish samples from 50 nationwide monitoring stations during the fall of 1969. Fish were analyzed for residues of 11 organochlorine insecticides, lipids, and PCB"s.	Henderson, et al (1971), AMIC-1407
BHC (plus lindane)	Yellow perch	FRL	Misc. states	0.01-0.31	--	same as above	Henderson,

				residue (SB)			et al (1971), AMIC-1407
BHC (plus lindane)	Chain pickerel	FRL	Misc. states	0.07 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1407
BHC (plus lindane)	White catfish	FRL	Misc. states	0.23 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1407
BHC (plus lindane)	White perch	FRL	Misc. states	0.18-0.26 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1407
BHC (plus lindane)	Goldfish	FRL	Misc. states	0.51 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1407
BHC (plus lindane)	Pumpkinseed	FRL	Misc. states	0.09 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1407
BHC (plus lindane)	Largemouth bass	FRL	Misc. states	0.01-0.47 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1407
BHC (plus lindane)	Brown bullhead	FRL	Misc. states	0.01-4.37 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1407
BHC (plus lindane)	Carp	FRL	Misc. states	0.01-0.99 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1407
BHC (plus lindane)	Channel catfish	FRL	Misc. states	0.01-1.50 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1407
BHC (plus lindane)	Redhorse sucker	FRL	Misc. states	0.02-0.18 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1407

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
BHC (plus lindane)	Gizzard shad	FRL	Misc. states	0.06-0.10 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1407
BHC (plus lindane)	Spotted sucker	FRL	Misc. states	0.01-0.03 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1407
BHC (plus lindane)	Bluegills	FRL	Misc. states	0.01-0.02 residue(SB)	--	same as above	Henderson, et al (1971), AMIC-1407
BHC (plus lindane)	Striped mullet	FRL	Misc. states	0.28-1.14 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1407
BHC (plus lindane)	Blue catfish	FRL	Misc. states	0.14 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1407
BHC (plus lindane)	Rock bass	FRL	Misc. states	0.01-0.14 residue(SB)	--	same as above	Henderson, et al (1971), AMIC-1407
BHC (plus lindane)	Freshwater drum	FRL	Misc. states	0.01 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1407
BHC (plus lindane)	Bloater	FRL	Misc. states	0.03-0.08 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1407
BHC (plus lindane)	Lake whitefish	FRL	Misc. states	0.05 residue(SB)	--	same as above	Henderson,et al (1971), AMIC-1407
BHC (plus lindane)	Lake trout	FRL	Misc. states	0.01-0.01 residue (SB)	--	same as above	Henderson, et al

							(1971), AMIC-1407
BHC (plus lindane)	White crappie	FRL	Misc. states	0.07-2.19 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1407
BHC (plus lindane)	Bigmouth buffalo	FRL	Misc. states	0.03-0.07 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1407
BHC (plus lindane)	Smallmouth buffalo	FRL	Misc. states	0.08 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1407
BHC (plus lindane)	Flathead catfish	FRL	Misc. states	0.02 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1407
BHC (plus lindane)	Goldeye	FRL	Misc. states	0.02-0.08 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1407
BHC (plus lindane)	Walleye	FRL	Misc. states	0.01 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1407
BHC (plus lindane)	Sauger	FRL	Misc. states	0.01 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1407
BHC (plus lindane)	Flannelmouth sucker	FRL	Misc. states	0.02 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1407
BHC (plus lindane)	Black bullhead	FRL	Misc. states	0.01 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1407
BHC (plus lindane)	White bass	FRL	Misc. states	0.01 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1407
BHC (plus lindane)	Black crappie	FRL	Misc. states	0.01-0.03 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1407

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
BHC (plus lindane)	Largescale sucker	FRL	Misc. states	0.01-0.12 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1407
BHC (plus lindane)	Smallmouth bass	FRL	Misc. states	0.01 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1407
BHC (plus lindane)	Northern squawfish	FRL	Misc. states	0.01 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1407
BHC (plus lindane)	Chiselmouth	FRL	Misc. states	0.02-0.03 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1407
BHC (plus lindane)	Rainbow trout	FRL	Misc. states	0.01 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1407
BHC (plus lindane)	Bridgelip sucker	FRL	Misc. states	0.02 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1407
BHC (plus lindane)	Arctic grayling	FRL	Misc. states	0.12 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1407
BHC (plus lindane)	Round whitefish	FRL	Misc. states	0.04 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1407
BHC (plus lindane)	Longnose sucker	FRL	Misc. states	0.01-0.03 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1407
BHC	Puntius ticto	--	--	70 (T4)	a,c,d,e,f	Of the pesticides investigated,	Bhatia

						the most toxic was Klofos followed in decreasing order by Sumithion, Malathion, Formithion, Dimecron, Sevin, and BHC. The author cites the need for more selective pesticides nontoxic to fish or antagonistic agents for reducing fish toxicity.	(1971), AMIC-5423
BHC	Carcinus maenas	BSA	--	greater than 100 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701
BHC	Cardium edule	BSA	--	greater than 10 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
BHC	Crangon crangon	BSA	--	0.001-0.003 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Bis hydroxymethyl) phosphinic acid	Pimephales promelas	BSA	--	29.0 (T4)	a*,d,e,o, and Fe	Malathion and its hydrolysis products were evaluated with the finding that one such product (diethyl fumarate) was more toxic than Malathion to fathead minnows. Synergism occurred between Malathion and two products of hydrolysis. Continuous exposure resulted in increased toxicity.	Bender (1969), AMIC-3787
Bis (dimethyl thio carbomoyl) disulfide	Phormidium ambiguum	L	--	0.5-10.0 (66percent growth inhibited 14)	--	Of 74 chemicals evaluated as algicides, only 9 were more toxic than $CuSO_4$. None inhibited growth of mat-forming algae for more than 2 weeks. $CuSO_4$ formulated with certain wetting agents was more toxic than $CuSO_4$ alone. Copper chloramine was also found to be	Otto (1970), AMIC-892

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
						more toxic than CuSO4. No wetting agents were found to be inhibitory at the concentrations investigated (0.05 and 0.005 ppm). Also reported are factors affecting growth of algae in canals to determine whether there were leads to controlling algae by environmental management. No practical environmental means were found.	
Bis (tri-n-butyl) tin oxide	Phormidium ambiguum	L	--	0.5-10.0 (100 percent growth inhibited 14)	--	same as above	Otto (1970), AMIC-892
Borasceu	Salmo gairdneri	BCFA and BSA	--	1,800 (T2)	a*,c,e,f, hard (HW) or SOFT(SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425
Bourbon	Betta splendens	L	--	2850 (SB 6 hr)	a*	The effects of ethanol and bourbon on the aggressive response of Siamese fighting fish were determined. Ethanol increased gill show (aggressiveness) and bourbon and bourbon congeners decreased it. The authors tentatively concluded that the delayed effect of the congener resulted from involvement of a different physiological mechanism and that this may be related to hangover effects in man.	Raynes, etal (1968),AMIC 5712
BP 1002	Carcinus maenas	BSA	--	10-33 (T2)	a*(continuous aeration, seawater, and daily	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine	Portmann, et al (1971), AMIC-7701

					solution renewal)	organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	
BP 1002	Cardium edule	BSA	--	33-100 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
BP 1002	Crangon crangon	BSA	--	3.3-10 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
BP 1002	Limanda limanda	BSA	--	10-33 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
BP 1002	Ostrea edulis	BSA	--	33-100 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
BP 1002	Pandalus montagui	BSA	--	3.3-10 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
BP 1100X	Agonus cataphractus	BSA	--	greater than 10,000 (T4)	a*(continuous aer-	same as above	Portmann, et al (1971),

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
					ation, sea-water, and daily solution renewal)		AMIC-7701
BP 1100X	Cardium edule	BSA	--	greater than 10,000 (T4)	a*(contin-uous aer-ation, sea-water, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
BP 1100X	Crangon crangon	BSA	--	greater than 10,000 (T4)	a*(contin-uous aer-ation, sea-water, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
BP 1100	Agonus cataphractus	BSA	--	1000-3300 (T2)	a*(contin-uous aer-ation, sea-water, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
BP 1100	Cardium edule	BSA	--	1000-3300 (T2)	a*(contin-uous aer-ation, sea-water, and daily solution renewal)	same as above	Portmann, et al (1971),AMIC-7701
BP 1100	Crangon crangon	BSA	--	greater than 3300 (T2)	a*(contin-uous aer-ation, sea-water, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701

BP	Fundulus heteroclitus	BSA	--	0.00001-0.00022 (T4)	a*,c,e,and synthetic seawater	A laboratory procedure based on Standard Methods for 96-hr toxicity determinations of crude oil and oil-dispersant mixtures was described. The dispersants varied considerably in toxicity, ranging from 0.01 to 7.1 ml/l, TL50 for 96 hr. These did not differ significantly from 240 hr values. The dispersants were designated as CX, DO, CI, OD, AQ, PC, MM, TN, BP, and NA with no further description of their chemical nature or source. Only a few bioassays were conducted with shrimp. Mollusks and echinoderms were suggested as suitable test animals. The authors stated that the method could be used to test any product for toxicity in seawater.	LaRoche, et al (1970), AMIC-445
BP	Nereis virens	BSA	--	0.00001-0.00017 (T4)	a*,c,e, and synthetic seawater	same as above	LaRoche,et al (1970), AMIC-445
Brakontrole	Rasbora heteromorpha	BCFA and BSA	--	62 (T2)	a*,c,e,f, hard (HW) or SOFT(SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425
Bromine	Coregonus clupeaformis	FL	Great Lakes - Superior, Michigan, and Erie	0.1(residue)	--	Trace element content of fish from Lakes Superior, Michigan, and Erie was determined by activation analysis. Whole body and liver residues were determined. Concentrations varied with species and lake. Other elements found were: antimony - 5 to 100 ppb, barium - 0.2 ppm, cesium - 3 ppb, lanthanum - 1 to 20 ppb, mercury - 10 ppb, rhenium - 0.5 to 5 ppb, rubidium - 0.06 to 6 ppm, scandium - 2 ppb, selenium - 0.1 to 2 ppb, silver - 0.001 ppb.	Lucas, et al (1970), AMIC-3778
Bromine	Coregonus hoyi	FL	Great Lakes - Superior, Michigan, and Erie	0.01(residue)	--	same as above	Lucas, et al (1970), AMIC-3778
Bromine	Prosopium cylindraceum	FL	Great Lakes - Superior, Michigan, and Erie	0.5(residue)	--	same as above	Lucas, et al (1970), AMIC-3778
Bromine	Salvelinus namaycush	FL	Great Lakes - Superior,	0.5(residue)	--	same as above	Lucas, et al (1970),

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
			Michigan, and Erie				AMIC-3778
Bromine	Carassius auratus	FL	Great Lakes - Superior, Michigan, and Erie	0.3(residue)	--	same as above	Lucas, et al (1970), AMIC-3778
Bromine	Roccus chrysops	FL	Great Lakes - Superior, Michigan, and Erie	0.8(residue)	--	same as above	Lucas, et al (1970), AMIC-3778
Bromine	Stizostedion vitreum vitreum	FL	Great Lakes - Superior, Michigan, and Erie	0.8(residue)	--	same as above	Lucas, et al (1970), AMIC-3778
Bromophos	Rasbora heteromorpha	BCFA and BSA	--	0.62 (T2)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425
Bromoxynil (K salt)	Rasbora heteromorpha	BCFA and BSA	--	60 (T2, hardwater)	a*,c,e,f,h ard (HW) or soft (SW) synthetic dilution water, or seawater for some species	same as above	Alabaster (1969),AMIC-5425
Bromoxynil (K salt)	Rasbora heteromorpha	BCFA and BSA	--	5.0 (T2, softwater)	a*,c,e,f, hard (HW) or soft	same as above	Alabaster (1969), AMIC-5425

					(SW) synthetic dilution water, or seawater for some species		
Busan 881	Rasbora heteromorpha	BCFA and BSA	--	0.65 (T2)	a*,c,e,f, hard (HW)or soft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969),AMIC-5425
Busan 90	Rasbora heteromorpha	BCFA and BSA	--	1.8 (T1, hardwater)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	same as above	Alabaster (1969), AMIC-5425
Busan 90	Rasbora heteromorpha	BCFA and BSA	--	1.2 (T1, softwater)	a*,c,e,f, hard (HW)or soft (SW) synthetic dilution water, or seawater for some species	same as above	Alabaster (1969),AMIC-5425
Cadmium chloride (as cadmium)	Agonus cataphractus	BSA	--	33 (T4)	a*(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
Cadmium chloride (as cadmium)	Cardium edule	BSA	--	3.3 (T4)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Cadmium chloride (as cadmium)	Crangon crangon	BSA	--	1.0 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Cadmium chloride	Fundulus heteroclitus	L	--	50 (SB2)	a*,c	Abnormalities observed included intestine, kidney, gill filaments, and respiratory lamellae. The earliest and most severe was the intestine (and mucus within one hr). Eosinophilia occurred after 4 hr exposure, and lymphocytethrombocyte irregularities occurred after 12 hr exposure. The authors suggest broader study of blood/pathology as a means for developing a water pollution classification similar to those used in mammalian toxicology.	Gardner,et al (190), AMIC-3827
Cadmium sulfate (as Cd)	Acroneuria	BSA	--	32 (T14)	a*,c,d,e,f	Ephemerella (mayfly) was the most sensitive aquatic insect of those studied, and copper the most broadly toxic metal. The authors suggest that aquatic insects may not be as sensitive to heavy metals as fish.	Warnick, et al(1969), AMIC-3767
Cadmium sulfate (as Cd)	Ephemerella	BSA	--	2 (T4)	a*,c,d,e,f	same as above	Warnick, et al(1969), AMIC-3767
Cadmium sulfate (as Cd)	Hydropsyche	BSA	--	32 (T10)	a*,c,d,e,f	same as above	Warnick, et al(1969), AMIC-3767

Cadmium	Alosa pseudo-harengus	FL	Great Lakes - Superior, Michigan, and Erie	0.00006 residue)	--	Trace element content of fish from Lakes Superior, Michigan, and Erie was determined by activation analysis. Whole body and liver residues were determined. Concentrations varied with species and lake. Other elements found were: antimony - 5 to 100 ppb, barium - 0.2 ppm, cesium - 3 ppb, lanthanum - 1 to 20 ppb, mercury - 10 ppb, rhenium - 0.5 to 5 ppb, rubidium - 0.06 to 6 ppm, scandium - 2 ppb, selenium - 0.1 to 2 ppb, silver - 0.001 ppb.	Lucas, et al (1970), AMIC-3778
Cadmium	Coregonus artedii	FL	Great Lakes - Superior, Michigan, and Erie	0.0016(residue)	--	same as above	Lucas, et al (1970), AMIC-3778
Cadmium	Coregonus clupeaformis	FL	Great Lakes - Superior, Michigan, and Erie	0.0002(residue)	--	same as above	Lucas, et al (1970), AMIC-3778
Cadmium	Coregonus hoyi	FL	Great Lakes - Superior, Michigan, and Erie	0.0005(residue)	--	same as above	Lucas, et al (1970), AMIC-3778
Cadmium	Prosopium cylindraceum	FL	Great Lakes - Superior, Michigan, and Erie	0.0004(residue)	--	same as above	Lucas, et al (1970), AMIC-3778
Cadmium	Salvelinus namaycush	FL	Great Lakes - Superior, Michigan, and Erie	0.003(residue)	--	same as above	Lucas, et al (1970), AMIC-3778
Cadmium	Osmerus mordax	FL	Great Lakes - Superior, Michigan, and Erie	0.00007 residue)	--	same as above	Lucas, et al (1970), AMIC-3778
Cadmium	Carassius auratus	FL	Great Lakes - Superior, Michigan, and Erie	0.0014(residue)	--	same as above	Lucas, et al (1970), AMIC-3778
Cadmium	Notropis hudsonius	FL	Great Lakes - Superior, Michigan, and Erie	0.0001(residue)	--	same as above	Lucas, et al (1970), AMIC-3778

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
Cadmium	Percopsis omiscomaycus	FL	Great Lakes - Superior, Michigan, and Erie	0.0001(residue)	--	same as above	Lucas, et al (1970), AMIC-3778
Cadmium	Roccus chrysops	FL	Great Lakes - Superior, Michigan,and Erie	0.0002(residue)	--	same as above	Lucas, et al (1970), AMIC-3778
Cadmium	Perca flavescens	FL	Great Lakes - Superior, Michigan, and Erie	0.0005(residue)	--	same as above	Lucas, et al (1970), AMIC-3778
Cadmium	Stizostedion vitreum vitreum	FL	Great Lakes - Superior, Michigan, and Erie	0.0002(residue)	--	same as above	Lucas, et al (1970), AMIC-3778
Cadmium	Coregonus clupeaformis	FL	Moose Lake, Can.	0.05 (residue)	--	Concentrations of 13 toxic elements in dressed fish from heavily industrialized and non-industrialized areas were determined. Only mercury exceeded regulatory limits, and concentrations of most elements were essentially the same in fish from both areas.	Uthe,et al (1971), AMIC-3819
Cadmium	Coregonus clupeaformis	FL	Lake Ontario, Can.	0.05 (residue)	--	same as above	Uthe,et al (1971), AMIC-3819
Cadmium	Esox lucius	FL	Moose Lake, Can.	0.05 (residue)	--	same as above	Uthe, et al (1971),AMIC-3819
Cadmium	Esox lucius	FL	Lake St. Pierre, Can.	0.05 (residue)	--	same as above	Uthe, et AL(1971), AMIC-3819
Cadmium	Esox lucius	FL	Lake Erie, Can.	0.05 (residue)	--	same as above	Uthe, et al (1971),AMIC-3819

Cadmium	Osmerus mordax	FL	Lake Erie, Can.	0.06 (residue)	--	same as above	Uthe, et AL(1971), AMIC-3819
Cadmium	Perca flavescens	FL	Lake Erie, Can.	0.05 (residue)	--	same as above	Uthe, et AL(1971), AMIC-3819
Cadmium	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	3 (dorsal muscle residue)	--	Fish collected from an effluent pipe of a steam plant and from offshore waters of Catalina Island were analyzed for trace element content. Trace element content of the effluent water was at least 5 times greater than that of normal sea water for cadmium, copper, nickel, zinc, and chromium. Livers of fish from the effluent were nearly twice the size of those from the ocean. Greatest differences in concentration occurred with aluminum, cadmium, and nickel. Silver, barium, lithium, and lead showed the least differences. The author concluded that trace element analysis of tissues could be used to determine the effect of pollutants on marine organisms.	Stapleton (1968), AMIC-5980
Cadmium	Paralabrax clathratus	FM	Catalina Island, Cal.	3 (dorsal muscle residue)	--	same as above	Stapleton (1969), AMIC-5980
Cadmium	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	4 (ventral muscle residue)	--	same as above	Stapleton (1968), AMIC-5980
Cadmium	Paralabrax clathratus	FM	Catalina Island, Cal.	2 (ventral muscle residue)	--	same as above	Stapleton (1968), AMIC-5980
Cadmium	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	10 (gonads residue)	--	same as above	Stapleton (1968), AMIC-5980
Cadmium	Paralabrax clathratus	FM	Catalina Island, Cal.	6 (gonads residue)	--	same as above	Stapleton (1968), AMIC-5980
Cadmium	Paralabrax clathratus (gravid females)	FM	Catalina Island, Cal.	3 (gonads residue)	--	same as above	Stapleton (1968), AMIC-5980

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
Cadmium	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	11 (liver residue)	--	same as above	Stapleton (1968), AMIC-5980
Cadmium	Paralabrax clathratus	FM	Catalina Island, Cal.	24 (liver residue)	--	same as above	Stapleton (1968), AMIC-5980
Cadmium	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	6 (integument residue)	--	same as above	Stapleton (1968), AMIC-5980
Cadmium	Paralabrax clathratus	FM	Catalina Island, Cal.	2 (integument residue)	--	same as above	Stapleton (1968), AMIC-5980
Cadmium	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	4 (heart residue)	--	same as above	Stapleton (1968), AMIC-5980
Cadmium	Paralabrax clathratus	FM	Catalina Island, Cal.	2 (heart residue)	--	same as above	Stapleton (1968), AMIC-5980
Cadmium	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	6 (eyeball residue)	--	same as above	Stapleton (1968), AMIC-5980
Cadmium	Paralabrax clathratus	FM	Catalina Island, Cal.	4 (eyeball residue)	--	same as above	Stapleton (1968), AMIC-5980
Calcium chloride	Lepomis macrochirus	BSA, L	--	10,650 (T4)	a*,e, and synthetic dilution water	This study was conducted to determine the relative toxicities of 20 common constituents of industrial wastes to a fish, an alga, and an invertebrate. The experiments were conducted over a 10-year period for varied purposes. The authors recommend bioassays with at least three components of the food web.	Patrick, et al (1968), AMIC-5720

Calcium chloride	Nitzschia linearis	BSA, L	--	3,130 (T5)	a#,e, and synthetic dilution water	same as above	Patrick, et al (1968), AMIC-5720
Calcium hypochlorite (as Cl)	Phormidium ambiguum	L	--	0.5-10.0 (NTE)	--	Of 74 chemicals evaluated as algicides, only 9 were more toxic than $CuSO_4$. None inhibited growth of mat-forming algae for more than 2 weeks. $CuSO_4$ formulated with certain wetting agents was more toxic than $CuSO_4$ alone. Copper chloramine was also found to be more toxic than $CuSO_4$. No wetting agents were found to be inhibitory at the concentrations investigated (0.05 and 0.005 ppm). Also reported are factors affecting growth of algae in canals to determine whether there were leads to controlling algae by environmental management. No practical environmental means were found.	Otto (1970), AMIC-892
Calcium oxide (plus Sulfuric acid)	Ictalurus punctatus	L	--	24,200-30,400 (K2, 5-9 ppm DO)	a*,c,e*,f, o	Large and small catfish were subjected to a neutral synthetic waste approximating that being dumped by the Sunflower Army Ammunition Plant into the Kansas River. There were no apparent differences between the responses of the large and small fish. Fish in the neutral mixture swam continuously with particles of the mixture clinging to the mucus of the skin. Also, the mucus stripped away in places, and strands of mucus extended from the gills. The degree of coating of the skin, stripping of the mucus, and mortality depended on the amount of solids kept in suspension by aeration.	Sparks, et al (1969), AMIC-5902
Calcium oxide (plus Sulfuric acid)	Ictalurus punctatus	L	--	367-509(67 percent K 22-28, 5-9 ppm DO)	a*,c,e*,f, o	same as above	Sparks, et al(1969), AMIC-5902
Calcium sulfate	Lepomis macrochirus	BSA, L	--	2,980 (T4)	a#,e, and synthetic dilution water	This study was conducted to determine the relative toxicities of 20 common constituents of industrial wastes to a fish, an alga, and an invertebrate. The experiments were conducted over a 10-year period for varied purposes. The authors recommend bioassays with at least three components of the food web.	Patrick, et al (1968), AMIC-5720

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
Calcium sulfate	Nitzschia linearis	BSA, L	--	3,200 (T5)	a*,e, and synthetic dilution water	same as above	Patrick, et al (1968), AMIC-5720
Calcium	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	728 (dorsal muscle residue)	--	Fish collected from an effluent ploe of a steam plant and from offshore waters of Catalina Island were analyzed for trace element content. Trace element content of the effluent water was at least 5 times greater than that of normal sea water for cadmium, copper, nickel, zinc, and chromium. Livers of fish from the effluent were nearly twice the size of those from the ocean. Greatest differences in concentration occurred with aluminum, cadmium, and nickel. Silver, barium, lithium, and lead showed the least differences. The author concluded that trace element analysis of tissues could be used to determine the effect of pollutants on marine organisms.	Stapleton (1968), AMIC-5980
Calcium	Paralabrax clathratus	FM	Catalina Island, Cal.	567 (dorsal muscle residue)	--	same as above	Stapleton (1968), AMIC-5980
Calcium	Paralabrax clathratus	FM	Scattergood Steam Plant, LosAngeles, Cal.	1020 (ventral muscle residue)	--	same as above	Stapleton (1968), AMIC-5980
Calcium	Paralabrax clathratus	FM	Catalina Island, Cal.	543 (ventral muscle residue)	--	same as above	Stapleton (1968), AMIC-5980
Calcium	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	853 (gonads residue)	--	same as above	Stapleton (1968), AMIC-5980
Calcium	Paralabrax clathratus	FM	Catalina Island, Cal.	565 (gonads residue)	--	same as above	Stapleton (1968), AMIC-5980

Calcium	Paralabrax clathratus (gravid females)	FM	Catalina Island, Cal.	550 (gonads residue)	--	same as above	Stapleton (1968), AMIC-5980
Calcium	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	155 (liver residue)	--	same as above	Stapleton (1968), AMIC-5980
Calcium	Paralabrax clathratus	FM	Catalina Island, Cal.	265 (liver residue)	--	same as above	Stapleton (1968), AMIC-5980
Calcium	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	1158 (integument residue)	--	same as above	Stapleton (1968), AMIC-5980
Calcium	Paralabrax clathratus	FM	Catalina Island, Cal.	1915 (integument residue)	--	same as above	Stapleton (1968), AMIC-5980
Calcium	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	380 (heart residue)	--	same as above	Stapleton (1968), AMIC-5980
Calcium	Paralabrax clathratus	FM	Catalina Island, Cal.	480 (heart residue)	--	same as above	Stapleton (1968), AMIC-5980
Calcium	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	19,000 (eyeball residue)	--	same as above	Stapleton (1968), AMIC-5980
Calcium	Paralabrax clathratus	FM	Catalina Island, Cal.	26,200(eyeball residue)	--	same as above	Stapleton (1968), AMIC-5980
Canal bank weedkiller	Rasbora heteromorpha	BCFA and BSA	--	610 (T2)	a*,c,e,f, hard(HW) or soft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true.	Alabaster (1969),AMIC-5425

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
						Testing the actual material as sold was found to be essential.	
Captan	Fish (not specified)	--	--	greater than 0.1-1.0 (K)	--	Approximate toxicities of numerous pesticides commonly used in Britain were summarized. An excellent brief, general discussion of toxicity testing is also present.	Mawdesley-Thomas (1971),AMIC-1056
Captan	Brachydanio rerio (larvae)	L	--	1.0 (T 30 min)	--	Folpet, Difolatan, and Captan were found to be toxic to zebrafish larvae within 90 min. Difolatan was most toxic while Captan was least toxic. Effects observed were cessation of heartbeat and loss of pigmentation. The authors recommended this as a sensitive, rapid bioassay for these and related compounds.	Abedi, et al (1968),AMIC-3717
Carbaryl	Fish (not specified)	--	--	greater than 1.0-10.0 (K)	--	Approximate toxicities of numerous pesticides commonly used in Britain were summarized. An excellent brief, general discussion of toxicity testing is also present.	Mawdesley-Thomas(1971) AMIC-1056
Carbaryl	Salvelinus fontinalis (1.15 g)	BCFA	--	1,070 (T4)	a#,c,d, e,f,i,o, sulfate, copper, manganese, iron, and chromium	Four insecticides were evaluated on four fish species at two body weights. Standard method bioassay procedures were followed. Symptomology was also reported. Generally, toxicity was significantly different at the two body weights, i.e., more toxic at the lower body weight, except for Malathion. Well-defined experimental conditions were said to result in truer measurement of toxicity.	Post, et al (1971), AMIC-1812
Carbaryl	Salvelinus fontinalis (2.04 g)	BCFA	--	1,450 (T4)	a#,c,d, e,f,i,o, sulfate, coppor, manganese, iron, and chromium	same as above	Post, et al (1971), AMIC-1812
Carbaryl	Salmo clarki	BCFA	--	1.5 (T4)	a#,c,d,	same as above	Post, et al

	(0.37 g)				e,f,i,o, sulfate, copper, manganese, iron, and chromium		(1971),AMIC-1812
Carbaryl	Salmo clarki (1.30 g)	BCFA	--	2.2 (T4)	a#,c,d, e,f,i,o, sulfate, copper, manganese, iron, and chromium	same as above	Post, et al (1971),AMIC-1812
Carbaryl	Salmo gairdneri (1.24 g)	BCFA	--	1.47 (T4)	a#,c,d, e,f,i,o, sulfate, copper, manganese, iron, and chromium	same as above	Post, et al (1971), AMIC-1812
Carbaryl	Oncorhynchus kisutch (.50 g)	BCFA	--	1.3 (T4)	a#,c,d, e,f,i,o, sulfate, copper, manganese, iron, and chromium	same as above	Post, et al (1971), AMIC-1812
Carbaryl	Ictalurus punctatus	BSA	--	15.80 (T4)	a, synthetic test water	Organochlorine insecticides were the most toxic compounds, organophosphates intermediate, carbamates the least toxic. Brown trout was the species most susceptible to organochlorines, coho salmon the most susceptible to carbamates, and goldfish were the least susceptible of all species. Safe concentrations established by bioassays with salmonids or centrarchids would likely be safe for cyprinids and ictalurids. Safe levels for ictalurids or cyprinids would probably be hazardous for centrarchids and salmonids. The use of goldfish in bioassays was discouraged.	Macek,et al (1970), AMIC-5510
Carbaryl	Ictalurus melas	BSA	--	20.00 (T4)	a, synthetic test water	same as above	Macek, etal (1970), AMIC-5510

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
Carbaryl	Carassius auratus	BSA	--	13.20 (T4)	a, synthetic testwater	same as above	Macek,et al (1970), AMIC-5510
Carbaryl	Cyprinus carpio	BSA	--	5.28 (T4)	a, synthetic test water	same as above	Macek, et al(1970), AMIC-5510
Carbaryl	Pimephales promelas	BSA	--	14.60 (T4)	a, synthetic test water	same as above	Macek,et al (1970). AMIC-5510
Carbaryl	Lepomis macrochirus	BSA	--	6.76 (T4)	a, synthetic test water	same as above	Macek,et al (1970), AMIC-5510
Carbaryl	Lepomis microlophus	BSA	--	11.20 (T4)	a, synthetic test water	same as above	Macek,et al (1970), AMIC-5510
Carbaryl	Micropterus salmoides	BSA	--	6.40 (T4)	a, synthetic test water	same as above	Macek,et al (1970), AMIC-5510
Carbaryl	Salmo gairdneri	BSA	--	4.34 (T4)	a, synthetic test water	same as above	Macek, etal (1970), AMIC-5510
Carbaryl	Salmo trutta	BSA	--	1.95 (T4)	a, synthetic test water	same as above	Macek, et al(1970), AMIC-5510
Carbaryl	Oncorhynchus kisutch	BSA	--	0.76 (T4)	a, synthetic test water	same as above	Macek,et al (1970), AMIC-5510
Carbaryl	Perca flavescens	BSA	--	0.75 (T4)	a, synthetic test water	same as above	Macek, etal (1970), AMIC-5510
Carbon dioxide	Salmo gairdneri (yearling)	BSA	--	35 (SB1)	a,c, bi-carbon-ato, and total solids	Bicarbonate in blood serum of brook trout rose to 5 times greater than that of contro Increase was slow, being half complete at 6 hr. Sodium and inorganic phosphate were not affected, but serum chloride increased. The	Lloyd, et al (1967), AMIC-3721

						authors note that the data indicate an environmental stress not related to problems of osmotic adaptation.	
Carbophenothion	Rasbora heteromorpha	BCFA and BSA	--	2.3 (T2)	a*,c,e,f, hard (HW) or SOFT(SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425
Carbyne	Rasbora heteromorpha	BCFA and BSA	--	0.5 (T2)	a*,c,e,f, hard (HW) or soft (SW) synthetic water, or seawater for some species	same as above	Alabaster (1969), AMIC-5425
Carbyne	Rasbora heteromorpha	BCFA and BSA	--	1.4 (T2)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	same as above	Alabaster (1969), AMIC-5425
Carbyne	Asterias rubens	BSA	--	3.3-10 (K 1 HR)	a*(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701
Carbyne	Cardium edule	BSA	--	100 (T2)	c*(continuous aer-	same as above	Portmann, et al (1971),

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
					ation, sea-water, and daily solution renewal)		AMIC-7701
Carbyne	Crangon crangon	BSA	--	3.3-10 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Casol	Pimephales promelas	BSA	--	32.0 (T4)	c,d,e,f	Toxicity of six oil spill dispersants was determined along with BOD values. Pond water was used as diluent and oil was included in the experiment. Oil markedly reduced toxicity of all dispersants. Data are given as "most probable" 96-hr TL sub m.	Zillich (1969), AMIC-2909
Casol	Pimephales promelas	BSA	--	4.4 (MSC)	c,d,e,f	same as above	Zillich (1969), AMIC-2909
Casol	Biochemical oxygen demand	L	--	610,000	c,d,e,f	same as above	Zillich (1969), AMIC-2909
Casoron G	Rasbora heteromorpha	BCFA and BSA	--	100 (T2)	a*,c,o,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425

Casoron 133	Rasbora heteromorpha	BCFA and BSA	--	13 (T2)	a*,c,e,f, hard (HW) or SOFT(SW) synthetic dilution water, or seawater for some species	same as above	Alabaster (1969), AMIC-5425
Casoron	Morone saxatilis (fingerlings)	BSA	--	6,200 (T4)	a,c,d,e,f, p	All compounds were investigated because of their probable usage in hatchery production of white bass. Compounds that can be used at recommended concentrations were Aquathol, Casaron, Lindane, and Terramycin concentrate. Those that should not be used were Acriflavine, Bayluscide, Malachite green oxalate, and Malathion.	Wellborn (1971), AMIC-5571
Casoron	Cardium edule	BSA	--	greater than 100 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701
Casoron	Crangon crangon	BSA	--	3.3-10 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Cd Cl2 . 2.5 H2O (as Cd 2 plus)	Crangon septemspinosa	BSA	--	0.32(T4)	a*,c,e, SSM	Although data cited were taken at 20 C and 2.0 percent salinity, varying temperature and salinity were also studied. Higher temperature (20 C) and lower salinity (5.0 percent) resulted in greater susceptibility of mummichogs to cadmium. TL sub 25, TL sub 50, and TL sub 75 for 24 and 48 hr are also presented. Post treatment mortality of mummichogs was also observed for considerably prolonged periods (up to 50 days). Teleosts were less susceptible than crustacea. Residue levels in mummichogs were also reported, e.g., whole body residues in excess of 86 mg Cd/kg body ash resulted in death within 5 wk. A review and discussion of results are also included.	Eisler (1971), AMIC-1621

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
Cd Cl2 . 2.5 H2O (as Cd 2 plus)	Fundulus heteroclitus	BSA	--	55.0 (T4)	a*,c,e, SSM	same as above	Eisler (1971), AMIC-1621
Cd Cl2 . 2.5 H2O (as Cd 2 plus)	Pagurus longicarpus	BSA	--	0.32 (T4)	a*,c,e, SSM	same as above	Eisler (1971), AMIC-1621
Cd Cl2 . 2.5 H2O (as Cd 2 plus)	Palaemonetes vulgaris	BSA	--	0.42 (T4)	a*,c,e, SSM	same as above	Eisler (1971), AMIC-1621
Cd Cl2 . 2.5 H2O (as Cd 2 plus)	Asterias forbesi	BSA	--	0.82 (T4)	a*,c,e, SSM	same as above	Eisler (1971), AMIC-1621
Cd Cl2 . 2.5 H2O (as Cd 2 plus)	Mya arenaria	BSA	--	2.2 (T4)	a*,c,e, SSM	same as above	Eisler (1971), AMIC-1621
Cd Cl2 . 2.5 H2O (as Cd 2 plus)	Carcinus maenus	BSA	--	4.1 (T4)	a*,c,e, SSM	same as above	Eisler (1971), AMIC-1621
Cd Cl2 . 2.5 H2O (as Cd 2 plus)	Urosalpinx cinerea	BSA	--	6.6 (T4)	a*,c,e, SSM	same as above	Eisler (1971), AMIC-1621
Cd Cl2 . 2.5 H2O (as Cd 2 plus)	Fundulus majalis	BSA	--	21.0 (T4)	a*,c,e, SSM	same as above	Eisler (1971), AMIC-1621
Cd Cl2 . 2.5 H2O (as Cd 2 plus)	Mytilus edulis	BSA	--	25.0 (T4)	a*,c,e, SSM	same as above	Eisler (1971), AMIC-1621
Cd Cl2 . 2.5 H2O (as Cd 2 plus)	Cyprinodon variegatus	BSA	--	50.0 (T4)	a*,c,e, SSM	same as above	Eisler (1971), AMIC-1621

Cd Cl2 . 2.5 H20 (as Cd 2 plus)	Nassarius obsoletus	BSA	--	10.5 (T4)	a*,c,e, SSM	same as above	Eisler (1971), AMIC-1621
Cd Cl2 . 2.5 H20 (as Cd 2 plus)	Nereis virens	BSA	--	11.0(T4)	a*,c,e, SSM	same as above	Eisler (1971), AMIC-1621
Chevron NI-0	Steelhead trout (fingerlings)	BSA	--	3.2 (T4)	--	Evaluation of 11 oil dispersants resulted in a ranking for each and a recommendation for use according to the ranking. Ranking was based on toxicity and oil dispersal effectiveness. Corexit 7764 appeared to have the least toxicity with fair to good oil dispersion capability.	Tracy, et al(1969), AMIC-3834
Chevron NI-0	Coho salmon (fingerlings)	BSA in situ	Hood Canal Hoodsport, Wash.	0.001 (K)	--	same as above	Tracy, et al (1969), AMIC-3834
Chloral hydrate	Negaprion brevirostris (1-3 kg)	BSA	--	300 (SB 1 hr)	a,c,e	Data from study of drug effects on young lemon sharks were treated mathematically to demonstrate applicability of classical rate theory to the study of chemical shark deterrents. Incapacitation (narcosis) was the primary parameter timed for effectiveness. This was usually quite rapid for the more effective drugs.	Baldridge(1969), AMIC-3832
Chloramine	Gammarus pseudo-limnaeus	BCF	--	0.22 (T4)	a#,c,d,e, f,r#,s	Chloramine toxicity was very carefully studied using weight reduction and reproduction over 15 to 21 week exposure periods. Loss of weight and ability to reproduce were observed at concentrations less than that observed for toxicity. The lowest chloramine concentration having no significant effect was less than 3.4 ppb for Gammarus and 0.017 ppb for the fathead minnow.	Arthur, et al (1971), AMIC-3290
Chloramine	Pimephales promelas	BCF	--	0.15 (T3) 0.09-0.15 (T4)	a#,c,d,e, f,r#,s	same as above	Arthur, et al (1971), AMIC-3290
Chloramine	Daphnia magna	BCF	--	0.001 (K 3-5)	a#,c,d,e, f,r#,s	same as above	Arthur, et al(1971), AMIC- 3290
Chloramphenicol	Mercenaria	L	--	74.3 (T2)	--	The effect of 52 pesticides on	Davis, et al

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
	mercenaria (eggs)					embryonic development of clams and oysters was reported. Synergistic effects with solvents were also reported. Most of the compounds affected development more than survival. Some, however, drastically reduced larval growth. The authors point out the necessity of evaluating the effects of pesticides on all life stages of an organism and note the possibility of selecting chemicals for pest control that would not have serious effect on shellfish.	(1969), AMIC-5990
Chloramphenicol	Mercenaria mercenaria (larvae)	L	--	50.0 (T12)	--	same as above	Davis, et al (1969), AMIC-5990
Chloramphenicol	Phormidium ambiguum	L	--	0.5-10.0 (NTE)	--	Of 74 chemicals evaluated as algicides, only 9 were more toxic than CuSO4. None inhibited growth of mat-forming algae for more than 2 weeks. CuSO4 formulated with certain wetting agents was more toxic than CuSO4 alone. Copper chloramine was also found to be more toxic than CuSO4. No wetting agents were found to be inhibitory at the concentrations investigated (0.05 and 0.005 ppm). Also reported are factors affecting growth of algae in canals to determine whether there were leads to controlling algae by environmental management. No practical environmental means were found.	Otto (1970), AMIC-892
Chlorax	Salmo gairdneri	BCFA and BSA	--	1,800 (T2)	a*, c, e, f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true.	Alabaster (1969), AMIC-5425

						Testing the actual material as sold was found to be essential.	
Chlordane	White sucker	FRL	Misc. states	0.12-0.44 residue (SB)	--	The Bureau of Sport Fisheries continued its fish monitoring program by collecting 147 composite fish samples from 50 nationwide monitoring stations during the fall of 1969. Fish were analyzed for residues of 11 organochlorine insecticides, lipids, and PCB"s.	Henderson,et al (1971), AMIC-1407
Chlordane	White perch	FRL	Misc. states	1.75 residue (SB)	--	same as above	Henderson, et al(1971), AMIC-1407
Chlordane	Largemouth bass	FRL	Misc. states	0.95 residue (SB)	--	same as above	Henderson, etal (1971), AMIC-1407
Chlordane	Brown bullhead	FRL	Misc. states	0.31 residue (SB)	--	same as above	Henderson, etal (1971), AMIC-1407
Chlordane	Carp	FRL	Misc. states	0.09-0.68 residue (SB)	--	same as above	Henderson, et al(1971), AMIC-1407
Chlordane	Channel catfish	FRL	Misc. states	0.09-1.01 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1407
Chlordane	Redhorse sucker	FRL	Misc. states	0.20 residue (SB)	--	same as above	Henderson, etal (1971), AMIC-1407
Chlordane	Gizzard shad	FRL	Misc. states	13.5 residue (SB)	--	same as above	Henderson, et al(1971), AMIC-1407
Chlordane	Striped mullet	FRL	Misc. states	0.09 residue (SB)	--	same as above	Henderson, et al(1971), AMIC-1407
Chlordane	Blue catfish	FRL	Misc. states	1.30 (SB)	--	same as above	Henderson, et al (1971),AMIC-1407
Chlordane	Walleye	FRL	Misc. states	0.10 residue (SB)	--	same as above	Henderson, et al (1971),AMIC-

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
							1407
Chlordane	Lepomis cyanellus (Resistant)	BSA	--	3.28 (T2)	a*	Green sunfish from Belzoni, Miss. were resistant to Chlordane, Heptachlor, Lindane, and Strobane, but not to Parathion. Golden shiners from the same location were resistant to Lindane and Strobane, tolerant to Chlordane and Heptachlor, and susceptible to Parathion. Lack of resistance to Parathion indicated lack of agricultural usage of organophosphates in that area. Resistant fish were compared to susceptible ones collected at Starkville.	Minchew, et al(1970), AMIC-5471
Chlordane	Lepomis cyanellus (Susceptible)	BSA	--	0.09 (T2)	a*	same as above	Minchew, et al(1970), AMIC-5471
Chlordane	Notemigonus crysoleucas (Resistant)	BSA	--	2.33 (T2)	a*	same as above	Minchew, et al(1970), AMIC-5471
Chlordane	Notemigonus crysoleucas (Susceptible)	BSA	--	0.41 (T2)	a*	same as above	Minchew, etal (1970), AMIC-5471
Chlordane	Palaemonetes kadiakensis (resistant)	BSA	--	0.0779-0.334 (T1)	a*	Bioassays were conducted with shrimp from three areas of intensive pesticide use and from an unexposed area. Previously exposed shrimp were from 1 to 25 times more resistant than unexposed shrimp. Both types of shrimp were also exposed in cages to waters of the contaminated areas. Susceptible shrimp suffered 66 percent more mortality than did resistant shrimp. The toxicity of the insecticides ranked in descending order was as follows: most toxic, Endrin, DDT, Methyl parathion, Parathion; medium toxicity, Guthion, Lindane, Toxaphene, Strobane; lease toxic Chlordane, Sevin, and Heptachlor.	Naqvi, et al (1970), AMIC-5519
Chlordane	Copepods (Cyclops bicuspidus Cyclops varicans, Eucyclops	FL and BSA	State College,Miss	0.30 (K2)	--	The response of pesticide-resistant aquatic organisms to various pesticides was compared to the response of non-resistant species. Pesticide-resistant species were collected at Belzoni and non-resistant	Naqvi, et al (1969), AMIC-5979

	agilis, Macrocyclops albidus, Orthocyclops modestus)					species at State College. Copepods, clams, snails, and sludge worms from Belzoni were considerably more tolerant to pesticides than the non-resistant organisms. The authors note that the effect of increased tolerance in the organisms is an increase in the amount of pesticide residues available to animals of higher trophic levels.	
Chlordane	Copepods (Cyclops bicuspidus, Cyclops varicans, Cyclops vernalis, Eucyclops agilis, Macrocyclops albidus, Orthocyclops modestus)	FL and BSA	Belzoni, Miss	0.30 (96percent K2)	--	same as above	Naqvi, et al (1969), AMIC-5979
Chlordane	Tubifex tubifex	FL and BSA	Belzoni, Miss.	1.50 (NTE)	--	same as above	Naqvi, et al(1969), AMIC-5979
Chlorea	Salmo gairdneri	BCFA and BSA	--	1,100 (T2)	a#,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425
Chlorfenvinphos	Rasbora heteromorpha	BCFA and BSA	--	0.25 (T2)	a#,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	same as above	Alabaster (1969), AMIC-5425
Chlorfenvinphos	Rasbora heteromorpha	BCFA and BSA	--	3.55 (T2)	a#,c,e,f, hard (HW) or soft (SW)	same as above	Alabaster (1969),AMIC-5425

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
					synthetic dilution water, or seawater for some species		
Chlorine	Pimephales promelas	BSA (ML)	Grand River, Wyoming, Mich.	0.07-0.15 (T4)	--	The indicated toxic levels of chloride occurred in 3.84 percent and 7.04 percent dilutions of wastewater effluent in river water. Sublethal effects were noted at dilutions as low as 1.92 percent. The authors note that this chemical at low concentrations 0.05 mg/l may seriously degrade fish populations in rivers.	Zillich, et al (1969), AMIC-2878
Chlorine	Fathead minnow	BSA (ML)	Grand River, Lansing, Mich.	8.33 percent(Kl, WWD)	--	Striking sublethal effects were noted at lower dilutions. Dechlorination did not remove toxicity of the wastewater since toxic effects were noted at dilutions of 42 and 50 percent of dechlorinated waste water. Cyanide was present at 0.2 mg/l and may have had some influerce on the results. The authors concluded that the waste water caused severe degradation of the Grand River.	Zillich, et al (1970), AMIC-2899
Chloroflurazole	Rasbora heteromorpha	BCFA and BSA	--	0.13 (T2)	a*,c,e,f, hard (HW) orsoft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425
Chloropropylate	Rasbora heteromorpha	BCFA and BSA	--	20 (T2)	a*,c,e,f, hard (HW) or soft (SW) syn-	same as above	Alabaster (1969), AMIC-5425

					thetic dilution water, or seawater for some species		
Chlorthiamid	Rasbora heteromorpha	BCFA and BSA	--	30 (T2)	a*,c,e,f, hard (HW) or SOFT(SW) synthetic dilution water, or seawater for some species	same as above	Alabaster (1969), AMIC-5425
Chromates (as chromium)	Agonus cataphractus	BSA	--	33-100 (T2)	a*(continuous aeration, sea water, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701
Chromates (as chromium)	Asterias rubens	BSA	--	33-100 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Chromates (as chromium)	Cardium edule	BSA	--	100-330 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann,et al (1971), AMIC-7701
Chromates (as chromium)	Crangon crangon	BSA	--	100 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
Chromic chloride (as Cr)	Acroneuria	BSA	--	32 (T7)	a*,c,d,e,f	Ephemerella (mayfly) was the most sensitive aquatic insect of those studied, and copper the most broadly toxic metal. The authors suggest that aquatic insects may not be as sensitive to heavy metals as fish.	Warnick, et al(1969), AMIC-3767
Chromic chloride (as Cr)	Ephemerella	BSA	--	2 (T4)	a*,c,d,e,f	same as above	Warnick, et al(1969), AMIC-3767
Chromic chloride (as Cr)	Hydropsyche	BSA	--	64 (T4)	a*,c,d,e,f	same as above	Warnick, et al(1969), AMIC-3767
Chromium trioxide (as Cr)	Phormidium ambiguum	L	--	0.5-10.0 (NTE)	--	Of 74 chemicals evaluated as algicides, only 9 were more toxic than CuSO4. None inhibited growth of mat-forming algae for more than 2 weeks. CuSO4 formulated with certain wetting agents was more toxic than CuSO4 alone. Copper chloramine was also found to be more toxic than CuSO4. No wetting agents were found to be inhibitory at the concentrations investigated (0.05 and 0.005 ppm). Also reported are factors affecting growth of algae in canals to determine whether there were leads to controlling algae by environmental management. No practical environmental means were found.	Otto (1970), AMIC-892
Chromium	Alosa pseudo-harengus	FL	Great Lakes - Superior, Michigan, and Erie	1.1(residue)	--	Trace element content of fish from Lakes Superior, Michigan, and Erie was determined by activation analysis. Whole body and liver residues were determined. Concentrations varied with species and lake. Other elements found were: antimony - 5 to 100 ppb, barium - 0.2 ppm, cesium - 3 ppb, lanthanum - 1 to 20 ppb, mercury - 10 ppb, rhenium - 0.5 to 5 ppb, rubidium - 0.06 to 6 ppm, scandium - 2 ppb, selenium - 0.1 to 2 ppb, silver - 0.001 ppb.	Lucas, et al (1970), AMIC-3778

Chromium	Notropis hudsonius	FL	Great Lakes - Superior, Michigan, and Erie	5.5(residue)	--	same as above	Lucas, et al (1970), AMIC-3778
Chromium	Percopsis omiscomaycus	FL	Great Lakes - Superior, Michigan, and Erie	2.4(residue)	--	same as above	Lucas, et al (1970), AMIC-3778
Chromium	Coregonus clupeaformis	FL	Moose Lake, Can.	0.03 (residue)	--	Concentrations of 13 toxic elements in dressed fish from heavily industrialized and non-industrialized areas were determined. Only mercury exceeded regulatory limits, and concentrations of most elements were essentially the same in fish from both areas.	Uthe, et AL(1971), AMIC-3819
Chromium	Coregonus clupeaformis	FL	Lake Ontario, Can.	0.02 (residue)	--	same as above	Uthe, etal (1971), AMIC-3819
Chromium	Esox lucius	FL	Moose Lake, Can.	0.04 (residue)	--	same as above	Uthe, et al (1971),AMIC-3819
Chromium	Esox lucius	FL	Lake St. Pierre, Can.	0.03 (residue)	--	same as above	Uthe, et AL(1971), AMIC-3819
Chromium	Esox lucius	FL	Lake Erie, Can.	0.03 (residue)	--	same as above	Uthe, et al (1971),AMIC-3819
Chromium	Osmerus mordax	FL	Lake Erie, Can.	0.03 (residue)	--	same as above	Uthe, et al (1971),AMIC-3819
Chromium	Perca flavescens	FL	Lake Erie, Can.	0.07 (residue)	--	same as above	Uthe, et al (1971),AMIC-3819
Chromium	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	1.3 (dorsal muscle residue)	--	Fish collected from an effluent ploe of a steam plant and from offshore waters of Catalina Island were analyzed for trace element content. Trace element content of the effluent water was at least 5 times greater than that of normal sea water for cadmium, copper, nickel, zinc, and chromium. Livers of fish from the effluent were nearly twice the size of those from the ocean. Greatest differences in concentration occurred with aluminum, cadmium, and nickel. Silver, barium, lithium, and lead showed the least differences. The author concluded that trace element analysis of tissues could be used to determine the effect of pollutants on marine organisms.	Stapleton (1968), AMIC-5980

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
Chromium	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	4.8 (eyeball residue)	--	same as above	Stapleton (1968), AMIC-5980
Chromium	Paralabrax clathratus	FM	Catalina Island, Cal.	5.5 (eyeball residue)	--	same as above	Stapleton (1968), AMIC-5980
Chromium	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	0.9 (heart residue)	--	same as above	Stapleton (1968), AMIC-5980
Chromium	Paralabrax clathratus	FM	Catalina Island, Cal.	1.7 (heart residue)	--	same as above	Stapleton (1968), AMIC-5980
Chromium	Paralabrax clathratus	FM	Catalina Island, Cal.	1.7 (dorsal muscle residue)	--	same as above	Stapleton (1968), AMIC-5980
Chromium	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	1.4 (ventral muscle residue)	--	same as above	Stapleton (1968), AMIC-5980
Chromium	Paralabrax clathratus	FM	Catalina Island, Cal.	1.4 (ventral muscle residue)	--	same as above	Stapleton (1968), AMIC-5980
Chromium	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	2 (gonads residue)	--	same as above	Stapleton (1968), AMIC-5980

Chromium	Paralabrax clathratus	FM	Catalina Island, Cal.	2.3 (gonads residue)	--	same as above	Stapleton (1968), AMIC-5980
Chromium	Paralabrax clathratus (gravid females)	FM	Catalina Island, Cal.	2.6 (gonads residue)	--	same as above	Stapleton (1968), AMIC-5980
Chromium	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	1 (liver residue)	--	same as above	Stapleton (1968), AMIC-5980
Chromium	Paralabrax clathratus	FM	Catalina Island, Cal.	1.5 (liver residue)	--	same as above	Stapleton (1968), AMIC-5980
Chromium	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	1.9 (integument residue)	--	same as above	Stapleton (1968), AMIC-5980
Chromium	Paralabrax clathratus	FM	Catalina Island, Cal.	1.4 (integument residue)	--	same as above	Stapleton (1958), AMIC-5980
Citric acid	Carcinus maenas	BSA	--	160 (T2)	a*(continuous aeration, sea-water, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701
CI	Fundulus heteroclitus	BSA	--	0.00014-0.0012 (T4)	a*,c,e, and synthetic seawater	A laboratory procedure based on Standard Methods for 96-hr toxicity determinations of crude oil and oil-dispersant mixtures was described. The dispersants varied considerably in toxicity, ranging from 0.01 to 7.1 ml/l, TL50 for 96 hr. These did not differ significantly from 240 hr values. The dispersants were designated as CX, DO, CI, OD, AQ, PC, MM, TN, BP, and NA with no further description of their chemical nature or source. Only a few bioassays were conducted with shrimp. Mollusks and echinoderms were suggested as suitable test animals. The authors stated that the method could be used to test any product for toxicity in seawater.	LaRoche, et al (1970), AMIC-445
CI	Nereis virens	BSA	--	0.0002-0.0007 (T4)	a*,c,e, and synthetic seawater	same as above	LaRoche, et al (1970), AMIC-445

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
Cleanosol	Cardium edule	BSA	--	10-33 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701
Cleanosol	Crangon crangon	BSA	--	33-100 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Cleanosol	Pandalus montagui	BSA	--	33 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Clophen A30	Agonus cataphractus	BSA	--	greater than 10 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann,et al (1971), AMIC-7701
Clophen A30	Cardium edule	BSA	--	3 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Clophen A30	Crangon crangon	BSA	--	0.03-1.0 (T2)	a*(continuous aeration, seawater, and	same as above	Portmann, et al (1971), AMIC-7701

					daily solution renewal)		
Clophen A60	Agonus cataphractus	BSA	--	greater than 10 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Clophen A60	Cardium edule	BSA	--	greater than 10 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al(1971), AMIC-7701
Clophen A60	Crangon crangon	BSA	--	greater than 10 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al(1971), AMIC-7701
Clophen A 40	Crangon crangon	BSA	--	1.0-3.3 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Clophen A 50	Crangon crangon	BSA	--	3.3-10 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
CN, Cu, Ni, Cr, and Zn	Pimephales promelas	BSACF (ML)	Grand River at	between 1.25-3.75	a,c,e, conductivity,	A mobile bioassay unit was utilized to conduct this study of municipal wastewater containing the indicated toxicants. River water was used as diluent. The conclusion was reached that synergistic or additive toxic effects occurred since toxicity was greater than that of any of the ions singly.	Zillich (1969),

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
			Wyoming,Mich igan	percent (T3)	Ni,Cu,Cr, CN, and Zn		AMIC-2906
CN, Cu, Ni, Cr, and Zn	Catostomus commersoni	BSACF (ML)	Grand River at Wyoming,Mich igan	between 1.25-3.75 percent (T3)	a,c,e, conductivity, Ni,Cu,Cr, CN, and Zn	same as above	Zillich (1969), AMIC-2906
Cobaltous sulfate (as Co)	Acroneuria	BSA	--	32 (T8)	a*,c,d,e,f	Ephemerella (mayfly) was the most sensitive aquatic insect of those studied, and copper the most broadly toxic metal. The authors suggest that aquatic insects may not be as sensitive to heavy metals as fish.	Warnick, et al(1969), AMIC-3767
Cobaltous sulfate (as Co)	Ephemerella	BSA	--	16 (T4)	a*,c,d,e,f	same as above	Warnick, et al(1969), AMIC-3767
Cobaltous sulfate (as Co)	Hydropsyche	BSA	--	32 (T7)	a*,c,d,e,f	same as above	Warnick, et al(1969), AMIC-3767
Cobalt	Alosa pseudo-harengus	FL	Great Lakes - Superior, Michigan, and Erie	0.029(residue)	--	Trace element content of fish from Lakes Superior, Michigan, and Erie was determined by activation analysis. Whole body and liver residues were determined. Concentrations varied with species and lake. Other elements found were; antimony - 5 to 100 ppb, barium - 0.2 ppm, cesium - 3 ppb, lanthanum - 1 to 20 ppb, mercury - 10 ppb, rhenium - 0.5 to 5 ppb, rubidium - 0.06 to 6 ppm, scandium - 2 ppb, selenium - 0.1 to 2 ppb, silver - 0.001 ppb.	Lucas, et al (1970), AMIC-3778
Cobalt	Coregonus artedii	FL	Great Lakes - Superior, Michigan, and Erie	0.020(residue)	--	same as above	Lucas, et al (1970), AMIC-3778
Cobalt	Coregonus clupeaformis	FL	Great Lakes - Superior, Michigan,	0.023(residue)	--	same as above	Lucas, et al (1970), AMIC-3778

			and Erie				
Cobalt	Coregonus hoyi	FL	Great Lakes - Superior, Michigan, and Erie	0.026(residue)	--	same as above	Lucas, et al (1970), AMIC-3778
Cobalt	Prosopium cylindraceum	FL	Great Lakes - Superior, Michigan, and Erie	0.047(residue)	--	same as above	Lucas, et al (1970), AMIC-3778
Cobalt	Salvelinus namaycush	FL	Great Lakes - Superior, Michigan, and Erie	0.033(residue)	--	same as above	Lucas, et al (1970), AMIC-3778
Cobalt	Osmerus mordax	FL	Great Lakes - Superior, Michigan, and Erie	0.013(residue)	--	same as above	Lucas, et al (1970), AMIC-3778
Cobalt	Notropis hudsonius	FL	Great Lakes - Superior, Michigan, and Erie	0.033(residue)	--	same as above	Lucas, et al (1970), AMIC-3778
Cobalt	Percopsis omiscomaycus	FL	Great Lakes - Superior, Michigan, and Erie	0.023(residue)	--	same as above	Lucas, et al (1970), AMIC-3778
Cobalt	Roccus chrysops	FL	Great Lakes - Superior, Michigan, and Erie	0.043(residue)	--	same as above	Lucas, et al (1970), AMIC-3778
Cobalt	Perca flavescens	FL	Great Lakes - Superior, Michigan, and Erie	0.120(residue)	--	same as above	Lucas, et al (1970), AMIC-3778
Cobalt	Stizostedion vitreum vitreum	FL	Great Lakes - Superior, Michigan, and Erie	0.045(residue)	--	same as above	Lucas, et al (1970), AMIC-3778
Cobalt	Paralabrax clathratus	FM	Scattergood Steam Plant, LosAngeles, Cal.	1.4 (dorsal muscle residue)	--	Fish collected from an effluent pipe of a steam plant and from offshore waters of Catalina Island were analyzed for trace element content. Trace element	Stapleton (1968), AMIC-5980

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
						content of the effluent water was at least 5 times greater than that of normal sea water for cadmium, copper, nickel, zinc, and chromium. Livers of fish from the effluent were nearly twice the size of those from the ocean. Greatest differences in concentration occurred with aluminum, cadmium, and nickel. Silver, barium, lithium, and lead showed the least differences. The author concluded that trace element analysis of tissues could be used to determine the effect of pollutants on marine organisms.	
Cobalt	Paralabrax clathratus	FM	Catalina Island, Cal.	2.2 (dorsal muscle residue)	--	same as above	Stapleton (1968), AMIC-5980
Cobalt	Paralabrax clathratus	FM	Scattergood Steam Plant, LosAngeles, Cal.	1.2ventral muscle residue)	--	same as above	Stapleton (1968), AMIC-5980
Cobalt	Paralabrax clathratus	FM	Catalina Island, Cal.	4.3 (ventral muscle residue)	--	same as above	Stapleton (1968), AMIC-5980
Cobalt	Paralabrax clathratus	FM	Scattergood Steam Plant, LosAngeles, Cal.	3.6 (gonads residue)	--	same as above	Stapleton (1968), AMIC-5980
Cobalt	Paralabrax clathratus	FM	Catalina Island, Cal.	4.4 (gonads residue)	--	same as above	Stapleton (1968), AMIC-5980
Cobalt	Paralabrax clathratus (gravid females)	FM	Catalina Island, Cal.	3.7(gonads residue)	--	same as above	Stapleton (1968), AMIC-5980
Cobalt	Paralabrax clathratus	FM	Scattergood Steam Plant, LosAngeles, Cal.	1.4 (liver residue)	--	same as above	Stapleton (1968), AMIC-5980

Cobalt	Paralabrax clathratus	FM	Catalina Island, Cal.	1.9 (liver residue)	--	same as above	Stapleton (1968), AMIC-5980
Cobalt	Paralabrax clathratus	FM	Scattergood Steam Plant, LosAngeles, Cal.	1.8 (integument residue)	--	same as above	StaplIIIIII eton (1968), AMIC-5980
Cobalt	Paralabrax clathratus	FM	Catalina Island, Cal.	1.4 (integument residue)	--	same as above	Stapleton (1968), AMIC-5980
Cobalt	Paralabrax clathratus	FM	Scattergood Steam Plant, LosAngeles, Cal.	1.7 (heart residue)	--	same as above	Stapleton (1968), AMIC-5980
Cobalt	Paralabrax clathratus	FM	Catalina Island, Cal.	1.2 (heart residue)	--	same as above	Stapleton (1968), AMIC-5980
Cobalt	Paralabrax clathratus	FM	Scattergood Steam Plant, LosAngeles, Cal.	5.2 (eyeball residue)	--	same as above	Stapleton (1968), AMIC-5980
Cobalt	Paralabrax clathratus	FM	Catalina Island, Cal.	5.1 (eyeball residue)	--	same as above	Stapleton (1968), AMIC-5980
Cocoamine diacetate	Phormidium ambiguum	L	--	0.5-10.0 (NTE)	--	Of 74 chemicals evaluated as algicides, only 9 were more toxic than $CuSO_4$. None inhibited growth of mat-forming algae for more than 2 weeks. $CuSO_4$ formulated with certain wetting agents was more toxic than $CuSO_4$ alone. Copper chloramine was also found to be more toxic than $CuSO_4$. No wetting agents were found to be inhibitory at the concentrations investigated (0.05 and 0.005 ppm). Also reported are factors affecting growth of algae in canals to determine whether there were leads to controlling algae by environmental management. No practical environmental means were found.	Otto(1970), AMIC-892
Coco monoethanolamide (plus ethylene oxide, ethoxy	Cardium edule	BSA	--	greater than 100 (T2)	as (continuous aeration, sea-water, and	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were	Portmann, et al (1971), AMIC-7701

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
monoethanolamide)					daily solution renewal)	evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	
Coco monoethanolamide (plus ethylene oxide, ethoxy monoethanolamide)	Crangon crangon	BSA	--	greater than 100 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Coco monoethanolamide (plus ethylene oxide, ethoxy monoethanolamide)	Carcinus maenas	BSA	--	greater than 100 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Coco monoethanolamide	Cardium edule	BSA	--	greater than 100 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Coco monoethanolamide	Crangon crangon	BSA	--	greater than 100 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Compass	Cardium edule	BSA	--	greater than 100 (T2)	a*(continuous aeration, seawater, and daily solution	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most	Portmann, et al (1971), AMIC-7701

					renowal)	published data of this type deal with toxicity of chemicals to freshwater organisms.	
Compass	Crangon crangon	BSA	--	greater than 100 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Compass	Carcinus maenas	BSA	--	greater than 100 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Cooper"s Fly dip (new type)	Rasbora heteromorpha	BCFA and BSA	--	3.55 (T2)	a*,c,e,f, hard(HW) or soft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity soanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water ani sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster, (1969),AMIC-5425
Copper chloride (as Cu)	Lepomis macrochirus	BSA, L	--	1.25 (T4)	a*,e, and synthetic dilution water	This study was conducted to determine the relative toxicities of 20 common constituents of industrial wastes to a fish, an alga, and an invertebrate. The experiments were conducted over a 10-year period for varied purposes. The authors recommend bioassays with at least three components of the food web.	Patrick, et al (1968), AMIC-5720
Copper chloride (as Cu)	Nitzschia linearis	BSA, L	--	0.81 (T5)	a*,e, and synthetic dilution water	same as above	Patrick, et al (1968), AMIC-5720
Copper	Phormidium	L	--	0.5-10.0 (16	--	Of 74 chemicals evaluated as	Otto (1970),

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
methane-arsonate	ambiguum			percent growth inhibited14)		algicides, only 9 were more toxic than $CuSO_4$. None inhibited growth of mat-forming algae for more than 2 weeks. $CuSO_4$ formulated with certain wetting agents was more toxic than $CuSO_4$ alone. Copper chloramine was also found to be more toxic than $CuSO_4$. No wetting agents were found to be inhibitory at the concentrations investigated (0.05 and 0.005 ppm). Also reported are factors affecting growth of algae in canals to determine whether there were leads to controlling algae by environmental management. No practical environmental means were found.	AMIC-892
Copper salts	Fish (not specified)	--	--	greater than 0.1-1.0 (K)	--	Approximate toxicities of numerous pesticides commonly used in Britain were summarized. An excellent brief, general discussion of toxicity testing is also present.	Mawdesley-Thomas(1971) AMIC-1056
Copper salt of endothall	Phormidium ambiguum	L	--	0.5-10.0 (NTE)	--	Of 74 chemicals evaluated as algicides, only 9 were more toxic than $CuSO_4$. None inhibited growth of mat-forming algae for more than 2 weeks. $CuSO_4$ formulated with certain wetting agents was more toxic than $CuSO_4$ alone. Copper chloramine was also found to be more toxic than $CuSO_4$. No wetting agents were found to be inhibitory at the concentrations investigated (0.05 and 0.005 ppm). Also reported are factors affecting growth of algae in canals to determine whether there were leads to controlling algae by environmental management. No practical environmental means were found.	Otto (1970), AMIC-892
Copper sodium citrate (as Cu)	Watersipora cucullata (larvae)	L	--	0.63 (T 2 hr)	a,o,i, and salinity	This study was conducted to determine species of marine larvae suitable for use in test screening antifouling chemicals. A salina (brine shrimp) appeared to have the best potential for this purpose. A salina larvae sensitivity was greatest starting at age 20-80 hr, and tolerated relatively low pH (5.0).	Wisely, et al (1967), AMIC-5708

Copper sodium citrate (as Cu)	Bugula neritina (larvae)	L	--	3.90 (T 2 hr)	a,c,i, and salinity	same as above	Wisely, et al (1967), AMIC-5708
Copper sodium citrate (as Cu)	Spirorbis lamellosa (larvae)	L	--	0.48 (T 2 hr)	a,c,i, and salinity	same as above	Wisely, et al (1967), AMIC-5708
Copper sodium citrate (as Cu)	Galeolaria caespitosa (larvae)	L	--	2.90 (T 2 hr)	a,c,i, and salinity	same as above	Wisely, et al (1967), AMIC-5708
Copper sodium citrate (as Cu)	Mytilus edulis planulatus (larvae)	L	--	23 (T 2 hr)	a,c,i, and salinity	same as above	Wisely, et al (1967), AMIC-5708
Copper sulfate plus Alkylaryl polyoxethylene glycols	Phormidium ambiguum	L	--	0.5-10.0 (100 percent growth inhibited 14)	--	Of 74 chemicals evaluated as algicides, only 9 were more toxic than CuSO4. None inhibited growth of mat-forming algae for more than 2 weeks. CuSO4 formulated with certain wetting agents was more toxic than CuSO4 alone. Copper chloramine was also found to be more toxic than CuSO4. No wetting agents were found to be inhibitory at the concentrations investigated (0.05 and 0.005 ppm). Also reported are factors affecting growth of algae in canals to determine whether there were leads to controlling algae by environmental management. No practical environmental means were found.	Otto (1970), AMIC-892
Copper sulfate plus Ammonium carbonate (1:2)	Phormidium ambiguum	L	--	0.5-10.0 (100 percent growth inhibited 14)	--	same as above	Otto (1970), AMIC-892
Copper sulfate plus Ammonium chloride (2:1	Phormidium ambiguum	L	--	0.5-10.0 (100 percent growth inhibited 14)	--	same as above	Otto (1970), AMIC-892
Copper sulfate plus Zinc sulfate (1:2)	Phormidium ambiguum	L	--	0.5-10.0 (100 percent growth inhibited 14)	--	same as above	Otto (1970), AMIC-892

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
Copper sulfate plus Calcium salt of polyoxyethylene	Phormidium ambiguum	L	--	0.5-10.0 (100 percent growth inhibited 14)	--	same as above	Otto (1970), AMIC-892
Copper sulfate plus Dodecylether of polyethylene glycol	Phormidium ambiguum	L	--	0.5-10.0 (50 percent growth inhibited 14)	--	same as above	Otto (1970), AMIC-892
Copper sulfate plus Emulsifiable polyethylene	Phormidium ambiguum	L	--	0.5-10.0(25 percent growth inhibited 14)	--	same as above	Otto (1970), AMIC-892
Copper sulfate plus Ethoxylated isooctyl phenoxy polyethoxy ethanol	Phormidium ambiguum	L	--	0.5-10.0 (50 percent growth inhibited 14)	--	same as above	Otto (1970), AMIC-892
Copper sulfate plus Ethoxylated nonyl phenylether	Phormidium ambiguum	L	--	0.5-10.0 (50 percent growth inhibited 14)	--	same as above	Otto (1970),AMIC-892
Copper sulfate plus Polyoxyethlene nonyl phenylether	Phormidium ambiguum	L	--	0.5-10.0 (NTE)	--	same as above	Otto (1970), AMIC-892
Copper sulfate (as copper)	Carcinus maenas	BSA	--	109 (T2)	a*(continuous aeration, sea-water, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701

Copper sulfate (as copper)	Cardium edule	BSA	--	1.0 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Copper sulfate (as copper)	Crangon crangon	BSA	--	19 (T4)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Copper sulfate (as copper)	Ostrea edulis	BSA	--	100 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Copper sulfate (as copper)	Pandalus montagui	BSA	--	14 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Copper sulfate (as copper)	Platicthys flesus	BSA	--	1.0-3.3 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Copper sulfate (as Cu2 plus)	Salmo gairdneri (eggs and sperm)	LCF	--	1.0 (NTE)	a,c,f	Data were given in mg/l which was taken to be the equivalent of ppm. Fertilization rates were statistically similar in both test (Cu and Ni) and control waters. The rate of hatching was significantly different for eggs exposed to Cu and the rate of development was	Shaw, et al (1971), AMIC-1444

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
						increased. The authors concluded that in hard waters neither Cu nor Ni is likely to impair fertilization in rainbow trout.	
Copper sulfate (as Cu)	Acroneuria	BSA	--	8.3 (T4)	a*,c,d,e,f	Ephemerella (mayfly) was the most sensitive aquatic insect of those studied, and copper the most broadly toxic metal. The authors suggest that aquatic insects may not be as sensitive to heavy metals as fish.	Warnick, et al (1969), AMIC-3767
Copper sulfate (as Cu)	Ephemerella	BSA	--	0.32 (T2)	a*,c,d,e,f	same as above	Warnick, etal (1969), AMIC-3767
Copper sulfate (as Cu)	Hydropsyche	BSA	--	32 (T14)	a*,c,d,e,f	same as above	Warnick, etal (1959), AMIC-3767
Copper sulfate (as Cu)	Phormidium ambiguum	L	--	0.5-10.0 (83 percent growth inhibited14)	--	Of 74 chemicals evaluated as algicides, only 9 were more toxic than CuSO4. None inhibited growth of mat-forming algae for more than 2 weeks. CuSO4 formulated with certain wetting agents was more toxic than CuSO4 alone. Copper chloramine was also found to be more toxic than CuSO4. No wetting agents were found to be inhibitory at the concentrations investigated (0.05 and 0.005 ppm). Also reported are factors affecting growth of algae in canals to determine whether there were leads to controlling algae by environmental management. No practical environmental means were found.	Otto (1970), AMIC-892
Copper sulfate	Pseudopleuronectes americanus (3 yr)	LCF	--	0.180 (SB)	a*,c,e	Winter flounder were exposed to varied concentrations of copper and selected tissues examined by light and electron microscopy. Medium to high concentrations of copper resulted in fatty liver deposits, kidney necrosis, hemopoetic tissue destruction, and gill architectural changes as determined by light microscopic analysis. Seven additional organs or structures were	Baker (1969), AMIC-3763

						apparently unaffected. Low levels of copper caused varied anomalies in gill lamellae as determined by electron microscopy.	
Copper sulfate	Pseudopleuronectes americanus (3 yr)	LCF	--	0.560-3.2 (K29)	a*,c,e	same as above	Baker (1969), AMIC-3763
Copper sulfate	Pimephales promelas	BSA	--	0.084 (T4)	a*,c,d,e, f, acidity conductivity, and Cu	Copper at 18.4 ppb affected survival, growth, and spawning. Lower concentrations also reduced growth and spawning but apparently not egg hatchability. The *maximum acceptable* toxicant concentration (MATC) for the fathead minnow was calculated to be between 0.13 to 0.22 of the 96-hr TL sub m. Some difference in results in hard and soft water was found but the authors recommend further study. Use and further development of the application factor approach was further recommended.	Mount, et al (1969), AMIC-3765
Copper sulfate	Pimephales promelas	BCFA	--	0.075 (T4)	a*,c,d,e, f, acidity, conductivity, and Cu	same as above	Mount, et al (1969), AMIC-3765
Copper sulfate	Pimephales promelas	BCFCH	--	0.018 (T 12 MO)	a*,c,d,e, f, acidity, conductivity, and Cu	same as above	Mount, et al (1969), AMIC-3765
Copper sulfate	Lepomis macrochirus (juvenile)	L	--	1-5 (S81)	a*,c,e,f	Copper caused a respiratory increase as concentration levels were increased. Recovery from initial stress by copper was delayed at higher concentrations. The author suggests the flowing water fish respirometer technique as a fast and sensitive tool for evaluating pollutants.	O"Hara (1971), AMIC-3793
Copper sulfate	Trachinotus carolinus (juvenile)	BSA	--	1.4-2.0 (T4)	a,c,e,f,i, and sulfate, sodium, calcium, potassium, magnesium,	In this study of pompano salinity was controlled at 10, 20, and 30 ppt and investigated as a variable. Acriflavin, formalin, and potassium permanganate were slightly more toxic at the highest salinity, while copper sulfate was slightly less toxic. These compounds are	Birdsong, et al (1971), AMIC-5570

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
					carbonate, bicarbonate, salinity	used as prophylactic bacterial treatments. All appeared to be reasonably safe to use except possibly potassium permanganate.	
Copper sulfate	Oncorhynchus tshawytscha (eggs)	BCFA	--	0.08 (NTE)	a*,c,d,f	Chinook salmon eggs were more resistant to copper sulfate than were fry. Growth was also inhibited. Adverse effects on fry were noted at concentrations as low as 0.02 ppm. The authors recommend further laboratory and in situ studies.	Hazel, et al (1970), AMIC-5572
Copper sulfate	Oncorhynchus tshawytscha (fry)	BCFA	--	0.04 (93 percent K)	a*,c,d,f	same as above	Hazel, et al (1970), AMIC-5572
Copper sulfate	Roccus saxatilis (fingerlings)	BSA	--	0.62 (T4)	a*,c,d,e, f,p, and iron	Striped bass fingerlings were apparently much more sensitive to therapeutic and herbicidal compounds than many freshwater fish.	Wellborn (1969), AMIC-5723
Copper sulfate	Orconectes rusticus	BCFA	--	3.0 (T4)	a*,c,e,f,q	Adult crayfish were found to be more resistant to copper sulfate than the young. Several life stages were studied, and additional exposure variations were included in the experimentation. Mortality of newly-hatched crayfish occurred at 0.125 ppm, and growth was inhibited at concentrations down to 0.015 ppm over a 30-day period. Sublethal effects of copper were well established and the procedure appears to be a good one.	Hubschman (1967), AMIC-5985
Copper sulfate	Orconectes rusticus	BCFCH	--	1.0 (T13)	a*,c,e,f,q	same as above	Hubschman (1967), AMIC-5985
Copper sulfate	Orconectes rusticus	BCFCH	--	0.015 (SB)	a*,c,e,f,q	same as above	Hubschman (1967), AMIC-5985
Copper (as Copper sulfate)	Campeloma decisum	BCFA andCH	--	1.7 (T4)	a,c,d,e,f	Survival, growth, reproduction, and feeding were the responses used to	Arthur, et al (1970),

						measure toxicant effects. Stock copper solutions were prepared by dissolving anhydrous copper sulfate in distilled water acidified with sulfuric acid. Chronic tests (6 weeks) with copper concentrations of 0.0148 and 0.028 ppm markedly reduced survival of all three species and prevented growth of Physa and Gammarus. Levels of 0.008 did not affect growth of Physa or Gammarus, feeding of Campeloma, or reproduction of Gammarus. However, growth and survival of the F1 Gammarus were affected at concentrations greater than 0.0046 ppm. Safe limits for Gammarus were 0.0046-0.008 in a continuous flow system and 0.0129-0.0239 in a static system.	AMIC-867
Copper (as Copper sulfate)	Campeloma decisum	BCFA and CH	--	0.008-0.0148 (NTE6 wk)	a,c,d,e,f	same as above	Arthur, et al (1970), AMIC-867
Copper (as Copper sulfate)	Physa integra	BCFA and CH	--	0.039 (T4)	a,c,d,e,f	same as above	Arthur, et al (1970), AMIC-867
Copper (as Copper sulfate)	Physa integra	BCFA and CH	--	0.008-0.0148 (NTE 6 wk)	a,c,d,e,f	same as above	Arthur, et al (1970), AMIC-867
Copper (as Copper sulfate)	Gammarus pseudo-limnaeus	BCFA and CH	--	0.020 (T4)	a,c,d,e,f	same as above	Arthur, et al (1970), AMIC-867
Copper (as Copper sulfate)	Gammarus pseudo-limnaeus	BCFA and CH	--	0.008-0.0148(NTE 6 wk)	a,c,d,e,f	same as above	Arthur, et al (1970), AMIC-867
Copper (plus PHENOL)	Salmo gairdneri	BSA	--	0.5-1.75 (T2)	a,c,e	Rainbow trout were exposed to copper, phenol, zinc, or nickel solutions to determine 48-hour LC50 values for mixtures of copper and phenol; copper, zinc, and phenol; and copper, zinc, and nickel. It was concluded that acute lethal toxicities of the mixtures could be adequately described by summations of the fractional toxicities.	Brown, et al(1970), AMIC-5994
Copper (plus zinc, nickel)	Salmo gairdneri	BSA	--	0.5-1.8 (T2)	a,c,e	same as above	Brown,et al (1970), AMIC-5994

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
Copper (plus zinc, phenol)	Salmo gairdneri	BSA	--	0.6-2.40 (T2)	a,c,e	same as above	Brown,et al (1970), AMIC-5994
Copper	Alosa pseudo-harengus	FL	Great Lakes - Superior, Michigan, and Erie	0.9(residue)	--	Trace element content of fish from Lakes Superior, Michigan, and Erie was determined by activation analysis. Whole body and liver residues were determined. Concentrations varied with species and lake. Other elements found were; antimony - 5 to 100 ppb, barium - 0.2 ppm, cesium - 3 ppb, lanthanum - 1 to 20 ppb, mercury - 10 ppb, rhenium - 0.5 to 5 ppb, rubidium - 0.06 to 6 ppm, scandium - 2 ppb, selenium - 0.1 to 2 ppb, silver - 0.001 ppb.	Lucas, et al (1970), AMIC-3778
Copper	Coregonus artedii	FL	Great Lakes - Superior, Michigan, and Erie	12(residue)	--	same as above	Lucas, et al (1970), AMIC-3778
Copper	Coregonus clupeaformis	FL	Great Lakes - Superior, Michigan, and Erie	5.4(residue)	--	same as above	Lucas, et al (1970), AMIC-3778
Copper	Coregonus hoyi	FL	Great Lakes - Superior, Michigan, and Erie	4.9(residue)	--	same as above	Lucas, et al (1970), AMIC-3778
Copper	Prosopium cylindraceum	FL	Great Lakes - Superior, Michigan, and Erie	3.8(residue)	--	same as above	Lucas, et al (1970), AMIC-3778
Copper	Salvelinus namaycush	FL	Great Lakes - Superior, Michigan, and Erie	24(residue)	--	same as above	Lucas, et al (1970), AMIC-3778
Copper	Osmerus mordax	FL	Great Lakes - Superior, Michigan, and Erie	1.5(residue)	--	same as above	Lucas, et al (1970), AMIC-3778

Copper	Carassius auratus	FL	Great Lakes - Superior, Michigan, and Erie	14(residue)	--	same as above	Lucas, et al (1970), AMIC-3778
Copper	Notropis hudsonius	FL	Great Lakes - Superior, Michigan, and Erie	1.0(residue)	--	same as above	Lucas, et al (1970), AMIC-3778
Copper	Percopsis omiscomaycus	FL	Great Lakes - Superior, Michigan, and Erie	1.8(residue)	--	same as above	Lucas, et al (1970), AMIC-3778
Copper	Roccus chrysops	FL	Great Lakes - Superior, Michigan, and Erie	4(residue)	--	same as above	Lucas, et al (1970), AMIC-3778
Copper	Perca flavescens	FL	Great Lakes - Superior, Michigan,and Erie	3(residue)	--	same as above	Lucas, et al (1970), AMIC-3778
Copper	Stizostedion vitreum vitreum	FL	Great Lakes - Superior, Michigan, and Erie	4(residue)	--	same as above	Lucas, et al (1970), AMIC-3778
Copper	Coregonus clupeaformis	FL	Moose Lake, Can.	0.5 (residue)	--	Concentrations of 13 toxic elements in dressed fish from heavily industrialized and non-industrialized areas were determined. Only mercury exceeded regulatory limits, and concentrations of most elements were essentially the same in fish from both areas.	Uthe, et AL(1971), AMIC-3819
Copper	Coregonus clupeaformis	FL	Lake Ontario, Can.	0.9 (residue)	--	same as above	Uthe, etal (1971), AMIC-3819
Copper	Esox lucius	FL	Moose Lake, Can.	0.07 (residue)	--	same as above	Uthe, et al (1971),AMIC-3819
Copper	Esox lucius	FL	Lake St. Pierre, Can.	0.9 (residue)	--	same as above	Uthe, et al (1971),AMIC-3819

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
Copper	Esox lucius	FL	Lake Erie, Can.	0.7 (residue)	--	same as above	Uthe, et al (1971),AMIC-3819
Copper	Osmerus mordax	FL	Lake Erie, Can.	0.8 (residue)	--	same as above	Uthe, et al (1971),AMIC-3819
Copper	Perca flavescens	FL	Lake Erie, Can.	1.3 (residue)	--	same as above	Uthe, et al (1971),AMIC-3819
Copper	Salvelinus fontinalis (eggs)	BDFCH	--	0.018 (NTE)	a*,c,d,e,f	A concentration of 17.5 ppb copper did not adversely affect survival, growth, or spawning of brook trout. However, this concentration level had drastic effect on juvenile trout. The copper also delayed yolk sac absorption and delayed fry development. The maximum acceptable toxicant concentration (MATC) was calculated to be between 9.5 to 17.4 ppb copper.	McKim, et al (1970), AMIC-3821
Copper	Salvelinus fontinalis (juveniles)	BDFCH	--	0.017 (K)	a*,c,d,e,f	same as above	McKim,et al (1970), AMIC-3821
Copper	Salvelinus fontinalis (adults)	BDFCH	--	0.1 (T4)	a*,c,d,e,f	same as above	McKim, etal (1970), AMIC-3821
Copper	Paralabrax clathratus	FM	Scattergood Steam Plant, LosAngeles, Cal.	2 (dorsal muscle RESIDUE)	--	Fish collected from an effluent pipe of a steam plant and from offshore waters of Catalina Island were analyzed for trace element content. Trace element content of the effluent water was at least 5 times greater than that of normal sea water for cadmium, copper, nickel, zinc, and chromium. Livers of fish from the effluent were nearly twice the size of those from the ocean. Greatest differences in concentration occurred with alumirum, cadmium, and nickel. Silver, barium, lithium, and lead showed the least differences. The author	Stapleton (1968), AMIC-5980

						concluded that trace element analysis of tissues could be used to determine the effect of pollutants on marine organisms.	
Copper	Paralabrax clathratus	FM	Catalina Island, Cal.	2 (dorsal muscle residue)	--	same as above	Stapleton (1968), AMIC-5980
Copper	Paralabrax clathratus	FM	Scattergood Steam Plant, LosAngeles, Cal.	2 (ventral muscle residue)	--	same as above	Stapleton (1968), AMIC-5980
Copper	Paralabrax clathratus	FM	Catalina Island, Cal.	2 (ventral muscle residue)	--	same as above	Stapleton (1968), AMIC-5980
Copper	Paralabrax clathratus	FM	Scattergood Steam Plant, LosAngeles, Cal.	6 (gonads residue)	--	same as above	Stapleton (1968), AMIC-5980
Copper	Paralabrax clathratus	FM	Catalina Island, Cal.	5 (gonads residue)	--	same as above	Stapleton (1968), AMIC-5980
Copper	Paralabrax clathratus (gravid females)	FM	Catalina Island, Cal.	5 (gonads residue)	--	same as above	Stapleton (1968), AMIC-5980
Copper	Paralabrax clathratus	FM	Scattergood Steam Plant, LosAngeles, Cal.	5 (liver residue)	--	same as above	Stapleton (1968), AMIC-5980
Copper	Paralabrax clathratus	FM	Catalina Island, Cal.	6 (liver residue)	--	same as above	Stapleton (1968), AMIC-5980
Copper	Paralabrax clathratus	FM	Scattergood Steam Plant, LosAngeles, Cal.	3 (integument residue)	--	same as above	Stapleton (1968), AMIC-5980
Copper	Paralabrax clathratus	FM	Catalina Island, Cal.	3 (integument residue)	--	same as above	Stapleton (1968), AMIC-5980
Copper	Paralabrax clathratus	FM	Scattergood Steam Plant, LosAngeles,	15 (heart residue)	--	same as above	Stapleton (1968), AMIC-5980

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
			Cal.				
Copper	Paralabrax clathratus	FM	Catalina Island, Cal.	12 (heart residue)	--	same as above	Stapleton (1968), AMIC-5980
Copper	Paralabrax clathratus	FM	Scattergood Steam Plant, LosAngeles, Cal.	8 (eyeball residue)	--	same as above	Stapleton (1968), AMIC-5980
Copper	Paralabrax clathratus	FM	Catalina Island, Cal.	4 (eyeball residue)	--	same as above	Stapleton (1968), AMIC-5980
Copper	Salmo gairdneri	BSA	--	0.75 (T2)	a,c,e	Rainbow trout were exposed to copper, phenol, zinc, or nickel solutions to determine 48-hour LC50 values for mixtures of copper and phenol; copper, zinc, and phenol; and copper, zinc, and nickel. It was concluded that acute lethal toxicities of the mixtures could be adequately described by summations of the fractional toxicities.	Brown, et al (1970),AMIC-5994
Corexit 7664	Pimephales promelas	BSA	--	3200 (T4)	c,d,e,f	Toxicity of six oil spill dispersants was determined along with BOD values. Pond water was used as diluent and oil was included in the experiment. Oil markedly reduced toxicity of all dispersants. Data are given as "most probable" 96-hr TL sub m.	Zillich (1969),AMIC-2909
Corexit 7664	Pimephales promelas	BSA	--	180 (MSC)	c,d,e,f	same as above	Zillich (1969),AMIC-2909
Corexit 7664	Biochemical oxygen demand	L	--	380,000	c,d,e,f	same as above	Zillich (1969), AMIC-2909
Corexit 7664	Steelhead trout (fingerlings)	BSA	--	15.8 (T4)	--	Evaluation of 11 oil dispersants resulted in a ranking for each and a recommendation for use according to the ranking. Ranking was based on toxicity and oil dispersal effectiveness. Corexit	Tracy, et al(1969), AMIC-3834

						7764 appeared to have the least toxicity with fair to good oil dispersion capability.	
Corexit 7664	Coho salmon (fingerlings)	BSA in situ	Hood Canal Hoodsport, Wash.	40.0 (K)	--	same as above	Tracy, et al (1969), AMIC-3834
Corexit 7664	Pacific oyster (larvae)	BSA in situ	Hood Canal Hoodsport, Wash.	40.0-80.0 (SB)	--	same as above	Tracy, et al (1969), AMIC-3834
Corexit 7664	Cardium edule	BSA	--	3300-10,000 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701
Corexit 7664	Crangon crangon	BSA	--	3300-10,000 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Corexit 7664	Limanda limanda	BSA	--	1000-3300 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Corexit 7664	Salmo salar (parr)	L	--	500 (NTE4)	a*,e (mixed tap or seawater)	Aroclors 1254 and 1221 were evaluated for toxic effect with Corexit 7664 (weight ratio 1:19) as an emulsifying agent. Since only two fish were used for each exposure, the author notes that the results are only preliminary. However, PCB"s appeared to be less toxic to Atlantic salmon parr than chlorinated hydrocarbon pesticides.	Zitko (1970), AMIC-23
Corexit 7664	Gammarus oceanicus	BSA	--	1900 (NTE)	a* (weekly solution change, seawater)	Aroclor 1254 solutions or suspensions with Corexit 7664 at varied concentrations in seawater resulted in varying toxicity of the Aroclor. Corexit was not lethal at 1900 ppm but caused sublethal brnchial edema at	Wildish (1970), AMIC-69

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
						concentrations down to 0.19 ppm. The author notes a possible synergistic effect between the two compounds.	
Corexit 7664	Gammarus oceanicus	BSA	--	0.19 (S8)	a* (weeklysolution change, seawater)	same as above	Wildish (1970), AMIC-69
Corexit 8666	Crangon crangon	BSA	--	3300 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701
Coumaphos	Rasbora heteromorpha	BCFA and BSA	--	0.046 (T2)	a*,c,e,f, hard (HW) or SOFT(SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425
Co-Ral	Morone saxatilis (fingerlings)	BSA	--	62 (T4)	a,c,d,e,f, p	All compounds were investigated because of their probable usage in hatchery production of white bass. Compounds that can be used at recommended concentrations were Aquathol, Casaron, Lindane, and Terramycin concentrate. Those that should not be used were Acriflavine, Bayluscide, Malachite green oxalate, and Malathion.	Wellborn (1971), AMIC-5571
Co-Ral	Mercenaria mercenaria (eggs)	L	--	9.12 (T2)	--	The effect of 52 pesticides on embryonic development of clams and oysters was reported. Synergistic effects with solvents were also reported. Most of the compounds affected	Davis, et al (1969), AMIC-5990

						development more than survival. Some, however, drastically reduced larval growth. The authors point out the necessity of evaluating the effects of pesticides on all life stages of an organism and note the possibility of selecting chemicals for pest control that would not have serious effect on shellfish.	
Co-Ral	Mercenaria mercenaria (larvae)	L	--	5.21 (T 12)	--	same as above	Davis, et al (1969),AMIC-5990
Co-Ral	Crassostrea virginica (eggs)	L	--	0.11 (T2)	--	same as above	Davis, et al (1969),AMIC-5990
Co-Ral	Crassostrea virginica (larvae)	L	--	greater than 1.0 (T 14)	--	same as above	Davis, et al(1969), AMIC-5990
Craine OSR	Crangon crangon	BSA	--	330-1000 (T2)	a*(continuous aeration, sea-water, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701
Cresols	Agonus cataphractus	BSA	--	10-33 (T2)	a*(continuous aeration, sea-water, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701
Cresols	Carcinus maenas	BSA	--	10-100 (T2)	a*(continuous aeration, sea-water, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
Cresols	Cardium edule	BSA	--	greater than 100 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Cresols	Pleuronectes platessa	BSA	--	10-33 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701
Crossguard	Crangon crangon	BSA	--	3.3-10 (T4)	a*(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971),AMIC-7701
Crotothane	Rasbora heteromorpha	BCFA and BSA	--	0.07 (T2)	a*,c,e,f, hard (HW)or soft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster, (1969),AMIC-5425
Crow solvent M	Crangon crangon	BSA	--	33-100 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701

Cr, Ni, Cu, CN, and Zn	Pimephales promelas	BSACF (ML)	Grand River at Wyoming,Michigan	between 1.25-3.75 percent (T3)	a,c,e, conductivity, Ni, Cu, Cr, CN, and Zn	A mobile bioassay unit was utilized to conduct this study of municipal wastewater containing the indicated toxicants. River water was used as diluent. The conclusion was reached that synergistic or additive toxic effects occurred since toxicity was greater than that of any of the ions singly.	Zillich (1969), AMIC-2906
Cr, Ni, Cu, CN, and Zn	Catostomus commersoni	BSACF (ML)	Grand River at Wyoming,Michigan	between 1.25-3.75 percent (T3)	a,c,e, conductivity, Ni, Cu, Cr, CN, and Zn	same as above	Zillich (1969), AMIC-2906
CS	Wolffia papulifera	L	--	100 (K)	Hunter's medium diluted 1:5	All compounds were harmful to duckweed to some degree. Decreased populations were noted at non-lethal concentrations and some compounds (Malathion and 2,4-D) caused teratogenic effects at concentrations as low as 1 ppm.	Worthley, et al,(1971), AMIC-3233
CuCl2 2H20 (as Cu)	Platymonas subcordiformis	L	--	approx.1.0 (K)	SSM and NSW	NTA stimulated algal growth in cultures without added copper and reduced toxicity of copper at all levels of copper addition. See information on CuCl2.H2O (as Cu) under authors cited for further information.	Erickson, et al (1970), AMIC-449
CuCl2 2H20 (as Cu)	Porphyridium cruentum	L	--	approx. 0.5(K)	SSM and NSW	same as above	Erickson, et al (1970), AMIC-449
CuCl2 2H20 (as Cu)	Skeletonema costatum	L	--	approx. 0.15 (K)	SSM and NSW	same as above	Erickson, et al (1970), AMIC-449
CuCl2 2H20 (as Cu)	Amphidinium carteri	L	--	less than 0.05 (K)	SSM and NSW	same as above	Erickson, et al (1970), AMIC-449
CuCl2 2H20 (as Cu)	Chaetoceros sp	L	-	approx. 0.05 (K)	SSM and NSW	same as above	Erickson,et al (1970), AMIC-449
CuCl2 2H20 (as Cu)	Cyclotella nana	L	--	approx. 0.15 (K)	SSM and NSW	same as above	Erickson, et al (1970), AMIC-449
CuCl2 2H20 (as Cu)	Dunaliella tertiolecta	L	--	450 (50 percent K)	SSM and NSW	same as above	Erickson, et al (1970), AMIC-449
CuCl2 2H20 (as Cu)	Isochrysis Galbana	L	--	Approx. 0.2 K)	SSM and NSW	same as above	Erickson, et al (1970), AMIC-449

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
CuCl2 2H2O (as Cu)	Monochrysis Lutheri	L	--	Approx. 0.5 (K)	SSM and NSW	same as above	Erickson, et al (1970), AMIC-449
CuCl2 2H2O (as Cu)	Nannochloris oculata	L	--	Approx. 0.5 (K)	SSM and NSW	same as above	Erickson, et al (1970), AMIC-449
CuCl2 2H2O (as Cu)	Nitzschia closterium	L	--	Approx. 0.05 (K)	SSM and NSW	same as above	Erickson, et al (1970), AMIC-449
CuCl2 2H2O (as Cu)	Olisthodiscus luteus	L	--	Approx. 0.05	SSM and NSW	same as above	Erickson, et al (1970), AMIC-449
Cunilate RQ 24	Salmo gairdneri	BCFA and BSA	--	0.5 (T2, hardwater)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425
Cunilate RQ 24	Rasbora heteromorpha	BCFA and BSA	--	1.4 (T2, softwater)	a*,c,e,f, hard(HW) or soft (SW) synthetic dilution water, orseawater for some species	same as above	Alabaster (1969), AMIC-5425
Cunilate RQ 24	Rasbora heteromorpha	BCFA and BSA	--	0.9 (T2, hardwater)	a*,c,e,f, hard(HW) or soft (SW) synthetic dilution water,	same as above	Alabaster (1969), AMIC-5425

					orseawater for some species		
Cupric ammonium sulfate (as Cu)	Phormidium ambiguum	L	--	0.5-10.0 (16 percent growth inhibited14)	--	Of 74 chemicals evaluated as algicides, only 9 were more toxic than CuSO4. None inhibited growth of mat-forming algae for more than 2 weeks. CuSO4 formulated with certain wetting agents was more toxic than CuSO4 alone. Copper chloramine was also found to be more toxic than CuSO4. No wetting agents were found to be inhibitory at the concentrations investigated (0.05 and 0.005 ppm). Also reported are factors affecting growth of algae in canals to determine whether there were leads to controlling algae by environmental management. No practical environmental means were found.	Otto (1970), AMIC-892
Cupric chloramine	Phormidium ambiguum	L	--	0.5-10.0 (100 percent growth inhibited 14)	--	same as above	Otto (1970), AMIC-892
Cupric sulfate	Salvelinus fontinalis (6-8 in.)	BCFA	--	0.038-0.069(SB 6 and 21)	a*,c,e,f,q	The seven blood characteristics of brook trout studied were red blood count, hematocrit, hemoglobin, plasma chloride, plasma glutamic oxalacetic transaminase, osmolarity, and total protein. Statistically significant changes were noted in 5 characteristics after 6 days. Measurable decrease in plasma glutamic oxalacetic transaminase was the only change noted after long-term exposure to lower concentrations. The authors state that fish blood study can be used as a measure of their physical condition and long-range forecasting of reproductive success and survival.	McKim, et al (1970), AMIC-3828
Cupric sulfate	Salvelinus fontinalis (6-8 in.)	BCFCH	--	0.017-0.033(SB 337)	a*,c,e,f,q	same as above	McKim, et al (1970), AMIC-3828
Cuprinol	Crangon crangon	BSA	--	3.3-10 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
Cu, Ni, Cr, CN, and Zn	Pimephales promelas	BSACF (ML)	Grand River at Wyoming,Michigan	between 1.25-3.75 percent (T3)	a,c,e, conductivity, Ni,Cu,Cr, CN, and Zn	A mobile bioassay unit was utilized to conduct this study of municipal wastewater containing the indicated toxicants. River water was used as diluent. The conclusion was reached that synergistic or additive toxic effects occurred since toxicity was greater than that of any of the ions singly.	Zillich (1969), AMIC-2906
Cu, Ni, Cr, CN, and Zn	Catostomus commersoni	BSACF (ML)	Grand River at Wyoming,Michigan	between 1.25-3.75 percent (T3)	a,c,e, conductivity, Ni,Cu,Cr, CN, and Zn	same as above	Zillich (1969), AMIC-2906
CX	Fundulus heteroclitus	BSA	--	0.00051-0.00225 (T4)	a*,c,e, and synthetic seawater	A laboratory procedure based on Standard Methods for 96-hr toxicity determinations of crude oil and oil-dispersant mixtures was described. The dispersants varied considerably in toxicity, ranging from 0.01 to 7.1 ml/l, TL50 for 96 hr. These did not differ significantly from 240 hr values. The dispersants were designated as CX, DO, CI, OD, AQ, PC, MM, TN, BP, and NA with no further description of their chemical nature or source. Only a few bioassays were conducted with shrimp. Mollusks and echinoderms were suggested as suitable test animals. The authors stated that the method could be used to test any product for toxicity in seawater.	LaRoche, et al (1970), AMIC-445
CX	Nereis virens	BSA	--	0.00078-0.0071 (T4)	a*,c,e, and synthetic seawater	same as above	LaRoche,et al (1970), AMIC-445
Cyanides	Lepomis macrochirus	BSA	--	0.18	a*,e, and synthetic dilution water	This study was conducted to determine the relative toxicities of 20 common constituents of industrial wastes to a fish, an alga, and an invertebrate. The experiments were conducted over a 10-year period for varied purposes. The authors recommend bioassays with at least three components of the food web.	Patrick, et al (1968), AMIC-5720

Cyanides	Physa heterostropha	BSA	--	0.432	a*,e, and synthetic dilution water	same as above	Patrick, et al (1968), AMIC-5720
Cycloheximide	Phormidium ambiguum	L	--	0.5-10.0 (66 percent growth inhibited)	--	Of 74 chemicals evaluated as algicides, only 9 were more toxic than $CuSO_4$. None inhibited growth of mat-forming algae for more than 2 weeks. $CuSO_4$ formulated with certain wetting agents was more toxic than $CuSO_4$ alone. Copper chloramine was also found to be more toxic than $CuSO_4$. No wetting agents were found to be inhibitory at the concentrations investigated (0.05 and 0.005 ppm). Also reported are factors affecting growth of algae in canals to determine whether there were leads to controlling algae by environmental management. No practical environmental means were found.	Otto (1970), AMIC-892
Dalacide	Rasbora heteromorpha	BCFA and BSA	--	620 (T2)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425
Dalapon	Fish (not specified)	--	--	greater than 100-1000 (K)	--	Approximate toxicities of numerous pesticides commonly used in Britain were summarized. An excellent brief, general discussion of toxicity testing is also present.	Mawdesley-Thomas (1971), AMIC-1056
Dalapon	Rasbora heteromorpha	BCFA and BSA	--	greater than 500 (T2, hardwater)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes	Alabaster (1969), AMIC-5425

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
					species	pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	
Dalapon	Rasbora heteromorpha	BCFA and BSA	--	43 (T2, softwater)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	same as above	Alabaster (1969), AMIC-5425
Dalapon	Cardium edule	BSA	--	greater than 100 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701
Dalapon	Crangon crangon	BSA	--	greater than 100 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Dalapon	Platicthys flesus	BSA	--	greater than 100 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
DBP	Palaemonetes kadiakensis	BCF	--	0.08 (residue)	a*	Magnification of DDT and Aldrin tagged with C-14 occurred rapidly.	Johnson, et al

						Biological magnification factors of 2900 to 114,100 depending on the species were found for DDT, and 22,800 to 141,000 for Aldrin. Marked degradation of DDT as determined by analysis for DDT metabolites occurred. The authors conclude that aquatic invertebrates influence quality and quantity of insecticide residue passed via the fish food chain.	(1971),AMIC-3820
DBP	Palaemonetes, Kadiakensis	BCF	--	0.0001 (SB3)	a*	same as above	Johnson,et al (1971), AMIC-3820
DDD (C-14 labelled)	Sorghum halpense	L (Model ecosystem)	--	1 lb per A (NTE)	a,c,g, standard reference water and sand	This small laboratory model ecosystem procedure was developed to study pesticide biodegradability and ecological magnification. The food-chain pathways in this system were: (1) sorghum - caterpiller (larva), (2) caterpiller (excreta) - Oedogonium, (3) Oedogonium - snail, (4) Estigmene (excreta) - diatoms, (5) Diatoms - plankton, (6) Plankton - Culex (larvae), (7) Culex - Gambusia. The fish is the top of the food chain. Using isotopically labeled pesticides (1 lb/acre application rate), residues were determined for only selected organisms (snail, mosquito, and fish) and water. Reproducibility appeared to be good. The authors state that the method gives a good estimation of the potential toxicity of pesticides and their breakdown products to a variety of organisms and is suitable for computer modeling.	Metcalf, et al (1971), AMIC-1495
DDD (C-14 labelled)	Estigmene acrea	L (Model ecosystem)	--	1 lbper A (K-NTE)	a,c,g, standard reference water and sand	same as above	Metcalf, et al (1971), AMIC-1495
DDD (C-14 labelled)	Physa spp	L (Model ecosystem)	--	5.6 (residue)	a,c,g, standard reference water and sand	same as above	Metcalf, et al (1971), AMIC-1495

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
DDD (C-14 labelled)	Daphnia magna	L (Model ecosystem)	--	1 lb per A (K-NTE)	a,c,g, standard reference water and sand	same as above	Metcalf, et al (1971), AMIC-1495
DDD (C-14 labelled)	Culex pipiens quinquefasciatus	L (Model ecosystem)	--	5.8(residue)	a,c,g, standard reference water and sand	same as above	Metcalf, et al (1971), AMIC-1495
DDD (C-14 labelled)	Oedogonium cardiacum	L (Model ecosystem)	--	1 lb per A (NTE)	a,c,g, standard reference water and sand	same as above	Metcalf, et al (1971), AMIC-1495
DDD (C-14 labelled)	Gambusia affinis	L (Model ecosystem)	--	39.1 (residue)	a,c,g, standard reference water and sand	same as above	Metcalf, et al (1971), AMIC-1495
DDD (C-14 labelled)	Diatoms (Navicula, Coscinodiscus, Diploness, and Diatomella)	L (Model ecosystem)	--	1 lb per A (NTE)	a,c,g, standard reference water and sand	same as above	Metcalf,et al (1971), AMIC-1495
DDD (C-14 labelled)	Protozoa (Nuclearia, Coleps, Vorticella, and Paramecium)	L (Model ecosystem)	--	1 lb per A (NTE)	a,c,g, standard reference water and sand	same as above	Metcalf, et al (1971), AMIC-1495
DDD (C-14 labelled)	Rotifers (Asplanchnopus, Notomatta, Euclaris, Scardium)	L (Model ecosystem)	--	1 lb per A (NTE)	a,c,g, standard reference water and sand	same as above	Metcalf, et al (1971),AMIC-1495

DDD (C-14 labelled)	Water	L (Model ecosystem)	--	0.006 (residue)	a,c,g, standard reference water and sand	same as above	Metcalf, et al (1971), AMIC-1495
DDD (p,p")	Anguilla rostrata	FRL	St. John, N.B., Can.	0.19 (residue)	--	PCB"s were found in higher concentrations than organochlorine pesticides in all fish analyzed. The authors point out that PCB is less toxic in an acute sense than organochlorines, that little is known of sublethal PCB effects, and that more knowledge of PCB distribution and effects is needed.	Zitko(1971), AMIC-3715
DDD (p,p")	Esox niger	FRL	St. John, N.B., Can.	0.03 (residue)	--	same as above	Zitko (1971),AMIC-3715
DDD (p,p")	Salmo salar	FRL	St. John, N.B., Can.	0.07 (residue)	--	same as above	Zitko (1971),AMIC-3715
DDD (p,p")	Clupea harengus	FRL	St. John, N.B., Can.	0.01-0.04 (residue)	--	same as above	Zitko(1971), AMIC-3715
DDD (p,p")	Scomber scombrus	FRL	St. John, N.B., Can.	0.02 (residue)	--	same as above	Zitko(1971), AMIC-3715
DDD	Limnephilus rhombicus (larvae)	FS	Knights Creek, Dun County, Wisc.	0.007(whole body residue)	--	Samples of water, silt, bottom debris, bottom organisms, and fish were taken in 1966 from a creek adjacent to an orchard which had been treated in 1963-1965 with various chlorinated hydrocarbon pesticides. No residues were found in water samples. Silt samples contained 0.002-0.013 ppm endrin and 0-0.005 ppm dieldrin. Endrin residues of 0.011-0.025 ppm and 0.002-0.006 ppm dieldrin were found in debris samples. Despite limited control data, residue analyses indicated that contamination of the environment studied was limited.	Moubry, et al (1968),AMIC-3753

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
DDD	Rhinichthys atratulus	FS	Knights Creek, Dun County, Wisc.	0.78 (fat residue)	--	same as above	Moubry, et al (1968), AMIC-3753
DDD	Gammarus sp.	FS	Knights Creek, Dun County, Wisc.	0.007 (whole bodyresidue) residue)	--	same as above	Moubry, et al (1968), AMIC-3753
DDD	Salvelinus fontinalis	FS	Knights Creek, Dun County, Wisc.	0.26-1.04 (fat residue)	--	same as above	Moubry, et al (1968), AMIC-3753
DDD	Semotilus atromaculatus	FS	Knights Creek, Dun County, Wisc.	0.53-0.67(fat residue)	--	same as above	Moubry, et al (1968), AMIC-3753
DDD	Cottus bairdi	FS	Knights Creek, Dun County, Wisc.	0.4-0.47 (fat residue)	--	same as above	Moubry, et al (1968), AMIC-3753
DDD	Sialis sp. (larvae)	FS	Knights Creek, Dun County, Wisc.	0.003 (wholebody residue)	--	same as above	Moubry, et al (1968), AMIC-3753
DDD	Carassius auratus	L	--	0.1-0.8 (residue)	a*	Goldfish were exposed to increasing concentrations of DDT and residues determined after 21 days of exposure. Most DDT had been converted to DDE. Phenobarital had no significant effect on insecticide residues.	Young, etal (1971), AMIC-3796
DDD	Daphnia magna (adult)	BCF	--	0.6 (residue)	a*	Magnification of DDT and Aldrin tagged with C-14 occurred rapidly. Biological magnification factors of 2900 to 114,100 depending on the species were found for DDT, and 22,800 to 141,000 for Aldrin. Marked degradation of DDT as determined by analysis for DDT metabolites occurred. The authors conclude that aquatic invertebrates influence quality and quantity of insecticide residue passed via the fish food chain.	Johnson, et al (1971),AMIC-3820

DDD	Palaemonetes kadlakensis (adult)	BCF	--	0.04 (residue)	a*	same as above	Johnson, et al(1971), AMIC-3820
DDD	Daphnia magna (adult)	BCF	--	0.0001 (SB3)	a*	same as above	Johnson,et al (1971), AMIC-3820
DDD	Palaemonetes Kadlakensis (adult)	BCF	--	0.0001 (SB3)	a*	same as above	Johnson,et al (1971), AMIC-3820
DDD	Archoplites interruptus	FL	Clear Lake, Cal.	316 (flesh residue)	--	Residue analysis results mainly for TDE in fish, birds, and plankton from 1959 through 1965 were reported. The residues primarily resulted from application of DDT to farmland and for gnat control. In some cases, data for a single animal in one year were given. Primary emphasis was on largemouth bass and white catfish. The general level of TDE contamination in birds and fish declined markedly from 1958 to 1965. This decline correlated directly with strict limitation by permits of DDT applications during the latter years.	Linn, et al (1969), AMIC-5521
DDD	Orthodon microlepidotus	FL	Clear Lake, Cal.	0.5-7.0 (flesh residue)	--	same as above	Linn,et al (1969), AMIC-5521
DDD	Pomoxis nigromaculatus	FL	Clear Lake, Cal.	10-24 (flesh residue)	--	same as above	Linn, etal (1969), AMIC-5521
DDD	Aechmophorus occidentalis	FL	Clear Lake, Cal.	16-2,800 (fat residue)	--	same as above	Linn,et al (1969), AMIC-5521
DDD	Bucephala clangula	FL	Clear Lake, Cal.	132 (fat residue)	--	same as above	Linn, et al (1969),AMIC-5521
DDD	Larus spp.	FL	Clear Lake, Cal.	68-2,134 (fat residue)	--	same as above	Linn, et al (1969),AMIC-5521
DDD	Larus delawarensis	FL	Clear Lake, Cal.	100-1,020 (fat residue)	--	same as above	Linn, et al (1969),AMIC-5521
DDD	Mergus merganser	FL	Clear Lake, Cal.	greater than 8-80 (fat residue)	--	same as above	Linn, etal (1969), AMIC-5521
DDD	Plankton	FL	Clear Lake, Cal.	10.9 (residue)	--	same as above	Linn, et al (1969), AMIC-5521

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
DDD	Archoplites interruptus	FL	Clear Lake, Cal.	3,972 (fat residue)	--	same as above	Linn, etal (1969), AMIC-5521
DDD	Ictalurus catus	FL	Clear Lake, Cal.	1.3-184 (flesh residue)	--	same as above	Linn, et AL(1969), AMIC-5521
DDD	Ictalurus catus	FL	Clear Lake, Cal.	220-2,350 (fat residue)	--	same as above	Linn, et AL(1969), AMIC-5521
DDD	Lavinia exilicauda	FL	Clear Lake, Cal.	less than 1-2 (flesh residue)	--	same as above	Linn,et al (1969), AMIC-5521
DDD	Lepomis cyanellus	FL	Clear Lake, Cal.	2 (flesh residue)	--	same as above	Linn, et al (1969),AMIC-5521
DDD	Lepomis cyanellus	FL	Clear Lake, Cal.	103 (fat residue)	--	same as above	Linn, et al (1969),AMIC-5521
DDD	Micropterus salmoides	FL	Clear Lake, Cal.	0.2-111 (flesh residue)	--	same as above	Linn,et al (1969), AMIC-5521
DDD	Micropterus salmoides	FL	Clear Lake, Cal.	28-437 (fat residue)	--	same as above	Linn, etal (1969), AMIC-5521
DDD	Perca flavescens	FLR	93 sampling stations in Mass.	0.24-5.7 (residue)	--	Fish indigenous to Massachusetts freshwater streams were analyzed for DDT and DDT metabolites during 1965-1967. Generally there was an increase in pesticide content during the three year period.	Lyman, et al (1968), AMIC-3839
DDD	Lepomis	FLR	93 sampling	0-6.7	--	same as above	Lyman, et al

	gibbosus		stations in Mass.	(residue)			(1968), AMIC-3839
DDD	Catostomus commersoni	FLR	93 sampling stations in Mass.	0.03-12.5 (residue)	--	same as above	Lyman, et al (1968), AMIC-3839
DDD	Ictalurus nebulosus	FLR	93 sampling stations in Mass.	1.2 (residue)	--	same as above	Lyman, et al (1968), AMIC-3839
DDD	Cyprinus carpio	FLR	93 sampling stations in Mass.	0.24-1.9 (residue)	--	same as above	Lyman, et al (1968), AMIC-3839
DDD	Esox niger	FLR	93 sampling stations in Mass.	0.30 (residue)	--	same as above	Lyman, etal (1959), AMIC-3839
DDD	Notemigonus crysoleucas	FLR	93 sampling stations in Mass.	0.15-2.7 (residue)	--	same as above	Lyman, et al (1968), AMIC-3839
DDD	Semotilus corporalis	FLR	93 sampling stations in Mass.	0.07-4.3 (residue)	--	same as above	Lyman, et al (1968), AMIC-3839
DDD	Lepomis macrochirus	FLR	93 sampling stations in Mass.	0.48-2.3 (residue)	--	same as above	Lyman, et al (1968), AMIC-3839
DDD	Ambloplites rupestris	FLR	93 sampling stations in Mass.	0.30-10.8 (residue)	--	same as above	Lyman, et al (1968), AMIC-3839
DDD	Semotilus atromaculatus	FLR	93 sampling stations in Mass.	0.18-0.64 (residue)	--	same as above	Lyman, et al (1968), AMIC-3839
DDD	Micropterus dolomieui	FLR	93 sampling stations in Mass.	0.20-0.50 (residue)	--	same as above	Lyman, et al (1968), AMIC-3839
DDD	Alosa pseudo-harengus	FLR	93 sampling stations in Mass.	0.88 (residue)	--	same as above	Lyman, et al (1968), AMIC-3839
DDD	Fundulus heteroclitus	FLR	93 sampling stations in Mass.	1.7-3.6 (residue)	--	same as above	Lyman, et al (1968), AMIC-3839
DDD	Notropis	FLR	93 sampling	0.8-2.0	--	same as above	Lyman, et al

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
	cornutus		stations in Mass.	(residue)			(1968), AMIC-3839
DDD	Roccus americanus	FLR	93 sampling stations in Mass.	0.4-1.3 (residue)	--	same as above	Lyman, et al (1968), AMIC-3839
DDD	Pomoxis nigro-maculatus	FLR	93 sampling stations in Mass.	10.7(residue)	--	same as above	Lyman, et al (1968), AMIC-3839
DDD	Lepomis auritus	FLR	93 sampling stations in Mass.	0.46 (residue)	--	same as above	Lyman, et al (1968), AMIC-3839
DDD	Rhinichthys atratulus	FLR	93 sampling stations in Mass.	0.40 (residue)	--	same as above	Lyman, et al (1968), AMIC-3839
DDD	Cyprinus carpio	FR	St. Lawrence River, Montreal, Canada	0.38(0.40 ppm max tissue residue)	--	Residues of DDD were measured in water, mud, molluscs, and fish during and after DDD application in 1967. Sampling points were above the point of application and 10 and 45 mi downstream. Residues from unknown sources were detected upstream. Downstream residues were more than twice those obtained upstream (0.156 versus 0.369 ppm). The highest concentration in an individual fish was 1.81 ppm.	Fredeen, et al (1970), AMIC-534
DDD	Catostomus commersoni	FR	St. Lawrence River, Montreal, Canada	0.38(0.40 ppm max tissue residue)	--	same as above	Fredeen, et al (1970),AMIC-534
DDD	Amelurus nebulosus	FR	St. Lawrence River, Montreal, Canada	0.38(0.55 ppm max tissue residue)	--	same as above	Fredeen, et al (1970), AMIC-534
DDD	Perca flavescens	FR	St. Lawrence River, Montreal, Canada	0.38 (0.44ppm max tissue residue)	--	same as above	Fredeen, et al (1970), AMIC-534

DDD	Esox lucius	FR	St. Lawrence River, Montreal, Canada	0.38 (1.31 ppmmax tissue residue)	--	same as above	Fredeen, et al (1970), AMIC-534
DDD	Ambloplites rupestris	FR	St. Lawrence River, Montreal, Canada	0.38(0.25 ppm max tissue residue)	--	same as above	Fredeen, et al (1970),AMIC-534
DDD	Pisidium sp.	FR	St. Lawrence River, Montreal, Canada	0.38 (0.001ppm max tissue residue)	--	same as above	Fredeen, et al (1970), AMIC-534
DDD	Campeloma sp.	FR	St. Lawrence River, Montreal, Canada	0.38 (0.22ppm max tissue residue)	--	same as above	Fredeen, et al (1970), AMIC-534
DDE (C-14 labelled)	Sorghum halpense	L (Model ecosystem)	--	1 lb per A (NTE)	a,c,g, standard reference water and sand	This small laboratory model ecosystem procedure was developed to study pesticide biodegradability and ecological magnification. The food-chain pathways in this system were: (1) sorghum - caterpiller (larva), (2) caterpiller (excreta) - Oedogonium, (3) Oedogonium - snail, (4) Estigmene (excreta) - diatoms, (5) Diatoms - plankton, (6) Plankton - Culex (larvae), (7) Culex - Gambusia. The fish is the top of the food chain. Using isotopically labeled pesticides (1 lb/acre application rate), residues were determined for only selected organisms (snail, mosquito, and fish) and water. Reproducibility appeared to be good. The authors state that the method gives a good estimation of the potential toxicity of pesticides and their breakdown products to a variety of organisms and is suitable for computer modeling.	Metcalf, et al (1971), AMIC-1495
DDE (C-14 labelled)	Estigmene acrea	L (Model ecosystem)	--	1 lbper A (K-NTE)	a,c,g, standard reference water and sand	same as above	Metcalf, et al (1971), AMIC-1495
DDE (C-14 labelled)	Physa spp	L (Mod-	--	121.6 (residue)	a,c,g, standard	same as above	Metcalf, et al

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
		el ecosystem)			reference water and sand		(1971), AMIC-1495
DDE (C-14 labelled)	Daphnia magna	L (Model ecosystem)	--	1 lb per A (K-NTE)	a,c,g,standard reference water and sand	same as above	Metcalf, et al (1971), AMIC-1495
DDE (C-14 labelled)	Culex pipiens quinquefasciatus	L (Model ecosystem)	--	168.9(residue)	a,c,g, standard reference water and sand	same as above	Metcalf, et al (1971), AMIC-1495
DDE (C-14 labelled)	Oedogonium cardiacum	L (Model ecosystem)	--	1 lb per A (NTE)	a,c,g, standard reference water and sand	same as above	Metcalf, et al(1971), AMIC-1495
DDE (C-14 labelled)	Gambusia affinis	L (Model ecosystem)	--	149.8 (residue)	a,c,g, standard reference water and sand	same as above	Metcalf, et al (1971), AMIC-1495
DDE (C-14 labelled)	Diatoms (Navicula, Coscinodiscus, Diploness, and Diatomella)	L (Model ecosystem)	-	1 lb per A (NTE)	a,c,g, standard reference water and sand	same as above	Metcalf, et al (1971), AMIC-1495
DDE (C-14 labelled)	Protozoa (Nuclearia, Coleps, Vorticella, and Paramecium)	L (Model ecosystem)	--	1 lb per A (NTE)	a,c,g, standard reference water and sand	same as above	Metcalf, et al (1971), AMIC-1495

DDE (C-14 labelled)	Rotifers (Asplanchnopus, Notomatta, Euclaris, Scardium)	L (Model ecosystem)	--	1 lb per A (NTE)	a,c,g, standard reference water and sand	same as above	Metcalf, et al(1971), AMIC-1495
DDE (C-14 labelled)	Water	L (Model ecosystem)	--	0.008 (residue)	a,c,g, standard reference water and sand	same as above	Metcalf, et al (1971), AMIC-1495
DDE (p,p")	Anguilla rostrata	FRL	St. John, N.B., Can.	0.5 (residue)	--	PCB"s were found in higher concentrations than organochlorine pesticides in all fish analyzed. The authors point out that PCB is less toxic in an acute sense than organochlorines, that little is known of sublethal PCB effects, and that more knowledge of PCB distribution and effects is needed.	Zitko(1971), AMIC-3715
DDE (p,p")	Esox niger	FRL	St. John, N.B., Can.	0.16 (residue)	--	same as above	Zitko (1971),AMIC-3715
DDE (p,p")	Salmo salar	FRL	St. John, N.B., Can.	0.22 (residue)	--	same as above	Zitko (1971),AMIC-3715
DDE (p,p")	Clupea harengus	FRL	St. John, N.B., Can.	0.06-0.24 (residue)	--	same as above	Zitko(1971), AMIC-3715
DDE (p,p")	Scomber scombrus	FRL	St. John, N.B., Can.	0.07 (residue)	--	same as above	Zitko(1971), AMIC-3715
DDE (p,p")	Mytilus edulis	FRL	St. John, N.B., Can.	0.02(residue)	--	same as above	Zitko (1971),AMIC-3715
DDE (p,p")	Gadus morhua	FRL	St. John, N.B., Can.	0.01 (residue)	--	same as above	Zitko(1971), AMIC-3715
DDE (p,p")	Urophycis tenuis	FRL	St. John, N.B., Can.	0.02 (residue)	--	same as above	Zitko(1971), AMIC-3715
DDE (p,p")	Hippoglossoides platessoides	FRL	St. John, N.B., Can.	0.01 (residue)	--	same as above	Zitko (1971), AMIC-3715
DDE (p,p")	Sebastodes	FRL	St. John,	trace	--	same as above	Zitko(1971),

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
	marinus		N.B., Can.	(residue)			AMIC-3715
DDE	Carp	FRL	Misc. states	0.03-2.93 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1407
DDE	Channel catfish	FRL	Misc. states	0.04-42.3 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1407
DDE	Redhorse sucker	FRL	Misc. states	0.03-0.36 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1407
DDE	Gizzard shad	FRL	Misc. states	0.27-1.54 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1407
DDE	Spotted sucker	FRL	Misc. states	0.29-0.45 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1407
DDE	Bluegills	FRL	Misc. states	0.04-0.81 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1407
DDE	Redbreast sunfish	FRL	Misc. states	0.02 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1407
DDE	Striped mullet	FRL	Misc. states	0.08-4.55 residue (SB)	--	same as above	Henderson, etal (1971), AMIC-1407
DDE	Blue catfish	FRL	Misc. states	1.87 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1407
DDE	Rock bass	FRL	Misc. states	0.08-0.60 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1407
DDE	Freshwater drum	FRL	Misc. states	0.26 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1407

DDE	Bloater	FRL	Misc. states	1.07-3.52 residue (SB)	--	same as above	Henderson et al(1971), AMIC-1407
DDE	Lake whitefish	FRL	Misc. states	0.34 residue (SB)	--	same as above	Henderson, etal (1971), AMIC-1407
DDE	Lake trout	FRL	Misc. states	0.04-0.98 residue (SB)	--	same as above	Henderson, etal (1971), AMIC-1407
DDE	White crappie	FRL	Misc. states	0.03-0.23 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1407
DDE	Bigmouth buffalo	FRL	Misc. states	0.15-0.62 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1407
DDE	Smallmouth buffalo	FRL	Misc. states	0.46 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1407
DDE	Flathead catfish	FRL	Misc. states	0.82 residue (SB)	--	same as above	Henderson, etal (1971), AMIC-1407
DDE	Goldeye	FRL	Misc. states	0.03-0.29 residue (SB)	--	same as above	Henderson, et al(1971), AMIC-1407
DDE	Walleye	FRL	Misc. states	0.05 residue (SB)	--	same as above	Henderson, et al (1971),AMIC-1407
DDE	Sauger	FRL	Misc. states	0.38 residue (SB)	--	same as above	Henderson,et al(1971), AMIC-1407
DDE	Flannelmouth sucker	FRL	Misc. states	0.13 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1407
DDE	Black bullhead	FRL	Misc. states	0.03-0.04 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1407
DDE	White bass	FRL	Misc. states	0.13 residue (SB)	--	same as above	Henderson, et al(1971),

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
							AMIC-1407
DDE	Black crappie	FRL	Misc. states	0.40-0.94 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1407
DDE	Largescale sucker	FRL	Misc. states	0.12-0.47 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1407
DDE	Smallmouth bass	FRL	Misc. states	0.30-0.94 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1407
DDE	Northern squawfish	FRL	Misc. states	0.48-1.87 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1407
DDE	Chiselmouth	FRL	Misc. states	0.14-0.70 residue (SB)	--	same as above	Henderson, etal (1971), AMIC-1407
DDE	Klamath sucker	FRL	Misc. states	0.02 residue (SB)	--	same as above	Henderson, etal (1971), AMIC-1407
DDE	Rainbow trout	FRL	Misc. states	0.08-0.50 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1407
DDE	Bridgelip sucker	FRL	Misc. states	0.35 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1407
DDE	Arctic grayling	FRL	Misc. states	0.25 residue (SB)	--	same as above	Henderson, etal (1971), AMIC-1407
DDE	Round whitefish	FRL	Misc. states	0.27 residue (SB)	--	same as above	Henderson, etal (1971), AMIC-1407
DDE	Longnose sucker	FRL	Misc. states	0.01-0.54 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1407

DDE	White sucker	FRL	Misc. states	0.05-4.82 residue (SB)	--	The Bureau of Sport Fisheries continued its fish monitoring program by collecting 147 composite fish samples from 50 nationwide monitoring stations during the fall of 1969. Fish were analyzed for residues of 11 organochlorine insecticides, lipids, and PCB"s.	Henderson, et al (1971), AMIC-1407
DDE	Yellow perch	FRL	Misc. states	0.03-2.41 residue (SB)	--	same as above	Henderson, etal (1971), AMIC-1407
DDE	Chain pickerel	FRL	Misc. states	0.06 residue (SB)	--	same as above	Henderson, et al(1971), AMIC-1407
DDE	White catfish	FRL	Misc. states	0.38-0.86 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1407
DDE	White perch	FRL	Misc. states	0.64-10.9 residue (SB)	--	same as above	Henderson, et al(1971), AMIC-1407
DDE	Goldfish	FRL	Misc. states	1.24 residue (SB)	--	same as above	Henderson, et al (1971),AMIC-1407
DDE	Pumpkinseed	FRL	Misc. states	0.23 residue (SB)	--	same as above	Henderson, et al (1971),AMIC-1407
DDE	Largemouth bass	FRL	Misc. states	0.10-5.85 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1407
DDE	Brown bullhead	FRL	Misc. states	0.08-1.65 residue (SB)	--	same as above	Henderson, et al(1971), AMIC-1407
DDE	Limnephilus rhombicus (larvae)	FS	Knights Creek, Dun County,Wisc.	0.006 (whole body residue)	--	Samples of water, silt, bottom debris, bottom organisms, and fish were taken in 1966 from a creek adjacent to an orchard which had been treated in 1963-1965 with various chlorinated hydrocarbon pesticides. No residues were found in water samples. Silt samples contained 0.002-0.013 ppm endrin and 0-0.005 ppm dieldrin. Endrin residues of	Moubry, et al (1968), AMIC-3753

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
						0.011-0.025 ppm and 0.002-0.006 ppm dieldrin were found in debris samples. Despite limited control data, residue analyses indicated that contamination of the environment studied was limited.	
DDE	Sialis sp. (larvae)	FS	Knights Creek, Dun County, Wisc.	0.005 (wholebody residue)	--	same as above	Moubry, et al (1968), AMIC-3753
DDE	Gammarus sp.	FS	Knights Creek, Dun County, Wisc.	0.01(whole bodyresidue) residue)	--	same as above	Moubry, et al (1968), AMIC-3753
DDE	Salvelinus fontinalis	FS	Knights Creek, Dun County, Wisc.	0.3-1.4(fat residue)	--	same as above	Moubry, et al (1968), AMIC-3753
DDE	Semotilus atromaculatus	FS	Knights Creek, Dun County, Wisc.	1.02-1.53(fat residue)	--	same as above	Moubry, et al (1958), AMIC-3753
DDE	Cottus bairdi	FS	Knights Creek, Dun County, Wisc.	0.6-0.7 (fat residue)	--	same as above	Moubry, et al (1968), AMIC-3753
DDE	Rhinichthys atratulus	FS	Knights Creek, Dun County, Wisc.	1.92(fat residue)	--	same as above	Moubry, et al (1968), AMIC-3753
DDE	Engraulis mordax	FM	Pacific Northwest Coast, Grays Harbor, Wash.	0.06-0.17(res idue)	--	Pesticides from the Columbia River into Puget Sound apparently contaminated fish constituting commercial catches in Pacific Northwest waters. Residues in these marine products were substantially lower than the FDA tolerance for beef (7 ppm). Fish from locations near the mouth of the Columbia River had higher pesticide content than ones caught farther away.	Stout (1968), AMIC-3784

			Wash.				
DDE	Sebastodes flavidus	FM	Pacific Northwest Coast, Hecate Strait, B.C.	0.02-0.08 (residue)	--	same as above	Stout (1968), AMIC-3784
DDE	Sebastodes flavidus	FM	Pacific Northwest Coast, Ilwaco,Wash.	0.09-0.42 (residue)	--	same as above	Stout (1968), AMIC-3784
DDE	Platichthys stellatus	FM	Pacific Northwest Coast, Blaine, Wash.	0.02(residue)	--	same as above	Stout (1968), AMIC-3784
DDE	Gadus macrocephalus	FM	Pacific Northwest Coast, Blaine,	0.01 (residue)	--	same as above	Stout (1968), AMIC-3784
DDE	Cancer magister	FM	Pacific Northwest Coast, Destruction Island, Wash.	0.039(residue)	--	same as above	Stout (1968), AMIC-3784
DDE	Cancer magister	FM	Pacific Northwest Coast, Ilwaco, Wash.	0.03-0.04 (residue)	--	same as above	Stout (1968), AMIC-3784
DDE	Parophrys vetulus	FM	Pacific Northwest Coast, Blaine, Wash.	0.01-0.05 (residue)	--	same as above	Stout (1968), AMIC-3784
DDE	Merluccius productus	FM	Pacific Northwest Coast, Sarasota Passage, Wash.	0.04-0.06 (residue)	--	same as above	Stout (1968), AMIC-3784
DDE	Merluccius productus	FM	Pacific Northwest	0.04-0.11 (residue)	--	same as above	Stout (1968),

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
			Coast, Fort Susan, Wash.				AMIC-3784
DDE	Merlucclus productus	FM	Pacific Northwest Coast, Cape Foulweather, Ore.	0.07(residue)	--	same as above	Stout (1968), AMIC-3784
DDE	Merlucclus productus (fishmeal)	FM	Pacific Northwest Coast, Aberdeen, Wash.	0.27 (residue)	--	same as above	Stout (1968), AMIC-3784
DDE	Sebastodes alutus	FM	Pacific Northwest Coast, Hecate Strait, B.C.	0.01 (residue)	--	same as above	Stout (1968), AMIC-3784
DDE	Carassius auratus	L	--	4.7-8.2 (residue)	a*	Goldfish were exposed to increasing concentrations of DDT and residues determined after 21 days of exposure. Most DDT had been converted to DDE. Phenobarital had no significant effect on insecticide residues.	Young, etal (1971), AMIC-3796
DDE	Triturus cristatus	L	--	0.23-0.64 (residue)	--	DDT caused hyperactivity in exposed tadpoles. This caused increased capture lunges of newts thus increasing the predatory efficiency of the newts. DDT had no apparent effect on the newts.	Cooke (1971), AMIC-3814
DDE	Rana temporaria	L	--	0.001-0.01 microgram (residue)	--	same as above	Cooke (1971), AMIC-3814
DDE	Daphnia magna (adult)	BCF	--	1.8 (residue)	a*	Magnification of DDT and Aldrin tagged with C-14 occurred rapidly. Biological magnification factors of 2900 to 114,100 depending on the species were found for DDT, and 22,800 to 141,000 for Aldrin. Marked degradation of DDT as determined by analysis for DDT metabolites occurred. The authors	Johnson, et al (1971), AMIC-3820

						conclude that aquatic invertebrates influence quality and quantity of insecticide residue passed via the fish food chain.	
DDE	Gammarus fasciatus (adult)	BCF	--	0.4 (residue)	a*	same as above	Johnson, et al (1971),AMIC-3820
DDE	Palaemonetes kadiakensis (adult)	BCF	--	0.7 (residue)	a*	same as above	Johnson, et al(1971), AMIC-3820
DDE	Hexagenia bilineata (nymph)	BCF	--	1.4 (residue)	a*	same as above	Johnson, et al (1971),AMIC-3820
DDE	Ischnura verticalis (naiad)	BCF	--	0.2 (residue)	a*	same as above	Johnson, et al (1971),AMIC-3820
DDE	Libellula sp. (naiad)	BCF	--	0.02 (residue)	a*	same as above	Johnson, et al (1971), AMIC-3820
DDE	Chironomus sp. (larva)	BCF	--	0.1 (residue)	a*	same as above	Johnson, et al (1971),AMIC-3820
DDE	Daphnia magna (adult)	BCF	--	0.0001 (SB3)	a*	same as above	Johnson,et al (1971), AMIC-3820
DDE	Gammarus fasciatus (adult)	BCF	--	0.0001 (SB3)	a*	same as above	Johnson,et al (1971), AMIC-3820
DDE	Palaemonetes kadiakensis (adult)	BCF	--	0.0001 (SB3)	a*	same as above	Johnson,et al (1971), AMIC-3820
DDE	Hexagenia bilineata (nymph)	BCF	--	0.0001 (SB3)	a*	same as above	Johnson,et al (1971), AMIC-3820
DDE	Ischnura verticalis (naiad)	BCF	--	0.0001 (SB3)	a*	same as above	Johnson,et al (1971), AMIC-3820

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
DDE	Libellula sp. (naiad)	BCF	--	0.0001 (SB3)	a*	same as above	Johnson, et al (1971), AMIC-3820
DDE	Chironomus sp. (larva)	BCF	--	0.0001 (SB3)	a*	same as above	Johnson, et al (1971), AMIC-3820
DDE	Micropterus salmoides	FL	Clear Lake, Cal.	0.3-9 (flesh residue)	--	Residue analysis results mainly for TDE in fish, birds, and plankton from 1959 through 1965 were reported. The residues primarily resulted from application of DDT to farmland and for gnat control. In some cases, data for a single animal in one year were given. Primary emphasis was on largemouth bass and white catfish. The general level of TDE contamination in birds and fish declined markedly from 1958 to 1965. This decline correlated directly with strict limitation by permits of DDT applications during the latter years.	Linn, et AL(1969), AMIC-5521
DDE	Micropterus salmoides	FL	Clear Lake, Cal.	82 (fat residue)	--	same as above	Linn, et al (1969), AMIC-5521
DDE	Aechmophorus occidentalis	FL	Clear Lake, Cal.	33-2,360 (fat residue)	--	same as above	Linn, et AL(1969), AMIC-5521
DDE	Larus spp.	FL	Clear Lake, Cal.	300-402 (residue)	--	same as above	Linn, et al (1969), AMIC-5521
DDE	Larus delawarensis	FL	Clear Lake, Cal.	92-2700 (fat residue)	--	same as above	Linn, et al (1959), AMIC-5521
DDE	Perca flavescens	FLR	93 sampling stations in Mass.	0.25-3.6 (residue)	--	Fish indigenous to Massachusetts freshwater streams were analyzed for DDT and DDT metabolites during 1965-1967. Generally there was an increase in pesticide content during the three year period.	Lyman, et al (1968), AMIC-3339

DDE	Lepomis gibbosus	FLR	93 sampling stations in Mass.	0.16-3.5 (residue)	--	same as above	Lyman, et al (1968), AMIC-3839
DDE	Catostomus commersoni	FLR	93 sampling stations in Mass.	0.16-4.6 (residue)	--	same as above	Lyman, et al (1968), AMIC-3839
DDE	Ictalurus nebulosus	FLR	93 sampling stations in Mass.	0.9 (residue)	--	same as above	Lyman, et al (1968), AMIC-3839
DDE	Cyprinus carpio	FLR	93 sampling stations in Mass.	1.6-4.8 (residue)	--	same as above	Lyman, et al (1968), AMIC-3839
DDE	Esox niger	FLR	93 sampling stations in Mass.	0.84-1.0 (residue)	--	same as above	Lyman,et al (1968), AMIC-3839
DDE	Notemigonus crysoleucas	FLR	93 sampling stations in Mass.	0.39-4.2 (residue)	--	same as above	Lyman, et al (1968), AMIC-3839
DDE	Semotilus corporalis	FLR	93 sampling stations in Mass.	0.17-7.4 (residue)	--	same as above	Lyman, et al (1968), AMIC-3839
DDE	Lepomis macrochirus	FLR	93 sampling stations in Mass.	0.18-4.4 (residue)	--	same as above	Lyman, et al (1968), AMIC-3839
DDE	Ambloplites rupestris	FLR	93 sampling stations in Mass.	0.76-4.3 (residue)	--	same as above	Lyman, et al (1968), AMIC-3839
DDE	Semotilus atromaculatus	FLR	93 sampling stations in Mass.	0.46-2.4 (residue)	--	same as above	Lyman, et al (1968), AMIC-3839
DDE	Micropterus dolomieui	FLR	93 sampling stations in Mass.	0.3-0.82 (residue)	--	same as above	Lyman, et al (1968), AMIC-3839
DDE	Alosa pseudo-harengus	FLR	93 sampling stations in Mass.	1.08 (residue)	--	same as above	Lyman, et al (1968), AMIC-3839
DDE	Fundulus heteroclitus	FLR	93 sampling stations in Mass.	1.16-4.1 (residue)	--	same as above	Lyman, et al (1968), AMIC-3839

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
DDE	Notropis cornutus	FLR	93 sampling stations in Mass.	0.50-2.6 (residue)	--	same as above	Lyman, et al (1968), AMIC-3839
DDE	Poccus americanus	FLR	93 sampling stations in Mass.	0.34-1.4 (residue)	--	same as above	Lyman, et al (1968), AMIC-3839
DDE	Pomoxis nigro-maculatus	FLR	93 sampling stations in Mass.	1.94(residue)	--	same as above	Lyman, et al (1968), AMIC-3839
DDE	Fundulus diaphanu	FLR	93 sampling stations in Mass.	2.35 (residue)	--	same as above	Lyman, et al (1968), AMIC-3839
DDE	Notropis anatostanus	FLR	93 sampling stations in Mass.	0.53 (residue)	--	same as above	Lyman, et al (1968), AMIC-3839
DDE	Lepomis auritus	FLR	93 sampling stations in Mass.	0.46 (residue)	--	same as above	Lyman,et al (1968), AMIC-3839
DDE	Phinichthys atratulus	FLR	93 sampling stations in Mass.	0.48-0.50 (residue)	--	same as above	Lyman, et al (1968), AMIC-3839
DDE	Cyprinus carpio	FR	St. Lawrence Piver, Montreal, Canada	0.38(0.32 ppm max tissue residue)	--	Residues of DDD were measured in water, mud, molluscs, and fish during and after DDD application in 1967. Sampling points were above the point of application and 10 and 45 mi downstream. Residues from unknown sources were detected upstream. Downstream residues were more than twice those obtained upstream (0.156 versus 0.369 ppm). The highest concentration in an individual fish was 1.81 ppm.	Fredeen, et al (1970), AMIC-534
DDE	Amelurus nebulosus	FR	St. Lawrence Piver, Montreal, Canada	0.38(0.12 ppm max tissue residue)	--	same as above	Fredeen, et al (1970), AMIC-534
DDE	Perca flavescens	FR	St. Lawrence River, Montreal, Canada	0.38 (0.01ppm max tissue residue)	--	same as above	Fredeen, et al (1970), AMIC-534

DDE	Esox lucius	FR	St. Lawrence River, Montreal, Canada	0.38 (0.43 ppmmax tissue residue)	--	same as above	Fredeen, et al (1970), AMIC-534
DDE	Ambloplites rupestris	FR	St. Lawrence River, Montreal, Canada	0.38(0.05 ppm max tissue residue)	--	same as above	Fredeen, et al (1970),AMIC-534
DDE	Pisidium sp.	FR	St. Lawrence River, Montreal, Canada	0.38 (0.04ppm max tissue residu)	--	same as above	Fredeen, et al (1970), AMIC-534
DDE	Campeloma sp.	FR	St. Lawrence River, Montreal, Canada	0.38 (0.09ppm max tissue residue)	--	same as above	Fredeen, et al (1970), AMIC-534
DDE	Catostomus commersoni	FR	St. Lawrence River, Montreal, Canada	0.38(0.32 ppm max tissue residue)	--	same as above	Fredeen, et al (1970),AMIC-534
DDT (C-14 labelled)	Daphnia magna (adult)	BCF	--	6.7-9.2 (residue)	a*	Magnification of DDT and Aldrin tagged with C-14 occurred rapidly. Biological magnification factors of 2900 to 114,100 depending on the species were found for DDT, and 22,800 to 141,000 for Aldrin. Marked degradation of DDT as determined by analysis for DDT metabolites occurred. The authors conclude that aquatic invertebrates influence quality and quantity of insecticide residue passed via the fish food chain.	Johnson, et al (1971), AMIC-3820
DDT (C-14 labelled)	Culex pipiens (larva)	BCF	--	13.9 (residue)	a*	same as above	Johnson,et al (1971), AMIC-3820
DDT (C-14 labelled)	Daphnia magna (adult)	BCF	--	0.0001 (SB3)	a*	same as above	Johnson,et al (1971), AMIC-3820
DDT (C-14 labelled)	Gammarus fasciatus (adult)	BCF	--	0.0001 (SB3)	a*	same as above	Johnson,et al (1971), AMIC-3820
DDT (C-14 labelled)	Orconectes nais (adult)	BCF	--	0.0001 (SB3)	a*	same as above	Johnson,et al (1971), AMIC-3820
DDT (C-14 labelled)	Palaemonetes kadiakensis (adult)	BCF	--	0.0001 (SB3)	a*	same as above	Johnson, et al (1971), AMIC-3820
DDT (C-14 labelled)	Hexagenia bilineata	BCF	--	0.0001(SB3)	a*	same as above	Johnson,et al (1971),

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
	(nymph)						AMIC-3820
DDT (C-14 labelled)	Siphlonurus sp (nymph)	BCF	--	0.0001 (SB3)	a*	same as above	Johnson,et al (1971), AMIC-3820
DDT (C-14 labelled)	Ischnura verticalis (naiad)	BCF	--	0.0001(SB3)	a*	same as above	Johnson,et al (1971), AMIC-3820
DDT (C-14 labelled)	Libellula sp. (naiad)	BCF	--	0.0001 (SB3)	a*	same as above	Johnson,et al (1971), AMIC-3820
DDT (C-14 labelled)	Chironomus sp. (larva)	BCF	--	0.0001 (SB3)	a*	same as above	Johnson,et al (1971), AMIC-3820
DDT (C-14 labelled)	Culex pipiens (larva)	BCF	--	0.0001 (SB3)	a*	same as above	Johnson,et al (1971), AMIC-3820
DDT (C-14 labelled)	Gammarus fasciatus (adult)	BCF	--	1.3-1.7 (residue)	a*	same as above	Johnson, et al (1971), AMIC-3820
DDT (C-14 labelled)	Orconectes nais (adult)	BCF	--	0.2 (residue)	a*	same as above	Johnson,et al (1971), AMIC-3820
DDT (C-14 labelled)	Palaemonetes kadiakensis (adult)	BCF	--	0.3-0.5 (residue)	a*	same as above	Johnson, et al (1971), AMIC-3820

DDT (C-14 labelled)	Hexagenia bilineata (nymph)	BCF	--	0.3-1.7 (residue)	a*	same as above	Johnson, et al (1971), AMIC-3820
DDT (C-14 labelled)	Siphlonurus sp. (nymph)	BCF	--	1.1 (residue)	a*	same as above	Johnson,et al (1971), AMIC-3820
DDT (C-14 labelled)	Ischnura verticalis (naiad)	BCF	--	0.2-0.4 (residue)	a*	same as above	Johnson, et al (1971), AMIC-3820
DDT (C-14 labelled)	Libellula sp. (naiad)	BCF	--	0.04-0.1 (residue)	a*	same as above	Johnson, et al (1971), AMIC-3820
DDT (C-14 labelled)	Chironomus sp. (larva)	BCF	--	0.4-2.2 (residue)	a*	same as above	Johnson, et al (1971), AMIC-3820
DDT (C-14 labelled)	Estigmene acrea	L (Model ecosystem)	--	1 lbper A (K-NTE)	a,c,g, standard reference water and sand	This small laboratory model ecosystem procedure was developed to study pesticide biodegradability and ecological magnification. The food-chain pathways in this system were: (1) sorghum - caterpiller (larva), (2) caterpiller (excreta) - Oedogonium, (3) Oedogonium - snail, (4) Estigmene (excreta) - diatoms, (5) Diatoms - plankton, (6) Plankton - Culex (larvae), (7) Culex - Gambusia. The fish is the top of the food chain. Using isotopically labeled pesticides (1 lb/acre application rate), residues were determined for only selected organisms (snail, mosquito, and fish) and water. Reproducibility appeared to be good. The authors state that the method gives a good estimation of the potential toxicity of pesticides and their breakdown products to a variety of organisms and is suitable for computer modeling.	Metcalf, et al (1971), AMIC-1495

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
DDT (C-14 labelled)	Protozoa (Nuclearia, Coleps, Vorticella, and Paramecium)	L (Model ecosystem)	--	1 lb per A (NTE)	a,c,g, standard reference water and sand	same as above	Metcalf, et al (1971), AMIC-1495
DDT (C-14 labelled)	Rotifers (Asplanchnopus, Notomatta, Euclaris, Scárdium)	L (Model ecosystem)	--	1 lb per A (NTE)	a,c,g, standard reference water and sand	same as above	Metcalf, et al(1971), AMIC-1495
DDT (C-14 labelled)	Water	L (Model ecosystem)	--	0.004 (residue)	a,c,g, standard reference water and sand	same as above	Metcalf, et al (1971), AMIC-1495
DDT (C-14 labelled)	Physa spp	L (Model ecosystem)	--	22.9 (residue)	a,c,g, standard reference water and sand	same as above	Metcalf, et al (1971), AMIC-1495
DDT (C-14 labelled)	Daphnia magna	L (Model ecosystem)	--	1 lb per A (K-NTE)	a,c,g, standard reference water and sand	same as above	Metcalf, et al (1971), AMIC-1495
DDT (C-14 labelled)	Culex pipiens quinquefasciatus	L (Model ecosystem)	--	8.9(residue)	a,c,g, standard reference water and sand	same as above	Metcalf, et al (1971), AMIC-1495
DDT (C-14 labelled)	Oedogonium cardiacum	L (Model ecosystem)	--	1 lb per A (NTE)	a,c,g, standard reference water and sand	same as above	Metcalf, et al(1971), AMIC-1495
DDT (C-14 labelled)	Gambusia affinis	L (Model ecosystem)	--	54.2 (residue)	a,c,g, standard reference water and sand	same as above	Metcalf, et al (1971), AMIC-1495

DDT (C-14 labelled)	Diatoms (Navicula, Coscinodiscus, Diploness, and Diatomella)	L (Model ecosystem)	--	1 lb per A (NTE)	a,c,q, standard reference water and sand	same as above	Metcalf, et al (1971), AMIC-1495
DDT (C-14 labelled)	Salvelinus fontinalis	BCFCH	--	0.000003 (0.0256ppm accumulation 120 d)	a	This study was an attempt to evaluate, under laboratory conditions, the relative importance of food and water as sources of DDT for fish and to relate these observations to natural environments. To simulate conditions in Lake Michigan, fish were exposed to water containing 3 plus or minus 0.3 ppt DDT, and others were fed 3 plus or minus 0.15 ppm DDT (0.045 mg/kg/day) for 120 days. Whole body accumulations were determined throughout the test by measuring C-14 radioactivity in fish. The results show that fish accumulated 3.5 percent of the DDT available in the water and 35.5 percent of that available in food. It is concluded that the food chain is the major source of DDT in fish.	Macek, et al (1970), AMIC-844
DDT (C-14 labelled)	Salvelinus fontinalis	BCFCH	--	0.045 mg per kg (1.92ppm accumulation 120 d)	a	same as above	Macek, et al (1970), AMIC-844
DDT (o,p")	Rasbora heteromorpha	BCFA and BSA	--	0.03 (T1)	a*,c,e,f, hard (HW) or SOFT(SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425
DDT (plus DDT analogs)	Limnephilus rhombicus (larvae)	FS	Knights Creek, Dun County, Wisc.	0.024 (whole body residue)	--	Samples of water, silt, bottom debris, bottom organisms, and fish were taken in 1966 from a creek adjacent to an orchard which had been treated in 1963-1965 with various chlorinated hydrocarbon pesticides. No residues were	Moubry, et al (1968), AMIC-3753

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
						found in water samples. Silt samples contained 0.002-0.013 ppm endrin and 0-0.005 ppm dieldrin. Endrin residues of 0.011-0.025 ppm and 0.002-0.006 ppm dieldrin were found in debris samples. Despite limited control data, residue analyses indicated that contamination of the environment studied was limited.	
DDT (plus DDT analogs)	Sialis sp. (larvae)	FS	Knights Creek, Dun County, Wisc.	0.016 (whole body residue)	--	same as above	Moubry, et al(1968), AMIC-3753
DDT (plus DDT analogs)	Gammarus sp.	FS	Knights Creek, Dun County, Wisc.	0.003-0.013 (whole body residue)	--	same as above	Moubry, et al (1968), AMIC-3753
DDT (plus DDT analogs)	Salvelinus fontinalis	FS	Knights Creek, Dun County,Wisc.	0.042-0.155 (whole body residue)	--	same as above	Moubry, et al (1968), AMIC-3753
DDT (plus DDT analogs)	Semotilus atromaculatus	FS	Knights Creek, Dun County,Wisc.	0.061-0.076 (whole body residue)	--	same as above	Moubry,et al (1968), AMIC-3753
DDT (plus DDT analogs)	Cottus bairdi	FS	Knights Creek, DunCounty, Wisc.	0.034-0.062 (whole body residue)	--	same as above	Moubry, et al (1968), AMIC-3753
DDT (plus DDT analogs)	Rhinichthys atratulus	FS	Knights Creek, Dun County,Wisc.	0.168 (whole body residue)	--	same as above	Moubry, et al (1968), AMIC-3753
DDT (plus DDT analogs)	Salvelinus fontinalis	FS	Knights Creek, Dun County,Wisc.	0.92-3.87 (fat residue)	--	same as above	Moubry, et al (1968), AMIC-3753
DDT (plus DDT analogs)	Semotilus atromaculatus	FS	Knights Creek, Dun County,Wisc.	1.81-2.36 (fat residue)	--	same as above	Moubry, et al (1968), AMIC-3753
DDT (plus DDT analogs)	Cottus bairdi	FS	Knights Creek,	1.53-2.58 (fat residue)	--	same as above	Moubry, et al (1968),

			DunCounty, Wisc.				AMIC-3753
DDT (plus DDT analogs)	Phinichthys atratulus	FS	Knights Creek, Dun County, Wisc.	2.8 (fat residue)	--	same as above	Moubry, et al (1968), AMIC-3753
DDT (plus 20 percent non-ionic emulsifier, 60 percent naphtha)	Rasbora heteromorpha	BCFA and BSA	--	0.11 (T2)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425
DDT (plus 20 percent non-ionic emulsifier, 60 percent naphtha, in acetone)	Rasbora heteromorpha	BCFA and BSA	--	0.02 (T2)	a*,c,e,f, hard (HW) or soft (SW) synthetic water, or seawater for some species	same as above	Alabaster (1969), AMIC-5425
DDT (plus 24 percent suspending agents)	Rasbora heteromorpha	BCFA and BSA	--	10.7 (T1)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	same as above	Alabaster (1969), AMIC-5425
DDT (plus 3 percent emulsifier, 48 percent naphtha)	Rasbora heteromorpha	BCFA and BSA	--	0.11 (T2)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	same as above	Alabaster (1969), AMIC-5425

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
DDT (plus 77 percent China clay, 3 percent calcium sulfate)	Rasbora heteromorpha	BCFA andBS A	--	8.0 (T2)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater forsome species	same as above	Alabaster (1969), AMIC-5425
DDT (plus 77 percent China clay, 3 percent calcium sulfate, in ACETONE)	Pasbora heteromorpha	BCFA and BSA	--	0.001 (T2)	a*,c,e,f, hard (HW) or soft (SW) syn-thetic water, or seawater for some species	same as above	Alabaster (1969), AMIC-5425
DDT (p,p"-)	Pimephales promelas (3 cm)	BSA	--	0.0074 (T2)	a*,c,e,f,k ,l,n,and magnesium, sulfates, iron, calcium	Bioassays conducted simultaneously indicated that DDT was considerably more toxic to fathead minnows under static conditions than under continuous flow conditions. Decreasing oxygen and increasing metabolites may have enhanced DDT toxicity. An identical study with Endrin resulted in only slightly higher toxicity under continuous flow conditions. Average pH, oxygen, and ammonia nitrogen were followed throughout the experiments. The results were comprehensively discussed taking into consideration many contributing factors.	Lincer, et al (1970), AMIC-5509
DDT (p,p"-)	Pimephales promelas (3 cm)	BCFA	--	greater than 0.04 (T2)	a*,c,e,f,k ,l,n,and magnesium, sulfates, iron,	same as above	Lincer, et al (1970), AMIC-5509

					calcium		
DDT (p,p")	Anguilla rostrata	FRL	St. John, N.B., Can.	0.29 (residue)	--	PCB"s were found in higher concentrations than organochlorine pesticides in all fish analyzed. The authors point out that PCB is less toxic in an acute sense than organochlorines, that little is known of sublethal PCB effects, and that more knowledge of PCB distribution and effects is needed.	Zitko(1971), AMIC-3715
DDT (p,p")	Esox niger	FRL	St. John, N.B., Can.	0.08 (residue)	--	same as above	Zitko (1971),AMIC-3715
DDT (p,p")	Salmo salar	FRL	St. John, N.B., Can.	0.08 (residue)	--	same as above	Zitko (1971),AMIC-3715
DDT (p,p")	Clupea harengus	FRL	St. John, N.B., Can.	0.05-0.15 (residue)	--	same as above	Zitko(1971), AMIC-3715
DDT (p,p")	Scomber scombrus	FRL	St. John, N.B., Can.	0.07 (residue)	--	same as above	Zitko(1971), AMIC-3715
DDT (p,p")	Rasbora heteromorpha	BCFA and BSA	--	0.013 (T1)	a*,c,e,f, hard (HW) or SOFT(SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425
DDT (p,p", C-14 labelled)	Gambusia affinis (0.1-1.5 g)	L	--	0.000041(SB2)	a*	DDT-resistant mosquitofish were collected from a pond at Salinas, California. Smaller fish (100 mg) accumulated DDT-C14 more rapidly than larger ones (200-1500 mg). In 48 hr the fish removed 21 percent of the DDT from the water. The author notes that other researchers attribute DDT contamination of fish to food chain uptake but that his results indicate direct uptake from water by smaller fish may be of considerable importance.	Murphy (1971), AMIC-1805

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
DDT (p,p", C-14 labelled)	Gambusia affinis (0.1-1.5 g)	L	--	0.000041(0.01-0.04 ppm whole body residue 2 d)	a*	same as above	Murphy (1971), AMIC-1805
DDT (p,p", plus 20 percent o,p"DDT)	Rasbora heteromorpha	BCFA and BSA	--	0.0031 (T2,hardwater)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425
DDT (p,p", plus 20 percent o,p"DDT)	Rasbora heteromorpha	BCFA and BSA	--	0.00054 (T2,softwater)	a*,c,e,f, hard (HW) or soft (SW) synthetic water, or seawater for some species	same as above	Alabaster (1969), AMIC-5425
DDT (p,p", plus 20 percent o,p"DDT)	Salmo trutta (alevin)	BCFA and BSA	--	0.0025 (T2)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	same as above	Alabaster (1969), AMIC-5425
DDT (p,p", plus 20 percent o,p"DDT)	Rasbora heteromorpha	BCFA and BSA	--	0.017 (T2)	a*,c,e,f, hard (HW) or soft (SW)	same as above	Alabaster (1969), AMIC-5425

					synthetic dilution water, or seawater for some species		
DDT (p,p", plus 20 percent o,p"DDT)	Salmo trutta (alevin)	BCFA and BSA	--	0.011 (T2)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	same as above	Alabaster (1969), AMIC-5425
DDT (18 percent)	Rasbora heteromorpha	BCFA and BSA	--	0.17 (T2)	a*,c,e,f, hard (HW) orsoft (SW) synthetic dilution water, or seawater for some species	same as above	Alabaster (1969), AMIC-5425
DDT	Fish (not specified)	--	--	greater than 0.0001-0.001 (K)	--	Approximate toxicities of numerous pesticides commonly used in Britain were summarized. An excellent brief, general discussion of toxicity testing is also present.	Mawdesley-Thomas(1971) AMIC-1056
DDT	White sucker	FRL	Misc. states	0.05-2.50 residue (SB)	--	The Bureau of Sport Fisheries continued its fish monitoring program by collecting 147 composite fish samples from 50 nationwide monitoring stations during the fall of 1969. Fish were analyzed for residues of 11 organochlorine insecticides, lipids, and PCB"s.	Henderson,et al (1971), AMIC-1407
DDT	Redhorse sucker	FRL	Misc. states	0.02-0.25 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1407
DDT	Gizzard shad	FRL	Misc. states	0.13-0.15 residue (SB)	--	same as above	Henderson, etal (1971), AMIC-1407
DDT	Spotted sucker	FRL	Misc. states	0.14 residue (SB)	--	same as above	Henderson, etal (1971), AMIC-1407

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
DDT	Striped mullet	FRL	Misc. states	0.30-1.12 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1407
DDT	Blue catfish	FRL	Misc. states	0.04 residue (SB)	--	same as above	Henderson, etal (1971), AMIC-1407
DDT	Rock bass	FRL	Misc. states	0.06-0.49 residue (SB)	--	same as above	Henderson, etal (1971), AMIC-1407
DDT	Freshwater drum	FRL	Misc. states	0.31 residue (SB)	--	same as above	Henderson, etal (1971), AMIC-1407
DDT	Bloater	FRL	Misc. states	0.59-1.80 residue (SB)	--	same as above	Henderson, et al(1971), AMIC-1407
DDT	Lake whitefish	FRL	Misc. states	0.28 residue (SB)	--	same as above	Henderson, etal (1971), AMIC-1407
DDT	Lake trout	FRL	Misc. states	0.03-0.45 residue (SB)	--	same as above	Henderson, etal (1971), AMIC-1407
DDT	White crappie	FRL	Misc. states	0.09-0.20 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1407
DDT	Bigmouth buffalo	FRL	Misc. states	0.11-0.51 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1407
DDT	Smallmouth buffalo	FRL	Misc. states	0.50 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1407
DDT	Flathead catfish	FRL	Misc. states	0.60 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1407

DDT	Goldeye	FRL	Misc. states	0.02-0.34 residue (SB)	--	same as above	Henderson, et al(1971), AMIC-1407
DDT	Walleye	FRL	Misc. states	0.04-0.20 residue (SB)	--	same as above	Henderson, et al(1971), AMIC-1407
DDT	Sauger	FRL	Misc. states	0.18 residue (SB)	--	same as above	Henderson,et al(1971), AMIC-1407
DDT	Flannelmouth sucker	FRL	Misc. states	0.19 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1407
DDT	Black bullhead	FRL	Misc. states	0.01-0.03 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1407
DDT	White bass	FRL	Misc. states	0.21 residue (SB)	--	same as above	Henderson, et al(1971), AMIC-1407
DDT	Black crappie	FRL	Misc. states	0.22-0.25 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1407
DDT	Largescale sucker	FRL	Misc. states	0.05-0.45 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1407
DDT	Smallmouth bass	FRL	Misc. states	0.16-0.20 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1407
DDT	Northern squawfish	FRL	Misc. states	0.05-0.10 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1407
DDT	Chiselmouth	FRL	Misc. states	0.07-0.09 residue (SB)	--	same as above	Henderson, etal (1971), AMIC-1407
DDT	Klamath sucker	FRL	Misc. states	0.02 residue (SB)	--	same as above	Henderson, etal (1971), AMIC-1407
DDT	Rainbow trout	FRL	Misc. states	0.03-0.07 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1407

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
DDT	Bridgelip sucker	FRL	Misc. states	0.38 residue (SB)	--	same as above	Henderson, etal (1971), AMIC-1407
DDT	Arctic grayling	FRL	Misc. states	0.21 residue (SB)	--	same as above	Henderson, etal (1971), AMIC-1407
DDT	Round whitefish	FRL	Misc. states	0.34 residue (SB)	--	same as above	Henderson, etal (1971), AMIC-1407
DDT	Longnose sucker	FRL	Misc. states	0.01-0.10 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1407
DDT	Yellow perch	FRL	Misc. states	0.03-2.56 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1407
DDT	Chain pickerel	FRL	Misc. states	0.08 residue (SB)	--	same as above	Henderson, et al(1971), AMIC-1407
DDT	White catfish	FRL	Misc. states	0.21-0.31 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1407
DDT	White perch	FRL	Misc. states	0.63-1.30 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1407
DDT	Goldfish	FRL	Misc. states	0.65 residue (SB)	--	same as above	Henderson, et al (1971),AMIC-1407
DDT	Bluegills	FRL	Misc. states	0.04-0.24 residue (SB)	--	same as above	Henderson, etal (1971), AMIC-1407
DDT	Redbreast sunfish	FRL	Misc. states	0.03 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1407

DDT	Pumpkinseed	FRL	Misc. states	0.23 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1407
DDT	Largemouth bass	FRL	Misc. states	0.06-1.57 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1407
DDT	Brown bullhead	FRL	Misc. states	0.06-0.42 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1407
DDT	Carp	FRL	Misc. states	0.01-0.96 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1407
DDT	Channel catfish	FRL	Misc. states	0.02-5.07 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1407
DDT	Gambusia affinis	BSA	--	0.04 ppb (SB)	a*	C-14-labelled DDT was taken up by mosquitofish more rapidly over a 36-hr period at 20 C than at 5 C. It was shown that only live fish take up DDT, that uptake was related to respiration rate and that small fish are more efficient than larger fish in removing DDT from water. One implication of this study is that at warmer temperatures DDT is taken up more rapidly, thus suggesting that thermal releases be carefully controlled.	Murphy and Murphy (1971), AMIC-1470
DDT	Wolffia papulifera	L	--	100 (K)	Hunter's medium diluted 1:5	All compounds were harmful to duckweed to some degree. Decreased populations were noted at non-lethal concentrations and some compounds (Malathion and 2,4-D) caused teratogenic effects at concentrations as low as 1 ppm.	Worthley, et al (1971), AMIC-3233
DDT	Salvelinus fontinalis (1.15 g)	BCFA	--	7.4 (T4)	a*,c,d, e,f,i,o, sulfate, copper, manganese, iron, and chromium	Four insecticides were evaluated on four fish species at two body weights. Standard method bioassay procedures were followed. Symptomology was also reported. Generally, toxicity was significantly different at the two body weights, i.e., more toxic at the lower body weight, except for Malathion. Well-defined experimental conditions were said to result in truer measurement of toxicity.	Post, et al (1971), AMIC-1812
DDT	Salvelinus fontinalis (2.13 g)	BCFA	--	11.9 (T4)	a*,c,d, e,f,i,o, sulfate, copper, manganese, iron, and chromium	same as above	Post, et al (1971), AMIC-1812

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
DDT	Salmo clarki (0.33 g)	BCFA	--	0.0001 (T4)	a*,c,d, e,f,i,o, sulfate, copper, manganese, iron, and chromium	same as above	Post, et al (1971), AMIC-1812
DDT	Salmo clarki (1.25 g)	BCFA	--	1.37 (T4)	a*,c,d, e,f,i,o, sulfate, copper, manganese, iron, and chromium	same as above	Post, et al (1971), AMIC-1812
DDT	Salmo gairdneri (0.41 g)	BCFA	--	0.0002 (T4)	a*,c,d, e,f,i,o, sulfate, copper, manganese, iron, and chromium	same as above	Post, et al (1971), AMIC-1812
DDT	Oncorhynchus kisutch (0.5 g)	BCFA	--	0.011 (T4)	a*,c,d, e,f,i,o, sulfate, copper, manganese, iron, and chromium	same as above	Post, et al (1971), AMIC-1812
DDT	Oncorhynchus kisutch (1.65 g)	BCFA	--	0.019 (T4)	a*,c,d, e,f,i,o, sulfate, copper, manganese, iron, and chromium	same as above	Post, et al (1971), AMIC-1812
DDT	Artemia spp.	L	--	0.00001 and 0.000001 (sublethal)	--	Artemia spp populations exposed in 1966 to the indicated DDT concentrations and studied for up to 4 generations were found to have residues of p,p"DDT that were higher than control	Grosch (1971),AMIC-2090

						background. Brine shrimp nauplii were apparently most sensitive to DDT compared to older stages. Cyclic coexistence of pesticide residue and vulnerable stage of life cycle influenced succeeding generations.	
DDT	Sebastodes sp.	FO	Pacific Ocean, Cal.	0.46 (liver residue)	--	Samples of marine animals were collected from three locations off the coast of Southern California and analyzed for residues of chlorinated hydrocarbons. The data suggest that Kellet"s whelk would be a good indicator organism for studying the regional distribution of chlorinated hydrocarbons.	Munson (1972), AMIC-3096
DDT	Panulirua interruptus	FO	Pacific Ocean, Cal.	0.037 (muscle residue)	--	same as above	Munson (1972), AMIC-3096
DDT	Paralabrax nebulifer	FO	Pacific Ocean, Cal.	0.21 (liverresidue)	--	same as above	Munson(1972), AMIC-3096
DDT	Anisotremis davidsoni	FO	Pacific Ocean, Cal.	0.4 (liver residue)	--	same as above	Munson(1972), AMIC-3096
DDT	Pimelometapon pulchrum	FO	Pacific Ocean, Cal.	0.21 (liver residue)	--	same as above	Munson(1972), AMIC-3096
DDT	Haliotis rufescens	FO	Pacific Ocean, Cal.	less than 0.1 (liver residue)	--	same as above	Munson (1972), AMIC-3096
DDT	Strongylocent rotus franciscanus	FO	Pacific Ocean, Cal.	0.057-0.073 (gonad residue)	--	same as above	Munson (1972), AMIC-3096
DDT	Hinnites multirugosis	FO	Pacific Ocean, Cal.	0.032 (gonad residue)	--	same as above	Munson (1972), AMIC-3096
DDT	Haliotis corrugata	FO	Pacific Ocean, Cal.	0.042 (digestive gland residue)	--	same as above	Munson (1972), AMIC-3095
DDT	Kelletia kelletii	FO	Pacific Ocean, Cal.	0.077 (residue)	--	same as above	Munson (1972), AMIC-3096
DDT	Plants (algae and higher aquatic	F	Various ponds and streamsin	0.01 to 0.74 (residue)	--	Plant, invertebrate, fish, and mud samples were pooled, homogenized, and analyzed for DDT. Birds were analyzed	Dimond, et al (1971), AMIC-3291

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
	plants)		Maine			individually. The data represent the range of DDT concentration over a 10-year period after one application. Highest concentrations were found immediately after and 1 yr after application with considerably less two years and after. However, the residues even after 10 years were still well above those in brooks never treated. This study further demonstrated the persistence of DDT in the environment and its tendency to spread and concentrate in food chains.	
DDT	Invertebrates (Cambarus bartoni, freshwater mussels, and smaller animals)	F	Various ponds and streams in Maine	0.03 to 2.41 (residue)	--	same as above	Dimond, et al(1971), AMIC-3291
DDT	Fish (Salvelinus fontinalis and Semotilus atromaculatus primarily)	F	Various pondsand streams in Maine	0.21 to 9.84 (residue)	--	same as above	Dimond, et al (1971), AMIC-3291
DDT	Birds (Megaceryle alcyon, Mergus merganser, and Lophodytes cucullatus)	F	Variousponds and streams in Maine	4.2 to 10.1 (residue)	--	same as above	Dimond, et al (1971), AMIC-3291
DDT	Muds	F	Various ponds and streams in Maine	0.03 to 0.83 (residue)	--	same as above	Dimond, et al(1971), AMIC-3291
DDT	Limnephilus rhombicus (larvae)	FS	Knights Creek, Dun County, Wisc.	0.01(whole body residue)	--	Samples of water, silt, bottom debris, bottom organisms, and fish were taken in 1966 from a creek adjacent to an orchard which had been treated in	Moubry, et al (1968), AMIC-3753

						1963-1965 with various chlorinated hydrocarbon pesticides. No residues were found in water samples. Silt samples contained 0.002-0.013 ppm endrin and 0-0.005 ppm dieldrin. Endrin residues of 0.011-0.025 ppm and 0.002-0.006 ppm dieldrin were found in debris samples. Despite limited control data, residue analyses indicated that contamination of the environment studied was limited.	
DDT	Sialis sp. (larvae)	FS	Knights Creek, Dun County, Wisc.	0.01 (whole body (residue)	--	same as above	Moubry, et al (1968), AMIC-3753
DDT	Gammarus sp.	FS	Knights Creek, Dun County, Wisc.	0.03(whole body residue)	--	same as above	Moubry, et al (1968), AMIC-3753
DDT	Salvelinus fontinalis	FS	Knights Creek, Dun County, Wisc.	0.4-1.4 (fat residue)	--	same as above	Moubry, et al (1968), AMIC-3753
DDT	Semotilus atromaculatus	FS	Knights Creek, Dun County, Wisc.	0.1-0.6(fat residue)	--	same as above	Moubry, et al (1968), AMIC-3753
DDT	Cottus bairdi	FS	Knights Creek, Dun County, Wisc.	0.5-1.5 (fat residue)	--	same as above	Moubry, et al (1968), AMIC-3753
DDT	Rhinichthys atratulus	FS	Knights Creek, Dun County, Wisc.	0.10 (fat residue)	--	same as above	Moubry, et al (1968), AMIC-3753
DDT	Salvelinus fontinalis (15.2 cm)	L	--	0.1-0.3 (SB1)	a*	Neurophysiological function of brook trout was affected by 24-hr exposure to DDT as determined by measurement of electrical activity of lateral lines. Partially exposed lateral lines of freshly killed fish were fitted with electrodes. DDT caused the lateral line nerve to become hypersensitive to experimental stimuli and affected behavioral responses of fish to temperature.	Anderson (1968), AMIC-3768

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
DDT	Oncorhynchus kisutch (2.9 g)	L	--	0.33 (T31)	--	A diet containing DDT fed to coho salmon resulted in median survival times directly proportional to body weight. Supplemental feeding prolonged lifespan, but mean survival time remained a direct function of body weight. Smaller salmon were more susceptible because lipid content apparently failed to provide for storage detoxification of DDT. Considerable additional data are presented.	Buhler, et al (1970), AMIC-3781
DDT	Oncorhynchus kisutch (7.4 g)	L	--	1.3 (T65)	--	same as above	Buhler, et al (1970), AMIC-3781
DDT	Oncorhynchus kisutch (15.04 g)	L	--	2.6 (T106)	--	same as above	Buhler, et al (1970), AMIC-3781
DDT	Salvelinus fontinalis (110-180 g)	L	--	0.02 (SB)	a*, e	Brook trout conditioned to light and shock respond to both by the propeller-tail reflex. Exposure to DDT resulted in markedly delayed ability to learn. The authors state that DDT apparently affects the CNS and may cause adverse effects on such behavioral activities as territorial defence and migration.	Anderson, et al (1970), AMIC-3782
DDT	Parophrys vetulus	FM	Pacific Northwest Coast, Blaine, Wash.	0.01 (residue)	--	Pesticides from the Columbia River into Puget Sound apparently contaminated fish constituting commercial catches in Pacific Northwest waters. Residues in these marine products were substantially lower than the FDA tolerance for beef (7 ppm). Fish from locations near the mouth of the Columbia River had higher pesticide content than ones caught farther away.	Stout (1968), AMIC-3784
DDT	Merluccius productus	FM	Pacific Northwest	0.01-0.06 (residue)	--	same as above	Stout (1968),

			Coast, Sarasota Passage, Wash.				AMIC-3784
DDT	Merlucclus productus	FM	Pacific Northwest Coast, Fort Susan, Wash.	0.04-0.09 (residue)	--	same as above	Stout (1968), AMIC-3784
DDT	Merlucclus productus	FM	Pacific Northwest Coast, Cape Foulweather, Ore.	0.01(residue)	--	same as above	Stout (1968), AMIC-3784
DDT	Merlucclus productus (fishmeal)	FM	Pacific Northwest Coast, Aberdeen, Wash.	0.08 (residue)	--	same as above	Stout (1968), AMIC-3784
DDT	Sebastodes alutus	FM	Pacific Northwest Coast, Hecate Strait, B.C.	0.01 (residue)	--	same as above	Stout (1968), AMIC-3784
DDT	Platichthys stellatus	FM	Pacific Northwest Coast, Blaine, Wash.	0.01(residue)	--	same as above	Stout (1968), AMIC-3784
DDT	Gadus macrocephalus	FM	Pacific Northwest Coast, Blaine, Wash.	0.004 (residue)	--	same as above	Stout (1968), AMIC-3784
DDT	Sebastodes flavidus	FM	Pacific Northwest Coast, Hecate Strait, B.C.	0.004-0.05 (residue)	--	same as above	Stout (1968), AMIC-3784
DDT	Sebastodes flavidus	FM	Pacific Northwest Coast, Ilwaco,Wash.	0.04-0.19 (residue)	--	same as above	Stout (1968), AMIC-3784
DDT	Pimephales	BCFA	--	0.018 (T4)	a*,e	LAS acted synergistically with	Solon, etal

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
	promelas					parathion to cause less survival of fatheds but had an indeterminate effect with DDT and no synergistic effect with Endrin.	(1969), AMIC-3785
DDT	Carassius auratus	L	--	45-180 (SB 5-20)	a*	Goldfish were exposed to increasing concentrations of DDT and residues determined after 21 days of exposure. Most DDT had been converted to DDE. Phenobarital had no significant effect on insecticide residues.	Young, et al (1971), AMIC-3796
DDT	Carassius auratus	L	--	0-0.1 (residue)	a*	same as above	Young, et al (1971), AMIC-3796
DDT	Salmo gairdneri (186-288 g)	L	--	15 (SB 6 hr)	a*	In aquarium water, 15 ppm DDT caused no apparent electrophysiological differences in lateral line preparations. However, tremors and hyperexcitability were observed after 1 hr. Neural discharge was not affected by intravenous injections, but tremors occurred at concentration levels of 0.5 ppm and above. The authors conclude that spontaneous activity of the lateral line is not a sensitive index for DDT neurotoxic effet.	Bahr, et al (1971), AMIC-3808
DDT	Salmo gairdneri (186-288 g)	L	--	0.1-2.0 (NTE, intravenous)	a*	same as above	Bahr, et al (1971), AMIC-3808
DDT	Triturus cristatus	L	--	0.62-1.4 (residue)	--	DDT caused hyperactivity in exposed tadpoles. This caused increased capture lunges of newts thus increasing the predatory efficiency of the newts. DDT had no apparent effect on the newts.	Cooke (1971), AMIC-3814
DDT	Rana temporaria	L	--	0.05 (SB 5-19 hr)	--	same as above	Cooke (1971), AMIC-3814
DDT	Rana temporaria	L	--	0.5-1.2 microgram (residue)	--	same as above	Cooke (1971), AMIC-3814

DDT	Carassius auratus (8-15 g)	BSA	--	1.0 (SB 2.5hr)	a,q*	Fish exposed to DDT were killed and brain electrical activity recorded by means of Ag-AgCl bipolar electrodes. After 2.5 hr exposure, fish displayed complete loss of balance and swam continuously on their sides. Amplitude and frequency of spontaneous electrical activity were altered. This coincided with permanent loss of balance. The authors state that this is the first record of a change in fish EEG following DDT poisoning.	Aubin, et al(1969), AMIC-3835
DDT	Carassius auratus (8-15 g)	BSA	--	1.0 (T 10 hr)	a,q*	same as above	Aubin, et al (1969),AMIC-3835
DDT	Salmo salar	L	--	0.02-0.20 (SB1)	a*,q*	Fish were conditioned by means of light change and low voltage electrical shock. Alteration of previous training procedures for avoidance containing, indicated that salmonids were able to acquire a conditioned avoidance response when pretreated with sublethal doses of DDT.	Jackson, et al (1970),AMIC-3837
DDT	Salvelinus fontinalis (yearling)	L	--	0.02-0.20 (SB1)	a*,q*	same as above	Jackson,et al (1970), AMIC-3837
DDT	Salvelinus fontinalis	L	--	0.4 (SB)	a*	The thermal acclimation mechanism of brook trout acclimated at 9 and 18 C was altered significantly at sublethal DDT concentrations. This was also true for conditioned avoidance, in which time for training was recorded, and for memory retention to a lesser extent.	Anderson, et al (1969),AMIC 3838
DDT	Endomychura craveri (eggs)	F	Western U.S., Pacific Ocean, Panama, Mexico,and Antarctic	39 (residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
DDT	Endomychura craveri (eggs)	F	Western U.S., Pacific Ocean,	0.31-2.4 (whole body residue)	--	same as above	Risebrough, et al (1968), AMIC-3844

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
			Panama, Mexico, and Antarctic				
DDT	Thalasseus elegans (eggs)	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antartic	5.0 (residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
DDT	Larus heermani (eggs)	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	48 (residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
DDT	Pomoxis annularis	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	1.83 (whole body residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
DDT	Pomoxis nigro-maculatus	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antartic	2.10 (whole body residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
DDT	Lepomis macrochirus	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	5.5 (whole body residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
DDT	Pygoscelis adeliae	F	Western U.S.,	0.128 (residue)	--	same as above	Risebrough, et al

	(eggs)		Pacific Ocean, Panama, Mexico, and Antarctic				(1968), AMIC-3844
DDT	Aechmorphorus occidentalis	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	26.4 (flesh residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
DDT	Fulmanus glacialis	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	0.41-17.5 (whole body residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
DDT	Puffinus creatopus	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	3.0 (whole body residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
DDT	Puffinus griseus	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	2.3-12.3 (whole body residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
DDT	Puffinus tenuirostris	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	39 (whole body residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
DDT	Oceanodroma homochroa	F	Western U.S., Pacific Ocean, Panama, Mexico, and	59.3 (whole body residue)	--	same as above	Risebrough, et al (1968), AMIC-3844

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
			Antarctic				
DDT	Pelecanus occidentalis (eggs)	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	10.0-11.5 (residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
DDT	Fregata magnificens (eggs)	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	0.0087-0.03 (residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
DDT	Sula leucogaster	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	8.2 (residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
DDT	Phalacrocorax penicillatus (eggs)	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	0.326 (residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
DDT	Phalacrocorax pelagicus (eggs)	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	0.128 (residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
DDT	Anas cyanoptera	F	Western U.S., Pacific Ocean,	10.9 (whole body residue)	--	same as above	Risebrough, etal (1968), AMIC-3844

			Panama, Mexico, and Antarctic				
DDT	Elanus leucurus (eggs)	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	0.34-9.0 (residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
DDT	Accipiter cooperii	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	25.2 (whole body residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
DDT	Aquila chrysaetos (eggs)	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	2.0 (residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
DDT	Pandion haliaetus	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	55.0 (whole body residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
DDT	Falco columbarius	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	2-9 (whole body residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
DDT	Falco sparverius	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	0.04 (whole body residue)	--	same as above	Risebrough, et al (1968), AMIC-3844

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
DDT	Falco sparverius (eggs)	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	0.2 (residue)	--	same as above	Risebrough, etal (1968), AMIC-3844
DDT	Nycticorax nycticorax (eggs)	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	0.541-0.869 (residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
DDT	Larus occidentalis (eggs)	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	0.385-0.803 (residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
DDT	Sterna forsteri (eggs)	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	0.665 (residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
DDT	Hydroprogne caspia (eggs)	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	1.269-1.430 (residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
DDT	Phalaropus fulicarius	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	0.78 (whole body residue)	--	same as above	Risebrough, et al (1968), AMIC-3844

DDT	Uria aalge (eggs)	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	151 (residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
DDT	Ptychoramphus aleuticua	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	5.8 (whole body residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
DDT	Synthliboramphus antiquum	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	0.75 (whole body residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
DDT	Cerorhinca monocerata	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	2.7 (whole body residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
DDT	Zenaidura macroura	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	0.19 (whole body residue)	--	same as above	Risebrough,et al (1968), AMIC-3844
DDT	Tyto alba	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	1.3-6.6 (whole body residue)	--	same as above	Risebrough, et al(1968), AMIC-3844
DDT	Sturnella neglecta	F	Western U.S., Pacific	0.2-3.3 (whole body residue)	--	same as above	Risebrough, et al (1968),

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
			Ocean, Panama, Mexico, and Antarctic				AMIC-3844
DDT	Falco peregrinus (eggs)	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	0.02 (residue)	--	Peregrine falcons, falcon prey, and other predator species were collected widely and analyzed for DDT, DDE, PCB, and a few other pesticides to a lesser degree. PCB and DDT were found to be widely dispersed globally. PCB was found to be a powerful inducer of hepatic enzymes that degrade oestradiol. Reductions in thickness of egg shells, eggshell weight, and water retention occurred. All affect hatching success. The authors state that the peregrine may be the first species entirpated by global contamination.	Risebrough, et al (1968), AMIC-3844
DDT	Falco peregrinus (immature)	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	1.9-296 (flesh residue)	--	same as above	Risebrough, et al (1958),AMIC-3844
DDT	Falco peregrinus (immature)	F	Western U.S., Pacific Ocean, Panama, Mexico,and Antarctic	64-5,000 (fat residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
DDT	Falco peregrinus (adult)	F	Western U.S., Pacific Ocean, Panama, Mexico,and Antarctic	85-127 (flesh residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
DDT	Falco peregrinus	F	Western U.S.,	2,600 (fat residue)	--	same as above	Risebrough, et al

	(adult)		Pacific Ocean, Panama, Mexico,and Antarctic				(1968), AMIC-3844
DDT	Podiceps caspicus	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	0.26-12.1 (whole body residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
DDT	Loomelania melania	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	9.2 (whole body residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
DDT	Halocyptena microsoma	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	3.2 (whole body residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
DDT	Pizonyx vivesi	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	0.71 (whole body residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
DDT	Ictalurus punctatus	BSA	--	0.016 (T4)	a, synthetic test water	Organochlorine insecticides were the most toxic compounds, organophosphates intermediate, carbamates the least toxic. Brown trout was the species most susceptible to organochlorines, coho salmon the most susceptible to carbamates, and goldfish were the least susceptible of all species. Safe concentrations established by bioassays with salmonids or centrarchids would likely be safe for cyprinids and ictalurids. Safe levels for ictalurids or cyprinids would probably be hazardous for centrarchids and salmonids. The use of goldfish in bioassays was discouraged.	Macek, et al (1970), AMIC-5510

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
DDT	Salmo trutta	BSA	--	0.002 (T4)	a, synthetic test water	same as above	Macek, et al(1970), AMIC-5510
DDT	Oncorhynchus kisutch	BSA	--	0.004 (T4)	a, synthetic test water	same as above	Macek, et al(1970), AMIC-5510
DDT	Perca flavescens	BSA	--	0.009 (T4)	a, synthetic test water	same as above	Macek, et al(1970), AMIC-5510
DDT	Ictalurus melas	BSA	--	0.005 (T4)	a, synthetic test water	same as above	Macek, et al(1970), AMIC-5510
DDT	Carassius auratus	BSA	--	0.021 (T4)	a, synthetic test water	same as above	Macek, et al(1970), AMIC-5510
DDT	Cyprinus carpio	BSA	--	0.010 (T4)	a, synthetic test water	same as above	Macek, et al(1970), AMIC-5510
DDT	Pimephales promelas	BSA	--	0.019 (T4)	a, synthetic test water	same as above	Macek, et al(1970), AMIC-5510
DDT	Lepomis macrochirus	BSA	--	0.008 (T4)	a, synthetic test water	same as above	Macek, et al(1970), AMIC-5510
DDT	Lepomis microlophus	BSA	--	0.005 (T4)	a, synthetic test water	same as above	Macek, et al(1970), AMIC-5510
DDT	Micropterus salmoides	BSA	--	0.002 (T4)	a, synthetic test water	same as above	Macek, et al(1970), AMIC-5510
DDT	Salmo gairdneri	BSA	--	0.007 (T4)	a, synthetic test water	same as above	Macek, et al(1970), AMIC-5510

DDT	Palaemonetes kadlakensis (resistant)	BSA	--	0.0037-0.0068 (T1)	a*	Bioassays were conducted with shrimp from three areas of intensive pesticide use and from an unexposed area. Previously exposed shrimp were from 1 to 25 times more resistant than unexposed shrimp. Both types of shrimp were also exposed in cages to waters of the contaminated areas. Susceptible shrimp suffered 66 percent more mortality than did resistant shrimp. The toxicity of the insecticides ranked in descending order was as follows: most toxic, Endrin, DDT, Methyl parathion, Parathion: medium toxicity, Guthion, Lindane, Toxaphene, Strobane: lease toxic Chlordane, Sevin, and Heptachlor.	Naqvi, et al (1970), AMIC-5519
DDT	Palaemonetes kadlakensis (non-resistant)	BSA	--	0.0026 (T1)	a*	same as above	Naqvi,et al (1970), AMIC-5519
DDT	Ictalurus catus	FL	Clear Lake, Cal.	less than 1 (flesh residue)	--	Residue analysis results mainly for TDE in fish, birds, and plankton from 1959 through 1965 were reported. The residues primarily resulted from application of DDT to farmland and for gnat control. In some cases, data for a single animal in one year were given. Primary emphasis was on largemouth bass and white catfish. The general level of TDE contamination in birds and fish declined markedly from 1958 to 1965. This decline correlated directly with strict limitation by permits of DDT applications during the latter years.	Linn, et AL(1969), AMIC-5521
DDT	Perca flavescens	FLR	93 sampling stations in Mass.	0.06-13.2 (residue)	--	Fish indigenous to Massachusetts freshwater streams were analyzed for DDT and DDT metabolites during 1965-1967. Generally there was an increase in pesticide content during the three year period.	Lyman, et al (1968), AMIC-3839
DDT	Lepomis gibbosus	FLR	93 sampling stations in Mass.	0-9.1 (residue)	--	same as above	Lyman, et al (1968), AMIC-3839
DDT	Catostomus commersoni	FLR	93 sampling stations in Mass.	0-11.2 (residue)	--	same as above	Lyman, et al (1958), AMIC-3839

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
DDT	Ictalurus nebulosus	FLR	93 sampling stations in Mass.	0.32 (residue)	--	same as above	Lyman, et al (1968), AMIC-3839
DDT	Cyprinus carpio	FLR	93 sampling stations in Mass.	0.3-1.0 (residue)	--	same as above	Lyman,et al (1968), AMIC-3839
DDT	Esox niger	FLR	93 sampling stations in Mass.	0.02-1.0 (residue)	--	same as above	Lyman,et al (1968), AMIC-3839
DDT	Notemigonus crysoleucas	FLR	93 sampling stations in Mass.	0-1.1 (residue)	--	same as above	Lyman, et al (1968), AMIC-3839
DDT	Semotilus corporalis	FLR	93 sampling stations in Mass.	0-2.8 (residue)	--	same as above	Lyman, et al (1968), AMIC-3839
DDT	Lepomis macrochirus	FLR	93 sampling stations in Mass.	0-2.4 (residue)	--	same as above	Lyman, et al (1968), AMIC-3839
DDT	Ambloplites rupestris	FLR	93 sampling stations in Mass.	0.4-8.3 (residue)	--	same as above	Lyman, et al (1968), AMIC-3839
DDT	Semotilus atromaculatus	FLR	93 sampling stations in Mass.	0.02-0.3 (residue)	--	same as above	Lyman, et al (1968), AMIC-3839
DDT	Micropterus dolomieui	FLR	93 sampling stations in Mass.	0.2-0.6 (residue)	--	same as above	Lyman, et al (1968), AMIC-3839
DDT	Alosa pseudo-harengus	FLR	93 sampling stations in Mass.	0.34 (residue)	--	same as above	Lyman, et al (1968), AMIC-3839
DDT	Fundulus heteroclitus	FLR	93 sampling stations in Mass.	0.7-2.8 (residue)	--	same as above	Lyman, et al (1968), AMIC-3839
DDT	Notropis	FLR	93 sampling	0.1-3.3	--	same as above	Lyman, et al

	cornutus		stations in Mass.	(residue)			(1968), AMIC-3839
DDT	Roccus americanus	FLR	93 sampling stations in Mass.	0.2-2.2 (residue)	--	same as above	Lyman, et al (1968), AMIC-3839
DDT	Pomoxis nigro-maculatus	FLR	93 sampling stations in Mass.	8.4 (residue)	--	same as above	Lyman, et al (1968), AMIC-3839
DDT	Fundulus diaphams	FLR	93 sampling stations in Mass.	5.9 (residue)	--	same as above	Lyman, et al (1968), AMIC-3839
DDT	Notropis anatostanus	FLR	93 sampling stations in Mass.	0.40 (residue)	--	same as above	Lyman, et al (1968), AMIC-3839
DDT	Lepomis auritus	FLR	93 sampling stations in Mass.	0.44 (residue)	--	same as above	Lyman, et al (1968), AMIC-3839
DDT	Phinichthys atratulus	FLR	93 sampling stations in Mass.	0-0.14 (residue)	--	same as above	Lyman, et al (1968), AMIC-3839
DDT	Salvelinus fontinalis (caged)	FS	Bobby"s Brook, Labrador, Can.	0.1 (NTE)	c,d,e,g	In studying control of black fly, the indicated aquatic species were studied at a series of six sampling stations. Water quality was unaffected by the DDT application. No caged fish died, but wild ones did apparently resulting from ingestion of dead invertebrate larvae. Invertebrates were collected by bottom sampling and by drift nets, and fish by netting and angling. Fish mortality could always be related to at least a ten-fold increase in DDT residues in the fish. DDT caused high bottom fauna mortality by direct contact. Caddisfly larvae were more affected than stonefly and mayfly larvae. The author stated that DDT larviciding for black fly control was not successful because of harm to non-target organisms.	Hatfield (1969), AMIC-5770
DDT	Salvelinus fontinalis (wild)	FS	Bobby"s Brook, Labrador, Can.	0.1 (SB)	c,d,e,g	same as above	Hatfield (1969), AMIC-5770

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
DDT	Simulum venustum (larvae)	FS	Bobby"s Brook, Labrador, Can.	0.1 (SB)	c,d,e,g	same as above	Hatfield (1969), AMIC-5770
DDT	Bottom invertebrates	FS	Bobby"s Brook, Labrador, Can.	0.1 (K)	c,d,e,g	same as above	Hatfield (1969), AMIC-5770
DDT	Lepomis macrochirus (liver mitochondria)	L	--	590 (SB)	a*	Oxygen uptake by bluegill liver mitochondria was inhibited in the presence of DDT and succinic acid. Increased hydrolysis of ATP also occurred in the presence of Mg and Mn ions. The author states that the primary effect of DDT appears to be inhibition of electron flow from succinic acid to the cytochrome chain.	Hiltibran (1971), AMIC-5975
DDT	Copepods (Cyclops bicuspidus, Cyclops varicans, Cyclops vernalis, Eucyclops agilis, Macrocyclops albidus, Orthocyclops modestus)	FL and BSA	State College, Miss.	0.05 (K2)	--	The response of pesticide-resistant aquatic organisms to various pesticides was compared to the response of non-resistant species. Pesticide-resistant species were collected at Belzoni and non-resistant species at State College. Copepods, clams, snails, and sludge worms from Belzoni were considerably more tolerant to pesticides than the non-resistant organisms. The authors note that the effect of increased tolerance in the organisms is an increase in the amount of pesticide residues available to animals of higher trophic levels.	Naqvi, et al (1969), AMIC-5979
DDT	Copepods (Cyclops bicuspidus, Cyclops varicans, Cyclops vernalis, Eucyclops agilis, Macrocyclops	FL and BSA	Belzoni, Miss	0.05 (91 percent K2)	--	same as above	Naqvi, et al (1969), AMIC-5979

	albidus, Orthocyclops modestus)						
DDT	Tubifex tubifex	FL and BSA	Belzoni, Miss.	3.0 (NTE)	--	same as above	Naqvi, et al(1969), AMIC-5979
DDT	Crassostrea virginica (larvae)	L	--	0.034 (T14)	--	The effect of 52 pesticides on embryonic development of clams and oysters was reported. Synergistic effects with solvents were also reported. Most of the compounds affected development more than survival. Some, however, drastically reduced larval growth. The authors point out the necessity of evaluating the effects of pesticides on all life stages of an organism and note the possibility of selecting chemicals for pest control that would not have serious effect on shellfish.	Davis, et al (1969),AMIC-5990
DDT	Gambusia affinis (female, 4.3 cm, 1.9 g)	BSA	--	0.02 (T4)	a,c,d, e,f,i, (Honolulu tap water)	The five fish species are commonly found in streams and estuaries in semi-tropical areas. G. affinis was the most tolerant. Varied sensitivity to the toxicants were found. K. sandvicensis was the most sensitive fish studied. The standard method procedure was followed.	Nunogawa, et al (1970), AMIC-6567
DDT	Lebistes reticulatus (male, 1.8 cm, 0.2 g)	BSA	--	0.003 (T4)	a,c,d, e,f,i, (Honolulu tap water)	same as above	Nunogawa, et al (1970), AMIC-6567
DDT	Tilapia mossambica (3.4 cm, 1.3 g)	BSA	--	0.007 (T4)	a,c,d, e,f,i, (Honolulu tap water)	same as above	Nunogawa, et al (1970), AMIC-6567
DDT	Kuhlia sandvicensis (4.3 cm, 1.5 g)	BSA	--	0.0039 (T4)	a,c,d,e,f, i,salt water	same as above	Nunogawa, et al (1970), AMIC-6567
DDT	Stolephorus purpurea (3.6 cm, 0.4 g)	BSA	--	0.001 (T 12hr)	a,c,d,e,f, i, salt water	same as above	Nunogawa, et al (1970), AMIC-6567

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
DDT	Carcinus maenas	BSA	--	0.3-1.0 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701
DDT	Cardium edule	BSA	--	greater than 10 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
DDT	Pleuronectes platessa	BSA	--	0.003-0.01 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
DDT	Freshwater drum	FL	Great Lakes (Ontario, Huron, Erie, Superior, Michigan)	0.62 (whole body residue)	--	Fish from Lake Michigan contained 2 to 7 times more DDT (and DDT analogs) and Dieldrin residues than fish from the other Great Lakes. Fish from Lake Superior invariably had the lowest accumulations of both chemicals. The compounds tended to concentrate in fat (oils). Considerable additional data are presented. The author noted the need to reduce pesticide usage to a minimum and to replace these insecticides with less persistent materials.	Reinert (1970), AMIC-196
DDT	Goldfish	FL	Great Lakes (Ontario, Huron, Erie, Superior, Michigan)	0.70 (whole body residue)	--	same as above	Reinert (1970), AMIC-196

DDT	Kiyi	FL	Great Lakes (Ontario, Huron, Erie, Superior, Michigan)	3.28 (whole body residue)	--	same as above	Reinert (1970), AMIC-196
DDT	Lake herring	FL	Great Lakes (Ontario, Huron, Erie, Superior, Michigan)	1.44-3.51 (whole body residue)	--	same as above	Reinert (1970), AMIC-196
DDT	Lake trout	FL	Great Lakes (Ontario, Huron, Erie, Superior, Michigan)	6.61-7.44 (whole body residue)	--	same as above	Reinert (1970), AMIC-196
DDT	Lake whitefish	FL	Great Lakes (Ontario, Huron, Erie, Superior, Michigan)	0.45-5.02 (wholebody residue)	--	same as above	Reinert (1970), AMIC-196
DDT	Rock bass	FL	Great Lakes (Ontario, Huron, Erie, Superior, Michigan)	0.40 (whole body residue)	--	same as above	Reinert (1970), AMIC-196
DDT	Round whitefish	FL	Great Lakes (Ontario, Huron, Erie, Superior, Michigan)	0.57 (whole body residue)	--	same as above	Reinert (1970), AMIC-196

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
DDT	Sea lamprey	FL	Great Lakes (Ontario, Huron, Erie, Superior, Michigan)	1.27 (whole body residue)	--	same as above	Reinert (1970), AMIC-196
DDT	Slimy sculpin	FL	Great Lakes (Ontario, Huron, Erie, Superior, Michigan)	0.22-2.33 (whole body residue)	--	same as above	Reinert (1970), AMIC-196
DDT	Spottail shiner	FL	Great Lakes (Ontario, Huron, Erie, Superior, Michigan)	0.25 (whole body residue)	--	same as above	Reinert (1970), AMIC-196
DDT	Nine-spined stickleback	FL	Great Lakes (Ontario, Huron, Erie, Superior, Michigan)	0.43 (whole body residue)	--	same as above	Reinert (1970), AMIC-196
DDT	Stonecat	FL	Great Lakes (Ontario, Huron, Erie, Superior, Michigan)	0.28 (whole body residue)	--	same as above	Reinert (1970), AMIC-196

DDT	Troutperch	FL	Great Lakes (Ontario, Huron, Erie, Superior, Michigan)	0.94 (whole body residue)	--	same as above	Reinert (1970), AMIC-196
DDT	Walleye	FL	Great Lakes (Ontario, Huron, Erie, Superior, Michigan)	1.12-6.02 (whole body residue)	--	same as above	Reinert (1970), AMIC-196
DDT	White bass	FL	Great Lakes (Ontario, Huron, Erie, Superior, Michigan)	1.89-2.76 (whole body residue)	--	same as above	Reinert (1970), AMIC-196
DDT	White perch	FL	Great Lakes (Ontario, Huron, Erie, Superior, Michigan)	4.32 (whole body residue)	--	same as above	Reinert (1970), AMIC-196
DDT	White sucker	FL	Great Lakes (Ontario, Huron, Erie, Superior, Michigan)	0.37-1.14 (whole body residue)	--	same as above	Reinert (1970), AMIC-196
DDT	Yellow perch	FL	Great Lakes (Ontario, Huron, Erie, Superior, Michigan)	0.87-2.93 (whole body residue)	--	same as above	Reinert (1970), AMIC-196

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
DDT	Emerald shiner	FL	Great Lakes (Ontario, Huron, Erie, Superior, Michigan)	0.94 (whole body residue)	--	same as above	Reinert (1970), AMIC-196
DDT	Gizzard shad	FL	Great Lakes (Ontario, Huron, Erie, Superior, Michigan)	0.53-0.63 (whole body residue)	--	same as above	Reinert (1970), AMIC-196
DDT	Alewife	FL	Great Lakes (Ontario, Huron, Erie, Superior, Michigan)	0.72-3.88 (whole body residue)	--	same as above	Reinert (1970), AMIC-196
DDT	American smelt	FL	Great Lakes (Ontario, Huron, Erie, Superior, Michigan)	0.32-1.58 (wholebody residue)	--	same as above	Reinert (1970), AMIC-196
DDT	Bloater	FL	Great Lakes (Ontario,	1.09-9.83 (whole body	--	same as above	Reinert (1970),

			Huron, Erie, Superior, Michigan)	residue)			AMIC-196
DDT	Brown bullhead	FL	Great Lakes (Ontario, Huron, Erie, Superior, Michigan)	0.28 (whole body residue)	--	same as above	Reinert (1970),AMIC-196
DDT	Carp	FL	Great Lakes (Ontario, Huron, Erie, Superior, Michigan)	1.92 (whole body residue)	--	same as above	Reinert (1970), AMIC-196
DDT	Channel catfish	FL	Great Lakes (Ontario, Huron, Erie, Superior, Michigan)	6.90 (whole body residue)	--	same as above	Reinert (1970), AMIC-196
DDT	Coho salmon (flesh)	FL	Great Lakes (Ontario, Huron, Erie, Superior, Michigan)	0.72 (whole body residue)	--	same as above	Reinert (1970),AMIC-196
DDT	Coho salmon (eggs)	FL	Great Lakes (Ontario, Huron, Erie, Superior, Michigan)	2.12 (whole body residue)	--	same as above	Reinert (1970),AMIC-196

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
			Lake Michigan)				
DDT	Cyprinus carpio	FR	St. Lawrence River, Montreal, Canada	0.38(0.33 ppm max tissue residue)	--	Residues of DDD were measured in water, mud, molluscs, and fish during and after DDD application in 1967. Sampling points were above the point of application and 10 and 45 mi downstream. Residues from unknown sources were detected upstream. Downstream residues were more than twice those obtained upstream (0.156 versus 0.369 ppm). The highest concentration in an individual fish was 1.81 ppm.	Fredeen, et al (1970), AMIC-534
DDT	Catostomus commersoni	FR	St. Lawrence River, Montreal, Canada	0.38(0.33 ppm max tissue residue)	--	same as above	Fredeen, et al (1970),AMIC-534
DDT	Amelurus nebulosus	FR	St. Lawrence River, Montreal, Canada	0.38(0.12 ppm max tissue residue)	--	same as above	Fredeen, et al (1970), AMIC-534
DDT	Perca flavescens	FR	St. Lawrence River, Montreal, Canada	0.38 (0.55ppm max tissue residue)	--	same as above	Fredeen, et al (1970), AMIC-534
DDT	Esox lucius	FR	St. Lawrence River, Montreal, Canada	0.38 (0.38 ppmmax tissue residue)	--	same as above	Fredeen, et al (1970), AMIC-534
DDT	Ambloplites rupestris	FR	St. Lawrence River, Montreal, Canada	0.38(0.02 ppm max tissue residue)	--	same as above	Fredeen, et al (1970),AMIC-534
DDT	Campeloma sp.	FR	St. Lawrence River, Montreal, Canada	0.38 (0.40ppm max tissue residue)	--	same as above	Fredeen, et al (1970), AMIC-534
DDT	Cyprinodon	BSA	--	0.015-0.02 (K)	a*,	Sensitivity of three generations	Holland, et

	variegatus (50-70 mm)				seawater	of sheepshead minnows to DDT and Endrin was determined. Sensitivity to DDT varied seasonally. Fish were bred in ponds 15m X 5m X 1.25m exposed to pesticides in aquaria, and survivors used for breeding. The results for DDT were not entirely clear due to the seasonal variability. Increased and decreased sensitivity were recorded for the F1 generation at different times, increased sensitivity for the F2, and decreased for the F3. The authors stated that incorporation of DDT in ova via lipids may have caused increased sensitivity. Endrin toxicity was decreased in the F1 and increased in the F2 generation.	al (1970), AMIC-726
DDT	Benthic insects	F	Trout Creek, Wasatch County,Utah	0.012-0.068 (K)	Stream flow	Complete depopulation was found at the collection station 2000 m downstream from application point. Insect mortality was independent of DDT concentration in areas of turbulent flow, thus mortality was not directly related to DDT concentration in this field situation. Repopulation was incomplete after 57 wk.	Sonstelie (1969), AMIC-964
DDVP	Labeo rohita (fry)	BSA	--	11.2 (T7)	a,c,d,e,f	DDVP and Phosphamidon were shown to be selective toxicants that can be used for eradication of undesirable animals from ponds without injuring carp. DDVP seemed superior since less was needed, it was not influenced by turbidity, and it detoxified more rapidly than phosphamidon.	Konar (1969),AMIC-5453
DDVP	Labeo rohita (fingerling)	BSA	--	22.4 (T7)	a,c,d,e,f	same as above	Konar (1969),AMIC-5453
DDVP	Trichogaster fasciatus (young)	BSA	--	1.8 (T7)	a,c,d,e,f	same as above	Konar(1969), AMIC-5453
DDVP	Trichogaster fasciatus (adult)	BSA	--	2.4 (T7)	a,c,d,e,f	same as above	Konar (1969),AMIC-5453
DDVP	Channa punctatus (fry)	BSA	--	0.8 (T7)	a,c,d,e,f	same as above	Konar (1969), AMIC-5453
DDVP	Puntius	BSA	--	6.2 (T7)	a,c,d,e,f	same as above	Konar

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
	sophore (adult)						(1969),AMIC-5453
DDVP	Anabas testudineus	BSA	--	11.7 (T7)	a,c,d,e,f	same as above	Konar (1969), AMIC-5453
DDVP	Heteropneustes fossilis	BSA	--	17.8 (T7)	a,c,d,e,f	same as above	Konar (1969),AMIC-5453
DDVP	Esomus danrica (fry)	BSA	--	2.8 (T7)	a,c,d,e,f	same as above	Konar (1969),AMIC-5453
DDVP	Esomus danrica (adult)	BSA	--	18.2 (T7)	a,c,d,e,f	same as above	Konar (1969),AMIC-5453
DDVP	Notonecta sp.	BSA	--	0.001 (T7)	a,c,d,e,f	same as above	Konar (1969), AMIC-5453
DDVP	Dytiscus sp. (larvae)	BSA	--	0.064 (T7)	a,c,d,e,f	same as above	Konar (1969),AMIC-5453
DDVP	Dytiscus sp. (adult)	BSA	--	0.35 (T7)	a,c,d,e,f	same as above	Konar (1969),AMIC-5453
DDVP	Sphaerodema annulatum	BSA	--	0.085 (T7)	a,c,d,e,f	same as above	Konar (1969),AMIC-5453
DDVP	Panatra filiformis	BSA	--	0.13 (T7)	a,c,d,e,f	same as above	Konar (1969), AMIC-5453
DDVP	Anisoptera (nymphs)	BSA	--	0.15 (T7)	a,c,d,e,f	same as above	Konar (1969),AMIC-5453
DDVP	Cybister sp.	BSA	--	0.21 (T7)	a,c,d,e,f	same as above	Konar (1969), AMIC-5453

DDVP	Nepa sp.	BSA	--	0.27 (T7)	a,c,d,e,f	same as above	Konar (1969), AMIC-5453
DDVP	Belostoma indica	BSA	--	0.28 (T7)	a,c,d,e,f	same as above	Konar (1969), AMIC-5453
DDVP	Hydrophilus sp.	BSA	--	0.35 (T7)	a,c,d,e,f	same as above	Konar (1969), AMIC-5453
DDVP	Volvox	BSA	--	5.0 (NTE)	a,c,d,e,f	same as above	Konar (1969), AMIC-5453
DDVP	Pandorina	BSA	--	5.0 (NTE)	a,c,d,e,f	same as above	Konar (1969), AMIC-5453
DDVP	Closterium	BSA	--	5.0 (NTE)	a,c,d,e,f	same as above	Konar (1969), AMIC-5453
DDVP	Brachionus	BSA	--	5.0 (NTE)	a,c,d,e,f	same as above	Konar (1969), AMIC-5453
DDVP	Gastrotricha	BSA	--	5.0 (NTE)	a,c,d,e,f	same as above	Konar (1969), AMIC-5453
DDVP	Cypris	BSA	--	1.0 (K)	a,c,d,e,f	same as above	Konar (1969), AMIC-5453
DDVP	Cyclops	BSA	--	0.5 (K)	a,c,d,e,f	same as above	Konar (1969), AMIC-5453
DDVP	Nauplius	BSA	--	0.5 (K)	a,c,d,e,f	same as above	Konar (1969), AMIC-5453
DDVP	Daphnia	BSA	--	0.5 (K)	a,c,d,e,f	same as above	Konar (1969), AMIC-5453
DDVP	Ceriodaphnia	BSA	--	0.5 (K)	a,c,d,e,f	same as above	Konar (1969), AMIC-5453

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
DDVP	Diaptomus	BSA	--	0.5 (K)	a,c,d,e,f	same as above	Konar (1969), AMIC-5453
DDVP	Nandus nandus	BSA	--	2.6 (T7)	a,c,d,e,f	same as above	Konar (1969), AMIC-5453
DDVP	Rita rita	BSA	--	2.8 (T7)	a,c,d,e,f	same as above	Konar (1969), AMIC-5453
DDVP	Amphipnous cuchia	BSA	--	3.4 (T7)	a,c,d,e,f	same as above	Konar (1969), AMIC-5453
DDVP	Mystus vitatus (fry)	BSA	--	2.3 (T7)	a,c,d,e,f	same as above	Konar (1969), AMIC-5453
DDVP	Mystus vitatus (adult)	BSA	--	6.6 (T7)	a,c,d,e,f	same as above	Konar (1969), AMIC-5453
DDVP	Puntius sophore (fry)	BSA	--	1.0 (T7)	a,c,d,e,f	same as above	Konar (1969), AMIC-5453
DDVP	Channa punctatus (fingerling)	BSA	--	1.8 (T7)	a,c,d,e,f	same as above	Konar (1969),AMIC-5453
DDVP	Channa punctatus (adult)	BSA	--	2.9 (T7)	a,c,d,e,f	same as above	Konar (1969),AMIC-5453
DDVP	Mastocembelus pancalus	BSA	--	2.6 (T7)	a,c,d,e,f	same as above	Konar(1969), AMIC-5453
DDVP	Macrognathus aculeatum	BSA	--	3.6 (T7)	a,c,d,e,f	same as above	Konar(1969), AMIC-5453
DDVP	Channa punctatus	L	--	20 (S81)	a*	Snakehead fish eggs were unaffected by DDVP concentrations of less	Konar (1969),AMIC-

	(eggs)					than 1.0 ppm, but delayed hatching occurred at higher concentrations. Yolk sac absorption was decreased at 1.6-4.0 ppm and stopped at 5.0 ppm or more. Eggs and hatchlings survived well at 0.1 ppm DDVP.	6388
DDVP	Channa punctatus (hatchlings)	L	--	2.5 (T2)	a*	same as above	Konar (1969), AMIC-6388
Decamethonium dibromide	Negaprion brevirostris (1-3 kg)	BSA	--	50 (NTE 3.5 HR)	a,c,e	Data from study of drug effects on young lemon sharks were treated mathematically to demonstrate applicability of classical rate theory to the study of chemical shark deterrents. Incapacitation (narcosis) was the primary parameter timed for effectiveness. This was usually quite rapid for the more effective drugs.	Baldridge (1969), AMIC-3832
Delrad	Mercenaria mercenaria (larvae)	L	--	0.031 (T12)	--	The effect of 52 pesticides on embryonic development of clams and oysters was reported. Synergistic effects with solvents were also reported. Most of the compounds affected development more than survival. Some, however, drastically reduced larval growth. The authors point out the necessity of evaluating the effects of pesticides on all life stages of an organism and note the possibility of selecting chemicals for pest control that would not have serious effect on shellfish.	Davis, et al (1969), AMIC-5990
Delrad	Crassostrea virginica (larvae)	L	--	0.072 (T14)	--	same as above	Davis, et al (1969), AMIC-5990
Demeton methyl	Fish (not specified)	--	--	greater than 1.0-10.0 (K)	--	Approximate toxicities of numerous pesticides commonly used in Britain were summarized. An excellent brief, general discussion of toxicity testing is also present.	Mawdesley-Thomas(1971) AMIC-1056
Dermol	Cardium edule	BSA	--	100-330 (T2)	a*(continuous aeration, sea-water, and daily	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with	Portmann, et al (1971), AMIC-7701

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
					solution renewal)	toxicity of chemicals to freshwater organisms.	
Dermol	Crangon crangon	BSA	--	100-330 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Dermol	Pandalus montagui	BSA	--	100-330 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
De De Tane 25	Rasbora heteromorpha	BCFA and BSA	--	0.11 (T2)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster, (1969), AMIC-5425
De De Tane (liquid)	Rasbora heteromorpha	BCFA and BSA	--	0.11 (T2)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	same as above	Alabaster, (1969), AMIC-5425

De De Tane (liquid)	Rasbora heteromorpha	BCFA and BSA	--	0.02 (T2 in acetone)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	same as above	Alabaster, (1969), AMIC-5425
De De Tane (paste)	Rasbora heteromorpha	BCFA and BSA	--	10.7 (T1)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	same as above	Alabaster, (1969),AMIC-5425
De De Tane (wettable)	Rasbora heteromorpha	BCFA and BSA	--	0.001 (T2 in acetone)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	same as above	Alabaster, (1969), AMIC-5425
De De Tane (wettable)	Rasbora heteromorpha	BCFA and BSA	--	8.2 (T2)	a*,c,e,f, hard (HW)or soft (SW) synthetic dilution water, or seawater for some species	same as above	Alabaster, (1969),AMIC-5425
Diacetone alcohol	Phormidium ambiguum	L	--	0.5-10.0 (NTE)	--	Of 74 chemicals evaluated as algicides, only 9 were more toxic than $CuSO_4$. None inhibited growth of mat-forming algae for more than 2 weeks. $CuSO_4$ formulated with certain wetting agents was more toxic than $CuSO_4$ alone. Copper chloramine was also found to be	Otto(1970), AMIC-892

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
						more toxic than CuSO4. No wetting agents were found to be inhibitory at the concentrations investigated (0.05 and 0.005 ppm). Also reported are factors affecting growth of algae in canals to determine whether there were leads to controlling algae by environmental management. No practical environmental means were found.	
Diazinon	Rasbora heteromorpha	BCFA and BSA	--	1.45 (T1)	a*,c,e,f, hard (HW) or soft (SW) synthetic water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425
Diazinon	Wolffia papulifera	L	--	100 (K)	Hunter's medium diluted 1:5	All compounds were harmful to duckweed to some degree. Decreased populations were noted at non-lethal concentrations and some compounds (Malathion and 2,4-D) caused teratogenic effects at concentrations as low as 1 ppm.	Worthley, et al (1971), AMIC-3233
Dicamba	Gammarus fasciatus	BSA	--	greater than 100.0 (T2)	a*	Of the aquatic weed herbicides evaluated, Diclone was the most toxic. Daphnia was generally the most sensitive organism. All of the crustacea were affected by much lower concentration levels of herbicides than indicated by the TL sub 50 values. All of the animals represent important food chain links.	Sanders (1970), AMIC-453
Dicamba	Paleomontes kadiakensis	BSA	--	greater than 100.0 (T2)	a*	same as above	Sanders (1970), AMIC-453
Dicamba	Asellus brevicaudus	BSA	--	greater than 100.0 (T2)	a*	same as above	Sanders (1970), AMIC-453
Dicamba	Orconectes nais	BSA	--	greater than 100.0 (T2)	a*	same as above	Sanders (1970), AMIC-453
Dicamba	Daphnia magna	BSA	--	greater than	a*	same as above	Sanders

				100.0 (T2)			(1970),AMIC-453
Dicamba	Cypridopsis vidua	BSA	--	greater than 100.0 (T2)	a*	same as above	Sanders (1970),AMIC-453
Dicamba	Lepomis macrochirus	BSA	--	40.0 (T2)	a*	same as above	Sanders (1970), AMIC-453
Dicapthon	Mercenaria mercenaria (eggs)	L	--	3.34 (T2)	--	The effect of 52 pesticides on embryonic development of clams and oysters was reported. Synergistic effects with solvents were also reported. Most of the compounds affected development more than survival. Some, however, drastically reduced larval growth. The authors point out the necessity of evaluating the effects of pesticides on all life stages of an organism and note the possibility of selecting chemicals for pest control that would not have serious effect on shellfish.	Davis, et al (1969),AMIC-5990
Dicapthon	Mercenaria mercenaria (larvae)	L	--	5.74 (T12)	--	same as above	Davis, et al (1969),AMIC-5990
Dichlobenil	Rasbora heteromorpha	BCFA and BSA	--	5.7 (T2)	a*,c,e,f, hard (HW) or SOFT(SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425
Dichlobenil	Callibactis sp. (nymph, 8-12 mm)	BSA	--	10.3 (T4)	a*,b*,c,f, i,l, and silica, calcium, magnesium, sodium, potassium,	The toxicity of herbicides Diquat and Dichlobenil to aquatic invertebrates and fish was determined in aquaria containing substrates natural to each species. Diquat was quite toxic to H. azeteca but not as toxic to other organisms. Dichlobenil was less toxic to H. azetecus but considerably more toxic	Wilson, et al (1969), AMIC-5452

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
					bicarbonate, carbonate, sulfate, iron, dissolved solids, conductance	to the remaining organism than Diquat Mud lessened the toxicity of both, but more so for Diquat. Dichlobenil had a sublethal narcotizing effect on the organisms that resulted in immobilization. It was concluded that both herbicides could adversely affect certain fish food organisms.	
Dichlobenil	Callibactis sp. (nymph, 8-12 mm)	BSA	--	7.4 (S84)	a*,b*,c,f, i,l, and silica, calcium, magnesium, sodium, potassium, bicarbonate, carbonate, sulfate, iron, dissolved solids, conductance	same as above	Wilson, et al (1969), AMIC-5452
Dichlobenil	Lepomis macrochirus	BSA	--	14.7 (T4)	a*,b*,c,f, i,l, and silica, calcium, magnesium, sodium, potassium, bicarbonate, carbonate, sulfate, iron, dissolved solids, conductance	same as above	Wilson, et al (1969), AMIC-5452

Dichlobenil	Libellula sp. (naiad, 16-24 mm)	BSA	--	greater than100 (T 1-4)	a#,b#,c,f, i,l, and silica, calcium, magnesium, sodium, potassium, bicarbon-ate, carbonate, sulfate, iron, dissolved solids, conduc-tance	same as above	Wilson, et al (1969), AMIC-5452
Dichlobenil	Libellula sp. (naiad, 16-24 mm)	BSA	--	greater than100 (SB 1-4)	a#,b#,c,f, i,l, and silica, calcium, magnesium, sodium, potassium, bicarbon-ate, carbonate, sulfate, iron, dissolved solids, conduc-tance	same as above	Wilson, et al (1969), AMIC-5452
Dichlobenil	Limnephilus sp. (larva, 15-20 mm)	BSA	--	13.0 (T4)	a#,b#,c,f, i,l, and silica, calcium, magnesium, sodium, potassium, bicarbon-ate,	same as above	Wilson, et al (1969), AMIC-5452

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
					carbonate, sulfate, iron, dissolved solids, conductance		
Dichlobenil	Limnephilus sp. (larva, 15-20 mm)	BSA	--	12.00 (SB4)	a*,b*,c,f, i,l, and silica, calcium, magnesium, sodium, potassium, bicarbonate, carbonate, sulfate, iron, dissolved solids, conductance	same as above	Wilson, et al (1969), AMIC-5452
Dichlobenil	Micropterus salmoides	BSA	--	12.5 (T4)	a*,b*,c,f, i,l, and silica, calcium, magnesium, sodium, potassium, bicarbonate, carbonate, sulfate, iron, dissolved solids, conductance	same as above	Wilson, et al (1969), AMIC-5452

Dichlobenil	Hyalella azeteca (adult, 4-8 mm)	BSA	--	8.5 (T4)	a*,b*,c,f, i,l, and silica, calcium, magnesium, sodium, potassium, bicarbon-ate, carbonate, sulfate, iron, dissolved solids, conduc-tance	same as above	Wilson, et al(1969), AMIC-5452
Dichlobenil	Hyalella azteca (adult, 4-8 mm)	BSA	--	2.8 (SB4)	a*,b*,c,f, i,l, and silica, calcium, magnesium, sodium, potassium, bicarbon-ate, carbonate, sulfate, iron, dissolved solids, conduc-tance	same as above	Wilson, et al(1969), AMIC-5452
Dichlobenil	Enallagma sp. (naiad, 16-24 mm)	BSA	--	12.3 (SB1)	a*,b*,c,f, i,l, and silica, calcium, magnesium, sodium, potassium, bicarbon-ate,	same as above	Wilson, et al (1969), AMIC-5452

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
					carbonate, sulfate, iron, dissolved solids, conductance		
Dichlobenil	Enallagma sp. (naiad, 16-24 mm)	BSA	--	20.7 (T4)	a*, b*, c, f, i, l, and silica, calcium, magnesium, sodium, potassium, bicarbonate, carbonate, sulfate, iron, dissolved solids, conductance	same as above	Wilson, et al(1969), AMIC-5452
Dichlobenil	Gammarus fasciatus	BSA	--	18.0 (T2), 10.0 (T4)	a*	Of the aquatic weed herbicides evaluated, Diclone was the most toxic, Daphnia was generally the most sensitive organism. All of the crustacea were affected by much lower concentration levels of herbicides than indicated by the TL sub 50 values. All of the animals represent important food chain links.	Sanders (1970), AMIC-453
Dichlobenil	Paleomontes kadiakensis	BSA	--	9.0 (T2)	a*	same as above	Sanders (1970), AMIC-453
Dichlobenil	Asellus brevicaudus	BSA	--	34.0 (T2)	a*	same as above	Sanders (1970), AMIC-453
Dichlobenil	Orconectes nais	BSA	--	22.0 (T2)	a*	same as above	Sanders (1970), AMIC-453

Dichlobenil	Daphnia magna	BSA	--	10.0 (T2)	a*	same as above	Sanders (1970), AMIC-453
Dichlobenil	Cypridopsis vidua	BSA	--	7.8 (T2)	a*	same as above	Sanders (1970), AMIC-453
Dichlobenil	Lepomis macrochirus	BSA	--	20.0 (T2)	a*	same as above	Sanders (1970), AMIC-453
Dichlone	Salmo gairdneri	BCFA and BSA	--	0.09 (T2)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425
Dichlone	Gammarus fasciatus	BSA	--	0.24 (T2), 0.10 (T4)	a*	Of the aquatic weed herbicides evaluated, Diclone was the most toxic, Daphnia was generally the most sensitive organism. All of the crustacea were affected by much lower concentration levels of herbicides than indicated by the TL sub 50 values. All of the animals represent important food chain links.	Sanders (1970), AMIC-453
Dichlone	Paleomontes kadiakensis	BSA	--	0.45 (T2)	a*	same as above	Sanders (1970), AMIC-453
Dichlone	Asellus brevicaudus	BSA	--	0.20 (T2)	a*	same as above	Sanders (1970), AMIC-453
Dichlone	Orconectes nais	BSA	--	3.2 (T2)	a*	same as above	Sanders (1970), AMIC-453
Dichlone	Daphnia magna	BSA	--	0.025 (T2)	a*	same as above	Sanders (1970), AMIC-453
Dichlone	Cypridopsis	BSA	--	0.23 (T2)	a*	same as above	Sanders

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
	vidua						(1970), AMIC-453
Dichlone	Lepomis macrochirus	BSA	--	0.12 (T2)	a*	same as above	Sanders (1970), AMIC-453
Dichlorfenthion	Rasbora heteromorpha	BCFA and BSA	--	1.9 (T2)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425
Dichlorfenthion	Rasbora heteromorpha	BCFA and BSA	--	2.1 (T1)	a*,c,e,f, hard (HW) or soft (SW) synthetic water, or seawater for some species	same as above	Alabaster (1969), AMIC-5425
Dichlorfenthion	Rasbora heteromorpha	BCFA and BSA	--	0.73 (T2)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	same as above	Alabaster (1969), AMIC-5425
Dichlorophen (Na salt)	Salmo gairdneri	BCFA and BSA	--	0.22 (T2)	a*,c,e,f, hard (HW) or	same as above	Alabaster (1969), AMIC-5425

					soft (SW) synthetic dilution water, or seawater for some species		
Dichlorophen (Na salt)	Rasbora heteromorpha	BCFA and BSA	--	0.15 (T2)	a*,c,e,f, hard (HW) or soft (SW) synthetic water, or seawater for some species	same as above	Alabaster (1969),AMIC-5425
Dichlorvos	Rasbora heteromorpha	BCFA and BSA	--	6.5 (T2)	a*,c,e,f, hard (HW) or SOFT(SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425
Dieldrin (15 percent M.O.)	Rasbora heteromorpha	BCFA and BSA	--	1.0 (T2)	a*,c,e,f, hard(HW) or soft (SW) synthetic dilution water, or seawater for some species	same as above	Alabaster (1969),AMIC-5425
Dieldrin	Fish (not specified)	--	--	greater than 0.001-0.01 (K)	--	Approximate toxicities of numerous pesticides commonly used in Britain were summarized. An excellent brief, general discussion of toxicity testing is also present.	Mawdesley-Thomas(1971) AMIC-1056
Dieldrin	Poecilia latipinna	BCFA	--	0.003 (partial K5)	a*	Studies were conducted with fish weighing 2-5 g in seawater at a	Lane, et al (1970),

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
						temperature of 27 plus or minus 1 C. The purpose of the tests was to determine the effect of dieldrin on serum glutamic oxaloacetic transaminenase activity which increased at all exposures. However, little correlation was found between enzyme activity and total mortality.	AMIC-1283
Dieldrin	Poecilia latipinna	BCFA	--	0.006 (70 percent K3)	a*	same as above	Lane, etal (1970), AMIC-1283
Dieldrin	Poecilia latipinna	BCFA	--	0.012 (K3)	a*	same as above	Lane, et al (1970),AMIC-1283
Dieldrin	White sucker	FRL	Misc. states	0.01-0.35 residue (SB)	--	The Bureau of Sport Fisheries continued its fish monitoring program by collecting 147 composite fish samples from 50 nationwide monitoring stations during the fall of 1969. Fish were analyzed for residues of 11 organochlorine insecticides, lipids, and PCB"s.	Henderson,et al (1971), AMIC-1407
Dieldrin	Yellow perch	FRL	Misc. states	0.02-0.20 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1407
Dieldrin	Chain pickerel	FRL	Misc. states	0.02 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1407
Dieldrin	White catfish	FRL	Misc. states	0.01-0.50 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1407
Dieldrin	White perch	FRL	Misc. states	0.06-0.56 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1407
Dieldrin	Goldfish	FRL	Misc. states	0.04 residue (SB)	--	same as above	Henderson, et al(1971), AMIC-1407
Dieldrin	Pumpkinseed	FRL	Misc. states	0.05 residue	--	same as above	Henderson,

				(SB)			etal (1971), AMIC-1407
Dieldrin	Largemouth bass	FRL	Misc. states	0.01-1.59 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1407
Dieldrin	Brown bullhead	FRL	Misc. states	0.01-0.25 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-147
Dieldrin	Carp	FRL	Misc. states	0.01-0.54 residue (SB)	--	same as above	Henderson, etal (1971), AMIC-1407
Dieldrin	Channel catfish	FRL	Misc. states	0.01-0.36 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1407
Dieldrin	Redhorse sucker	FRL	Misc. states	0.01-0.12 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1407
Dieldrin	Gizzard shad	FRL	Misc. states	0.05-0.50 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1407
Dieldrin	Spotted sucker	FRL	Misc. states	0.30 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1407
Dieldrin	Bluegills	FRL	Misc. states	0.01-0.55 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1407
Dieldrin	Redbreast sunfish	FRL	Misc. states	0.01 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1407
Dieldrin	Striped mullet	FRL	Misc. states	0.02-0.39 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1407
Dieldrin	Rock bass	FRL	Misc. states	0.07 residue (SB)	--	same as above	Henderson, et al(1971), AMIC-1407
Dieldrin	Bloater	FRL	Misc. states	0.02-0.37	--	same as above	Henderson,et

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
				residue (SB)			al (1971), AMIC-1407
Dieldrin	Lake whitefish	FRL	Misc. states	0.03 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1407
Dieldrin	Lake trout	FRL	Misc. states	0.02 residue (SB)	--	same as above	Henderson, etal (1971), AMIC-1407
Dieldrin	White crappie	FRL	Misc. states	0.02-0.27 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1407
Dieldrin	Bigmouth buffalo	FRL	Misc. states	0.04-0.42 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1407
Dieldrin	Smallmouth buffalo	FRL	Misc. states	0.12 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1407
Dieldrin	Flathead catfish	FRL	Misc. states	0.03 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1407
Dieldrin	Goldeye	FRL	Misc. states	0.01-0.08 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1407
Dieldrin	Walleye	FRL	Misc. states	0.01-0.03 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1407
Dieldrin	Sauger	FRL	Misc. states	0.01 residue (SB)	--	same as above	Henderson, et al(1971), AMIC-1407
Dieldrin	Flannelmouth sucker	FRL	Misc. states	0.01 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1407
Dieldrin	Freshwater drum	FRL	Misc. states	0.04 residue (SB)	--	samo as above	Henderson, et al (1971), AMIC-1407

Dieldrin	Black bullhead	FRL	Misc. states	0.01-0.03 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1407
Dieldrin	White bass	FRL	Misc. states	0.02 residue (SB)	--	same as above	Henderson, et al(1971), AMIC-1407
Dieldrin	Black crappie	FRL	Misc. states	0.02-0.36 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1407
Dieldrin	Largescale sucker	FRL	Misc. states	0.01-0.09 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1407
Dieldrin	Smallmouth bass	FRL	Misc. states	0.03-0.04 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1407
Dieldrin	Northern squawfish	FRL	Misc. states	0.01-0.02 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1407
Dieldrin	Chiselmouth	FRL	Misc. states	0.01-0.03 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1407
Dieldrin	Rainbow trout	FRL	Misc. states	0.01-0.04 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1407
Dieldrin	Bridgelip sucker	FRL	Misc. states	0.02 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1407
Dieldrin	Arctic grayling	FRL	Misc. states	0.01 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1407
Dieldrin	Round whitefish	FRL	Misc. states	0.01 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1407
Dieldrin	Longnose sucker	FRL	Misc. states	0.01 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1407

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
Dieldrin	Ictalurus punctatus	FRLO	Iowa	0.034-1.6 (accumulation, SB)	--	Edible flesh of fish collected from rivers, lakes, ponds, and reservoirs was analyzed. Fish taken in areas receiving agricultural runoff showed highest accumulation, especially in bottom feeding fish.	Morris, et al (1971), AMIC-1452
Dieldrin	Ictiobus cyprinellus	FRLO	Iowa	0.028-0.84 (accumulation, SB)	--	Same as above	Morris, et al (1971), AMIC-1452
Dieldrin	Cyprinus carpio	FRLO	Iowa	0.015-0.56 (accumulation, SB)	--	same as above	Morris, et al (1971), AMIC-1452
Dieldrin	Micropterus salmoides	FRLO	Iowa	0.11-0.08 (accumulation, SB)	--	same as above	Morris, et al (1971), AMIC-1452
Dieldrin	Carpiodes sp	FRLO	Iowa	0.313 (accumulation, SB)	--	same as above	Morris et al (1971), AMIC-1452
Dieldrin	Pomoxis nigromaculatus	FRLO	Iowa	0.012 (accumulation, SB)	--	same as above	Morris, et al (1971), AMIC-1452
Dieldrin	Pomoxis annularis	FRLO	Iowa	0.059 (accumulation, SB)	--	same as above	Morris, et al (1971), AMIC-1452
Dieldrin	Stizostedion vitreum	FRLO	Iowa	0.01-0.06 (accumulation, SB)	--	same as above	Morris,et al (1971), AMIC-1452
Dieldrin	Esox lucius	FRLO	Iowa	0.05 (accumulation, SB)	--	same as above	Morris, et al (1971),AMIC-1452

Dieldrin	Ictalarus melas	FRLO	Iowa	0.098 (accumulation, SB)	--	same as above	Morris, et al (1971), AMIC-1452
Dieldrin	Lepomis macrochirus	FRLO	Iowa	0.014-0.034 (accumulation, SB)	--	same as above	Morris, et al (1971), AMIC-1452
Dieldrin	Esox lucius	FRLO	Iowa	0.05 (accumulation, SB)	--	same as above	Morris, et al (1971), AMIC-1452
Dieldrin	Roccus chrysops	FRLO	Iowa	0.091-0.175 (accumulation, SB)	--	same as above	Morris, et al (1971), AMIC-1452
Dieldrin	Anacystis nidulans	L	--	0.5-1.0 (growth inhibited)	a*,c*,r SM	Metabolic products of Aldrin, Dieldrin, and Endrin can be as toxic as the parent compounds, as shown by OD measurement.	Batterton, etal (1971), AMIC-1471
Dieldrin	Agmenellum quadrup-licatum	L	--	0.5-1.0 (growth inhibited)	a*,c*,r SM	same as above	Batterton, et al (1971), AMIC-1471
Dieldrin	Leptodius floridanus (larvae)	L	--	5-10 ppb(K)	--	Zoeal and megalops larval stages were investigated and varying sensitivity at different stages was found, i.e., earlier stages were affected more severely. Sublethal effects on molting and survival were also noted at 0.5 and 1.0 ppb. The author recommended study of toxicity at all life stages to determine better the effect of a pesticide on the animal in its natural environment.	Epifanio (1971), AMIC-2653
Dieldrin	Panopenus herbstii (larvae)	L	--	5-10 ppb (K)	--	same as above	Epifanio (1971),AMIC-2653
Dieldrin	Limnephilus rhombicus (larvae)	FS	Knights Creek, Dun County, Wisc.	0.002(whole body residue)	--	Samples of water, silt, bottom debris, bottom organisms, and fish were taken in 1966 from a creek adjacent to an orchard which had been treated in 1963-1965 with various chlorinated hydrocarbon pesticides. No residues were found in water samples. Silt samples contained 0.002-0.013 ppm endrin and	Moubry, et al (1968), AMIC-3753

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
						0-0.005 ppm dieldrin. Endrin residues of 0.011-0.025 ppm and 0.002-0.006 ppm dieldrin were found in debris samples. Despite limited control data, residue analyses indicated that contamination of the environment studied was limited.	
Dieldrin	Sialis sp. (larvae)	FS	Knights Creek, Dun County, Wisc.	0.013 (wholebody residue)	--	same as above	Moubry, et al (1968), AMIC-3753
Dieldrin	Gammarus sp.	FS	Knights Creek, Dun County, Wisc.	0.005-0.013 (wholebody residue)	--	same as above	Moubry, et al (1968), AMIC-3753
Dieldrin	Salvelinus fontinalis	FS	Knights Creek, Dun County, Wisc.	0.008-0.014 (whole body residue)	--	same as above	Moubry, et al (1968), AMIC-3753
Dieldrin	Semotilus atromaculatus	FS	Knights Creek, Dun County, Wisc.	0.006-0.013 (whole body residue)	--	same as above	Moubry, et al (1968), AMIC-3753
Dieldrin	Cottus bairdi	FS	Knights Creek, Dun County, Wisc.	0.007-0.017 (whole body residue)	--	same as above	Moubry, et al (1968), AMIC-3753
Dieldrin	Rhinichthys atratulus	FS	Knights Creek, Dun County, Wisc.	0 (wholebody residue)	--	same as above	Moubry, et al (1968), AMIC-3753
Dieldrin	Salvelinus fontinalis	FS	Knights Creek, Dun County, Wisc.	0.18-0.26 (fat residue)	--	same as above	Moubry, et al (1968), AMIC-3753
Dieldrin	Semotilus atromaculatus	FS	Knights Creek, Dun County, Wisc.	0.17-0.34 (fat residue)	--	same as above	Moubry, et al (1968), AMIC-3753
Dieldrin	Cottus bairdi	FS	Knights Creek, Dun	0.3-0.7 (fat residue)	--	same as above	Moubry, et al (1968),

			County, Wisc.				AMIC-3753
Dieldrin	Rhinichthys atratulus	FS	Knights Creek, Dun County, Wisc.	0 (fat residue)	--	same as above	Moubry, et al (1968), AMIC-3753
Dieldrin	Lepomis cyanellus	L	--	0.006 (K9)	a*	The blood and brains of green sunfish that died due to exposure to Dieldrin were analyzed for this chemical. Surviving fish had less Dieldrin in blood and brains than dead fish. Severity of poisoning symptoms also correlated with Dieldrin concentration. Extraction efficiency from blood and brains was quite good (92-95 percent).	Hogan, et al (1971), AMIC-3824
Dieldrin	Lepomis cyanellus	L	--	5.7 (blood residue)	a*	same as above	Hogan, et al (1971), AMIC-3824
Dieldrin	Lepomis cyanellus	L	--	10.3 (brain residue)	a*	same as above	Hogan, et al (1971), AMIC-3824
Dieldrin	Falco peregrinus (eggs)	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	0.11 (residue)	--	Peregrine falcons, falcon prey, and other predator species were collected widely and analyzed for DDT, DDE, PCB, and a few other pesticides to a lesser degree. PCB and DDT were found to be widely dispersed globally. PCB was found to be a powerful inducer of hepatic enzymes that degrade oestradiol. Reductions in thickness of egg shells, eggshell weight, and water retention occurred. All affect hatching success. The authors state that the peregrine may be the first species extirpated by global contamination.	Risebrough, et al (1968), AMIC-3844
Dieldrin	Aquila chrysaetos (eggs)	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	0.0047 (residue)	--	same as above	Risebrough, et al (1968), AMIC-3844

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
Dieldrin	Falco peregrinus (immature)	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	0.07-1.6 (fat residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
Dieldrin	Falco peregrinus (adult)	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	0.31-3.7 (flesh residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
Dieldrin	Falco peregrinus (adult)	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	0.44-62.5 (fat residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
Dieldrin	Endomychura craveri (eggs)	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	0.08 (residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
Dieldrin	Pelecanus occidentalis (eggs)	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	0.06-0.16 (residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
Dieldrin	Sula leucogaster (eggs)	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	0.04-0.18 (residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
Dieldrin	Falco	F	Western	0.04-0.11	--	same as above	Risebrough,

	peregrinus (immature)		U.S., Pacific Ocean, Panama, Mexico, and Antarctic	(flesh residue)			et al (1968), AMIC-3844
Dieldrin	Chlamydotheca arcuata	BSCH and A	--	0.00001-0.001 (1700-2600 ppb residue48 wk)	--	The organisms were exposed to 0.01 and 0.1 ppb of the toxicants for 25 weeks after which time the amounts added each week were increased ten-fold over the initial amounts. Ulothrix occurred spontaneously in the test tanks. The results show that chronic accumulations in Chlamydotheca exceeded levels which were toxic in acute tests. Residues in Chlamydotheca ranged from 12,000 to 260,000 times greater than the theoretical concentrations in the water; those in Ulothrix were 235-3,000 times exposure levels.	Kawatski, et al (1971), AMIC-5506
Dieldrin	Chlamydotheca arcuata	BSCH and A	--	0.0245 (T1)	--	same as above	Kawatski, et al(1971), AMIC-5506
Dieldrin	Ulothrix sp.	BSCH	--	0.00001-0.001 (1.9-126 ppb residue 33-48 wk)	--	same as above	Kawatski, et al (1971), AMIC-5506
Dieldrin	Copepods (Cyclops bicuspidus, Cyclops varicans, Cyclops vernalis, Eucyclops agilis, Macrocyclops albidus, Orthocyclops modestus)	FL and BSA	State College, Miss.	0.35 (83 percentK2)	--	The response of pesticide-resistant aquatic organisms to various pesticides was compared to the response of non-resistant species. Pesticide-resistant species were collected at Belzoni and non-resistant species at State College. Copepods, clams, snails, and sludge worms from Belzoni were considerably more tolerant to pesticides than the non-resistant organisms. The authors note that the effect of increased tolerance in the organisms is an increase in the amount of pesticide residues available to animals of higher trophic levels.	Naqvi, et al. (1969), AMIC-5979

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
Dieldrin	Tubifex tubifex	FL and BSA	Belzoni, Miss.	6.0 (NTE)	--	same as above	Naqvi, etal (1969), AMIC-5979
Dieldrin	Physa gyrina	FL and BSA	State College, Miss.	0.50 (K3)	--	same as above	Naqvi, etal (1969), AMIC-5979
Dieldrin	Physa gyrina	FL and BSA	Belzoni, Miss.	0.50 (K3)	--	same as above	Naqvi, et al(1969), AMIC-5979
Dieldrin	Copepods (Cyclops bicuspidus, Cyclops varicans, Cyclops vernalis, Eucyclops agilis, Macrocyclops albidus, Orthocyclops modestus)	FL and BSA	Belzoni, Miss	0.35 (20 percent K2)	--	same as above	Naqvi, et al(1969), AMIC-5979
Dieldrin	Copepods (Cyclops bicuspidus, Cyclops varicans, Cyclops vernalis, Eucyclops agilis, Macrocyclops albidus, Orthocyclops modestus)	FL and BSA	Belzoni, Miss	0.40 (39 percent K2)	--	same as above	Naqvi, et al(1969), AMIC-5979
Dieldrin	Crassostrea virginica (eggs)	L	--	0.64 (T2)	--	The effect of 52 pesticides on embryonic development of clams and oysters was reported. Synergistic effects with solvents were also reported. Most of the compounds affected development more than survival. Some, however, drastically reduced larval growth. The authors point out the necessity of evaluating the effects of pesticides on all life stages of an organism and note the possibility of	Davis, et al (1969),AMIC-5990

						selecting chemicals for pest control that would not have serious effect on shellfish.	
Dieldrin	Crassostrea virginica (larvae)	L	--	greater than 10.0 (T14)	--	same as above	Davis, etal (1969), AMIC-5990
Dieldrin	Gambusia affinis (female, 4.3 cm, 1.9 g)	BSA	--	0.031 (T4)	a,c,d,e, e,f,i, (Honolulu tap water)	The five fish species are commonly found in streams and estuaries in semi-tropical areas. G. affinis was the most tolerant. Varied sensitivity to the toxicants were found. K. sandvicensis was the most sensitive fish studied. The standard method procedure was followed.	Nunogawa, et al (1970), AMIC-6567
Dieldrin	Lebistes reticulatus (male, 1.8 cm, 0.2 g)	BSA	--	0.007 (T4)	a,c,d, e,f,i, (Honolulu tap water)	same as above	Nunogawa, et al (1970), AMIC-6567
Dieldrin	Tilapia mossambica (3.4 cm, 1.3 g)	BSA	--	0.010 (T4)	a,c,d, e,f,i, (Honolulu tap water)	same as above	Nunogawa, et al (1970), AMIC-6567
Dieldrin	Kuhlia sandvicensis (4.3 cm, 1.5 g)	BSA	--	0.002 (T4)	a,c,d,e,f, i,salt water	same as above	Nunogawa, et al (1970), AMIC-6567
Dieldrin	Stolephorus purpurea (3.6 cm, 0.4 g)	BSA	--	0.005 (T 12 HR)	a,c,d,e,f, i, salt water	same as above	Nunogawa, et al (1970), AMIC-6567
Dieldrin	Agonus cataphractus	BSA	--	3.3 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701
Dieldrin	Carcinus maenas	BSA	--	0.01-0.03 (T2)	a*(continuous aeration, seawater, and daily	same as above	Portmann, et al (1971), AMIC-7701

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
					solution ronewal)		
Dieldrin	Cardium edule	BSA	--	greater than 10 (T2)	a*(continuous aeration, seawater, and daily solution ronewal)	same as above	Portmann, et al (1971), AMIC-7701
Dieldrin	Crangon crangon	BSA	--	0.01-0.03 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Dieldrin	Freshwater drum	FL	Great Lakes (Ontario, Huron, Erie, Superior, Michigan)	0.04 (whole body residue)	--	Fish from Lake Michigan contained 2 to 7 times more DDT (and DDT analogs) and Dieldrin residues than fish from the other Great Lakes. Fish from Lake Superior invariably had the lowest accumulations of both chemicals. The compounds tended to concentrate in fat (oils). Considerable additional data are presented. The author noted the need to reduce pesticide usage to a minimum and to replace these insecticides with less persistent materials.	Reinert (1970),AMIC-196
Dieldrin	Alewife	FL	Great Lakes (Ontario, Huron, Erie, Superior, Michigan)	0.05-0.97 (whole body residue)	--	same as above	Reinert (1970),AMIC-196
Dieldrin	American smelt	FL	Great Lakes (Ontario,	0.02-0.10 (whole body	--	same as above	Reinert (1970),AMIC-

			Huron, Erie, Superior, Michigan)	residue)			196
Dieldrin	Bloater	FL	Great Lakes (Ontario, Huron, Erie, Superior, Michigan)	0.03-1.07 (whole body residue)	--	same as above	Reinert (1970),AMIC-196
Dieldrin	Brown bullhead	FL	Great Lakes (Ontario, Huron, Erie, Superior, Michigan)	0.00 (wholebody residue)	--	same as above	Reinert (1970),AMIC-196
Dieldrin	Channel catfish	FL	Great Lakes (Ontario, Huron, Erie, Superior, Michigan)	0.07 (whole body residue)	--	same as above	Reinert (1970),AMIC-196
Dieldrin	Coho salmon (flesh)	FL	Great Lakes (Ontario, Huron, Erie, Superior, Michigan)	0.01(whole body residue)	--	same as above	Reinert (1970),AMIC-196
Dieldrin	Coho salmon (eggs)	FL	Great Lakes (Ontario,	0.04 (whole body residue)	--	same as above	Reinert (1970),AMIC-196

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
			Huron, Erie, Superior, Michigan)				
Dieldrin	Gizzard shad	FL	Great Lakes (Ontario, Huron, Erie, Superior, Michigan)	0.04-0.09 (whole body residue)	--	same as above	Reinert (1970),AMIC-196
Dieldrin	Kiyi	FL	Great Lakes (Ontario, Huron, Erie, Superior, Michigan)	0.28 (whole body residue)	--	same as above	Reinert (1970),AMIC-196
Dieldrin	Lake herring	FL	Great Lakes (Ontario, Huron, Erie, Superior, Michigan)	0.02-0.07 (whole body residue)	--	same as above	Reinert (1970),AMIC-196
Dieldrin	Lake trout	FL	Great Lakes (Ontario, Huron, Erie, Superior, Michigan)	0.05-1.13 (whole body residue)	--	same as above	Reinert (1970),AMIC-196

Dieldrin	Lake whitefish	FL	Great Lakes (Ontario, Huron, Erie, Superior, Michigan)	0.02-0.47 (whole body residue)	--	same as above	Reinert (1970),AMIC-196
Dieldrin	Rock bass	FL	Great Lakes (Ontario, Huron, Erie, Superior, Michigan)	0.02 (whole body residue)	--	same as above	Reinert (1970),AMIC-196
Dieldrin	Round whitefish	FL	Great Lakes (Ontario, Huron, Erie, Superior, Michigan)	0.03 (whole body residue)	--	same as above	Reinert (1970),AMIC-196
Dieldrin	Sea lamprey	FL	Great Lakes (Ontario, Huron, Erie, Superior, Michigan)	0.02 (whole body residue)	--	same as above	Reinert (1970),AMIC-196
Dieldrin	Slimy sculpin	FL	Great Lakes (Ontario, Huron, Erie, Superior, Michigan)	0.03 (whole body residue)	--	same as above	Reinert (1970),AMIC-196
Dieldrin	Nine-spined stickleback	FL	Great Lakes (Ontario,	0.02(whole body residue)	--	same as above	Reinert (1970),AMIC-

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
			Huron, Erie, Superior, Michigan)				196
Dieldrin	Walleye	FL	Great Lakes (Ontario, Huron, Erie, Superior, Michigan)	0.08-0.13 (whole body residue)	--	same as above	Reinert (1970),AMIC-196
Dieldrin	White bass	FL	Great Lakes (Ontario, Huron, Erie, Superior, Michigan)	0.04-0.10 (whole body residue)	--	same as above	Reinert (1970),AMIC-196
Dieldrin	White perch	FL	Great Lakes (Ontario, Huron, Erie, Superior, Michigan)	0.10 (whole body residue)	--	same as above	Reinert (1970),AMIC-196
Dieldrin	White sucker	FL	Great Lakes (Ontario, Huron, Erie, Superior, Michigan)	0.02 (whole body residue)	--	same as above	Reinert (1970),AMIC-196

			Michigan)				
Dieldrin	Yellow perch	FL	Great Lakes (Lake Ontario, LakeHuron, LakeErie, Lake Superior, Lake Michigan)	0.03-0.07 (whole body residue)	--	same as above	Reinert (1970), AMIC-196
Dieldrin	Wolffia papulifera	L	--	100 (K)	Hunter's medium diluted 1:5	All compounds were harmful to duckweed to some degree. Decreased populations were noted at non-lethal concentrations and some compounds (Malathion and 2,4-D) caused teratogenic effects at concentrations as low as 1 ppm,	Worthley, et al (1971), AMIC-3233
Diethyl-DL-tartarate	Pimephales promelas	BSA	--	650.0 (T4)	a*, d, e, o, and Fe	Malathion and its hydrolysis products were evaluated with the finding that one such product (diethyl fumarate) was more toxic than Malathion to fathead minnows. Synergism occurred between Malathion and two products of hydrolysis. Continuous exposure resulted in increased toxicity.	Bender (1969), AMIC-3787
Diethyl fumarate	Pimephales promelas	BSA	--	4.5 (T4)	a*, d, e, o, and Fe	same as above	Bender (1969), AMIC-3787
Diethyl fumarate	Pimephales promelas	BCFA	--	2.8 (T14)	a*, d, e, o, and Fe	same as above	Bender (1969), AMIC-3787
Diethyl maleate	Pimephales promelas	BSA	--	18.0 (T4)	a*, d, e, o, and Fe	same as above	Bender (1969), AMIC-3787
Diethyl succinate	Pimephales promelas	BSA	--	140.0 (T4)	a*, d, e, o, and Fe	same as above	Bender (1969), AMIC-3787
Difolatan	Brachydanio rerio (larvae)	L	--	1.0 (T 30 min)	--	Folpet, Difolatan, and Captan were found to be toxic to zebrafish larvae within 90 min. Difolatan was most toxic while Captan was least toxic. Effects observed were cessation of heartbeat and loss of pigmentation. The authors recommended this as a sensitive, rapid bioassay for these and related compounds.	Abedi, et al (1968), AMIC-3717
Difolatan	Rasbora heteromorpha	BCFA and BSA	--	0.032 (T1)	a*, c, e, f, hard (HW) or SOFT (SW) synthetic dilution water, or	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy	Alabaster (1969), AMIC-5425

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
					seawater for some species	predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	
Difolatan	Rasbora heteromorpha	BCFA and BSA	--	0.017 (T2)	a*,c,e,f, hard (HW) or SOFT(SW) synthetic dilution water, or seawater for some species	same as above	Alabaster (1969), AMIC-5425
Dimanin	Rasbora heteromorpha	BCFA and BSA	--	3.3 (T2)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425
Dimecron	Puntius ticto	--	--	0.41 (T4)	a,c,d,e,f	Of the pesticides investigated, the most toxic was Klofos followed in decreasing order by Sumithion, Malathion, Formithion, Dimecron, Sevin, and BHC. The author cites the need for more selective pesticides nontoxic to fish or antagonistic agents for reducing fish toxicity.	Bhatia (1971), AMIC-5423
Dimethoate	Fish (not specified)	--	--	greater than 10-100 (K)	--	Approximate toxicities of numerous pesticides commonly used in Britain were summarized. An excellent brief, general discussion of toxicity testing is also present.	Mawdesley-Thomas(1971) AMIC-1056

Dimethoate	Salmo gairdneri	RCFA and BSA	--	9 (T2)	a*,c,e,f, hard (HW) or soft (SW) synthetic water, or seawater for somo species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425
Dimethoate	Carcinus maenas	BSA	--	greater than 3.3 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al(1971), AMIC-7701
Dimethoate	Cardium edule	BSA	--	3.3 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Dimethoate	Crangon crangon	BSA	--	0.0003-0.001 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Dimethoate	Pandalus montagui	BSA	--	greater than 0.03 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, etal (1971), AMIC-7701

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
Dimethylamine	Crangon crangon	BSA	--	greater than 100 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701
Dimethylphosphorodithoic acid	Pimephales promelas	BSA	--	23.5 (T4)	a*,d,e,o, and Fe	Malathion and its hydrolysis products were evaluated with the finding that one such product (diethyl fumarate) was more toxic than Malathion to fathead minnows. Synergism occurred between Malathion and two products of hydrolysis. Continuous exposure resulted in increased toxicity.	Bender (1969), AMIC-3787
Dimethylphosphorodithoic acid	Pimephales promelas	BCFA	--	21.0 (T14)	a*,d,e,o, and Fe	same as above	Bender (1969), AMIC-3787
Dimethylphosphorothionic acid	Pimephales promelas	BSA	--	42.5 (T4)	a*,d,e,o, and Fe	same as above	Bender (1969), AMIC-3787
Dimethyl formamide	Crangon crangon	BSA	--	greater than 100 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701
Dimethyl phosphate	Pimephales promelas	BSA	--	18.0 (T4)	a*,d,e,o, and Fe	Malathion and its hydrolysis products were evaluated with the finding that one such product (diethyl fumarate) was more toxic than Malathion to fathead minnows. Synergism occurred between Malathion and two products of hydrolysis. Continuous exposure resulted in increased toxicity.	Bender (1969), AMIC-3787

Dimethyl phosphite	Pimephales promelas	BSA	--	225.0 (T4)	a*,d,e,o, and Fe	same as above	Bender(1969), AMIC-3787
Dimethyl 2,3,6-tetrachloroterephthalate	Phormidium ambiguum	L	--	0.5-10.0 (33percent growth inhibited 14)	--	Of 74 chemicals evaluated as algicides, only 9 were more toxic than CuSO4. None inhibited growth of mat-forming algae for more than 2 weeks. CuSO4 formulated with certain wetting agents was more toxic than CuSO4 alone. Copper chloramine was also found to be more toxic than CuSO4. No wetting agents were found to be inhibitory at the concentrations investigated (0.05 and 0.005 ppm). Also reported are factors affecting growth of algae in canals to determine whether there were leads to controlling algae by environmental management. No practical environmental means were found.	Otto (1970), AMIC-892
Dimite	Tubifex tubifex	FL and BSA	Belzoni, Miss.	0.50 (NTE)	--	The response of pesticide-resistant aquatic organisms to various pesticides was compared to the response of non-resistant species. Pesticide-resistant species were collected at Belzoni and non-resistant species at State College. Copepods, clams, snails, and sludge worms from Belzoni were considerably more tolerant to pesticides than the non-resistant organisms. The authors note that the effect of increased tolerance in the organisms is an increase in the amount of pesticide residues available to animals of higher trophic levels.	Naqvi, et al(1969), AMIC-5979
Dinitrobutyl phenol	Gammarus fasciatus	BSA	--	1.8 (T4)	a*	Of the aquatic weed herbicides evaluated, Diclone was the most toxic, Daphnia was generally the most sensitive organism. All of the crustacea were affected by much lower concentration levels of herbicides than indicated by the TL sub 50 values. All of the animals represent important food chain links.	Sanders (1970), AMIC-453
Dinitrophenylether	Phormidium ambiguum	L	--	0.5-10.0 (66 percent growth inhibited 14)	--	Of 74 chemicals evaluated as algicides, only 9 were more toxic than CuSO4. None inhibited growth of mat-forming algae for more than 2 weeks. CuSO4 formulated with certain wetting agents was more toxic than CuSO4 alone. Copper chloramine was also found to be	Otto (1970), AMIC-892

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
						more toxic than CuSO4. No wetting agents were found to be inhibitory at the concentrations investigated (0.05 and 0.005 ppm). Also reported are factors affecting growth of algae in canals to determine whether there were leads to controlling algae by environmental management. No practical environmental means were found.	
Dinocap	Fish (not specified)	--	--	greater than 0.01-0.1 (K)	--	Approximate toxicities of numerous pesticides commonly used in Britain were summarized. An excellent brief, general discussion of toxicity testing is also present.	Mawdesley-Thomas (1971),AMIC-1056
Dinocap	Rasbora heteromorpha	BCFA and BSA	--	0.11 (T2)	a*,c,e,f, hard (HW) or soft (SW) synthetic water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425
Dinocap	Rasbora heteromorpha	BCFA and BSA	--	0.07 (T2)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	same as above	Alabaster (1969), AMIC-5425
Dinoseb	Fish (not specified)	--	--	greater than 0.1-1.0 (K)	--	Approximate toxicities of numerous pesticides commonly used in Britain were summarized. An excellent brief, general discussion of toxicity testing is also present.	Mawdesley-Thomas(1971) AMIC-1056

Diphenamid	Gammarus fasciatus	BSA	--	greater than 100.0 (T2)	a*	Of the aquatic weed herbicides evaluated, Diclone was the most toxic, Daphnia was generally the most sensitive organism. All of the crustacea were affected by much lower concentration levels of herbicides than indicated by the TL sub 50 values. All of the animals represent important food chain links.	Sanders (1970), AMIC-453
Diphenamid	Paleomontes kadiakensis	BSA	--	58.0 (T2)	a*	same as above	Sanders (1970), AMIC-453
Diphenamid	Asellus brevicaudus	BSA	--	greater than 100.0 (T2)	a*	same as above	Sanders (1970),AMIC-453
Diphenamid	Orconectes nais	BSA	--	greater than 100.0 (T2)	a*	same as above	Sanders (1970),AMIC-453
Diphenamid	Daphnia magna	BSA	--	56.0 (T2)	a*	same as above	Sanders (1970), AMIC-453
Diphenamid	Cypridopsis vidua	BSA	--	50.0 (T2)	a*	same as above	Sanders (1970), AMIC-453
Diphenamid	Lepomis macrochirus	BSA	--	80.0 (T2)	a*	same as above	Sanders (1970), AMIC-453
Dipterex	Crassostrea virginica (larvae)	L	--	1.0 (T14)	--	The effect of 52 pesticides on embryonic development of clams and oysters was reported. Synergistic effects with solvents were also reported. Most of the compounds affected development more than survival. Some, however, drastically reduced larval growth. The authors point out the necessity of evaluating the effects of pesticides on all life stages of an organism and note the possibility of selecting chemicals for pest control that would not have serious effect on shellfish.	Davis, et al (1969),AMIC-5990
Diquat-dibromide	Salmo gairdneri	BCFA and BSA	--	70 (T2)	a*,c,e,f, hard (HW) or	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a	Alabaster (1969), AMIC-5425

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
					SOFT(SW) synthetic dilution water, or seawater for some species	wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	
Diquat	Callibactis sp. (nymph, 8-12 mm)	BSA	--	16.4 (T4)	a*,b*,c,f, i,l, and silica, calcium, magnesium, sodium, potassium, bicarbon-ate, carbonate, sulfate, iron, dissolved solids, conduc-tance	The toxicity of herbicides Diquat and Dichlobenil to aquatic invertebrates and fish was determined in aquaria containing substrates natural to each species. Diquat was quite toxic to H. azeteca but not as toxic to other organisms. Dichlobenil was less toxic to H. azetecus but considerably more toxic to the remaining organism than Diquat Mud lessened the toxicity of both, but more so for Diquat. Dichlobenil had a sublethal narcotizing effect on the organisms that resulted in immobilization. It was concluded that both herbicides could adversely affect certain fish food organisms.	Wilson, et al (1969), AMIC-5452
Diquat	Enallagma sp. (naiad, 16-24 mm)	BSA	--	greater than 100 (T4)	a*,b*,c,f, i,l, and silica, calcium, magnesium, sodium, potassium, bicarbon-ate, carbonate, sulfate, iron, dissolved solids, conduc-tance	same as above	Wilson, et al (1969), AMIC-5452

Diquat	Hyalella azteca (adult, 4-8 mm)	BSA	--	0.05 (T4)	a#,b#,c,f, i,l, and silica, calcium, magnesium, sodium, potassium, bicarbonate, carbonate, sulfate, iron, dissolved solids, conductance	same as above	Wilson, et al (1969), AMIC-5452
Diquat	Libellula sp. (naiad, 16-24 mm)	BSA	--	greater than 100 (T4)	a#,b#,c,f, i,l, and silica, calcium, magnesium, sodium, potassium, bicarbonate, carbonate, sulfate, iron, dissolved solids, conductance	same as above	Wilson, et al (1969), AMIC-5452
Diquat	Limnephilus sp. (larva, 15-20 mm)	BSA	--	33 (T4)	a#,b#,c,f, i,l, and silica, calcium, magnesium, sodium, potassium, bicarbonate, carbonate, sulfate, iron,	same as above	Wilson, et al (1969), AMIC-5452

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
					dissolved solids, conductance		
Diquat	Tendipedidae (larvae, 7-10 mm)	BSA	--	greater than 100 (T4)	a*,b*,c,f, i,l, and silica, calcium, magnesium, sodium, potassium, bicarbonate, carbonate, sulfate, iron, dissolved solids, conductance	same as above	Wilson,et al (1969), AMIC-5452
Diquat	Roccus saxatilis (fingerlings)	BSA	--	80 (T4)	a*,c,d,e, f,p, and iron	Striped bass fingerlings were apparently much more sensitive to therapeutic and herbicidal compounds than many freshwater fish.	Wellborn (1969), AMIC-5723
Diquat	Mya arenaria	F	Nomini Creek, Va.	0.35 (SB)	--	Consistent absence of Diquat in edible parts of clams and oysters was recorded. Residues in integument of clam siphons was believed to be due to soil particles trapped in folds of tissue. No Diquat was found in water due probably to rapid adsorption by silt and bottom mud. Residues persisted for nearly one year in bottom mud.	Haven (1969),AMIC-5978
Diquat	Crassostrea virginica	F	Nomini Creek, Va.	0.35 (SB)	--	same as above	Haven (1969),AMIC-5978

Diquat	Myriophillum spicatum	F	Nomini Creek, Va.	0.35 (40-70 percent K36)	--	same as above	Haven (1969), AMIC-5978
Diquat	Cardium edule	BSA	--	greater than 10 (T2)	a*(continuous aeration, sea-water, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701
Diquat	Crangon crangon	BSA	--	greater than 10 (T2)	a*(continuous aeration, sea-water, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Dispersol SD	Agonus cataphractus	BSA	--	100-330 (T4)	a*(continuous aeration, sea-water, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Dispersol SD	Crangon crangon	BSA	--	3300-10,000 (T2)	a*(continuous aeration, sea-water, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Disulfoton	Fish (not specified)	--	--	greater than 1.0-10.0 (K)	--	Approximate toxicities of numerous pesticides commonly used in Britain were summarized. An excellent brief, general discussion of toxicity testing is also present.	Mawdesley-Thomas(1971) AMIC-1056
Diuron	Mercenaria mercenaria (eggs)	L	--	2.5 (T2)	--	The effect of 52 pesticides on embryonic development of clams and oysters was reported. Synergistic effects with solvents were also reported. Most of the compounds affected	Davis, et al (1969), AMIC-5990

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
						development more than survival. Some, however, drastically reduced larval growth. The authors point out the necessity of evaluating the effects of pesticides on all life stages of an organism and note the possibility of selecting chemicals for pest control that would not have serious effect on shellfish.	
Diuron	Mercenaria mercenaria (larvae)	L	--	greater than 5.0 (T12)	--	same as above	Davis, et al(1969), AMIC-5990
Diuron	Gammarus fasciatus	BSA	--	0.70 (T4)	a*	Of the aquatic weed herbicides evaluated, Diclone was the most toxic, Daphnia was generally the most sensitive organism. All of the crustacea were affected by much lower concentration levels of herbicides than indicated by the TL sub 50 values. All of the animals represent important food chain links.	Sanders (1970), AMIC-453
Di-isobutyl phenoxyethoxyethyl dimethyl benzyl ammonium chloride	Phormidium ambiguum	L	--	0.5-10.0 (16 percent growth inhibited 14)	--	Of 74 chemicals evaluated as algicides, only 9 were more toxic than $CuSO_4$. None inhibited growth of mat-forming algae for more than 2 weeks. $CuSO_4$ formulated with certain wetting agents was more toxic than $CuSO_4$ alone. Copper chloramine was also found to be more toxic than $CuSO_4$. No wetting agents were found to be inhibitory at the concentrations investigated (0.05 and 0.005 ppm). Also reported are factors affecting growth of algae in canals to determine whether there were leads to controlling algae by environmental management. No practical environmental means were found.	Otto (1970), AMIC-892
Di-n-butyl tin oxide	Crepidostomum farionis	L	--	150 (oral dose, K1)	--	Capsules containing the tin compound were administered to the trout by force feeding. The tin compound was effective against the intestinal fluke but erythromycin was not. Residue analyses indicated tin was not readily	Mitchum, et al (1969), AMIC-5730

						absorbed by tissue outside the intestinal tract and that the compound was rapidly eliminated. Tissue residue and retention time studies were recommended for drug clearance purposes.	
Di-n-butyl tin oxide	Salmo aquabonita	L	--	100-600 (oral dose, NTE)	--	same as above	Mitchum, et al (1969), AMIC-5730
Di-Syston	Mercenaria mercenaria (eggs)	L	--	5.28 (T2)	--	same as above	Davis, et al (1969),AMIC-5990
Di-Syston	Mercenaria mercenaria (larvae)	L	--	1.39 (T12)	--	same as above	Davis, et al (1969),AMIC-5990
Di-Syston	Crassostrea virginica (eggs)	L	--	5.86 (T2)	--	same as above	Davis, et al (1969),AMIC-5990
Di-Syston	Crassostrea virginica (larvae)	L	--	3.67 (T14)	--	same as above	Davis, et al (1969),AMIC-5990
Di (N, N dimethyl cocoamine salt of endothall (ethyl bis) (2-ethylhexyl) phosphinate7-oxabicyclo (2.2.1) heptane-2,3-dicarboxylic acid)	Phormidium ambiguum	L	--	0.5-10.0 (NTE)	--	Of 74 chemicals evaluated as algicides, only 9 were more toxic than CuSO4. None inhibited growth of mat-forming algae for more than 2 weeks. CuSO4 formulated with certain wetting agents was more toxic than CuSO4 alone. Copper chloramine was also found to be more toxic than CuSO4. No wetting agents were found to be inhibitory at the concentrations investigated (0.05 and 0.005 ppm). Also reported are factors affecting growth of algae in canals to determine whether there were leads to controlling algae by environmental management. No practical environmental means were found.	Otto (1970), AMIC-892
Di (N, N dimethyl tridecyl amine) salt of endothall	Phormidium ambiguum	L	--	0.5-10.0 (0 percent growth inhibited 14)	--	same as above	Otto (1970), AMIC-892
DNOC	Fish (not	--	--	greater than	--	Approximate toxicities of	Hawdesley-

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
	specified)			1.0-10.0 (K)		numerous pesticides commonly used in Britain were summarized. An excellent brief, general discussion of toxicity testing is also present.	Thomas (1971),AMIC-1055
Dobs JN	Carcinus maenas	BSA	--	greater than 100 (T2)	a*(continuous aeration, sea water, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701
Dobs JN	Cardium edule	BSA	--	greater than 100 (T2)	a*(continuous aeration, sea-water, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Dobs JN	Crangon crangon	BSA	--	greater than 100 (T2)	a*(continuous aeration, sea-water, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Dobs JN	Pandalus montagui	BSA	--	greater than 100 (T2)	a*(continuous aeration, sea-water, and daily solution renewal)	same as above	Portmann, etal (1971), AMIC-7701
Dobs 055	Carcinus maenas	BSA	--	greater than 100 (T2)	a*(continuous aeration, sea-water, and daily solution	same as above	Portmann, et al (1971), AMIC-7701

					renewal)		
Dobs 055	Cardium edule	BSA	--	34.3 (T2)	a*(contin- uous aer- ation, sea- water, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Dobs 055	Crangon crangon	BSA	--	greater than 100 (T2)	a*(contin- uous aer- ation, sea- water, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Dobs 055	Pandalus montagui	BSA	--	greater than 100 (T2)	a*(contin- uous aer- ation, sea- water, and daily solution renewal)	same as above	Portmann, et al(1971), AMIC-7701
Dobs 055	Platicthys flesus	BSA	--	10-30 (T2)	a*(contin- uous aer- ation, sea- water, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Dodine acetate	Fish (not specified)	--	--	greater than 0.1-1.0 (K)	--	Approximate toxicities of numerous pesticides commonly used in Britain were summarized. An excellent brief, general discussion of toxicity testing is also present.	Mawdesley-Thomas(1971) AMIC-1056
Dowicide A	Mercenaria mercenaria (eggs)	L	--	greater than 10.0 (T2)	--	The effect of 52 pesticides on embryonic development of clams and oysters was reported. Synergistic effects with solvents were also reported. Most of the compounds affected development more than survival. Some, however, drastically reduced larval	Davis, etal (1969), AMIC-5990

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
						growth. The authors point out the necessity of evaluating the effects of pesticides on all life stages of an organism and note the possibility of selecting chemicals for pest control that would not have serious effect on shellfish.	
Dowicide A	Mercenaria mercenaria (larvae)	L	--	0.75 (T12)	--	same as above	Davis, et al (1969), AMIC-5990
Dowicide G	Mercenaria mercenaria (eggs)	L	--	less than 0.25 (T2)	--	same as above	Davis, et al (1969), AMIC-5990
Dowicide G	Mercenaria mercenaria (larvae)	L	--	less than 0.25 (T12)	--	same as above	Davis, et al (1969), AMIC-5990
Dowpon	Rashora heteromorpha	BCFA and BSA	--	204 (T2)	a*, c, e, f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425
Dowpon	Salmo gairdneri	BCFA and BSA	--	179 (T2)	a*, c, e, f, hard (HW) or soft (SW) synthetic water, or seawater for some species	same as above	Alabaster (1969), AMIC-5425

Doxcide (ClO2)	Carcinus maenas	BSA	--	500 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701
Doxcide (ClO2)	Cardium edule	BSA	--	greater than 500 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Doxcide (ClO2)	Crangon crangon	BSA	--	greater than 500 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Doxcide (ClO2)	Pandalus montagui	BSA	--	greater than 500 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
DSS	Fundulus heteroclitus	BSA	--	4.5 (T4)	a*,c,e, and synthetic seawater	A laboratory procedure based on Standard Methods for 96-hr toxicity determinations of crude oil and oil-dispersant mixtures was described. The dispersants varied considerably in toxicity, ranging from 0.01 to 7.1 ml/l, TL50 for 96 hr. These did not differ significantly from 240 hr values. The dispersants were designated as CX, OO, Cl, OD, AQ, PC, MM, TN, BP, and NA with no further description of their chemical nature or source. Only a few bioassays were conducted with shrimp. Mollusks and echinoderms were suggested as suitable test animals. The authors stated that the method could be used to test any product for toxicity in seawater.	LaRoche, et al (1970), AMIC-445

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
DO	Fundulus heteroclitus	BSA	--	0.0005 (T4)	a*,c,e, and synthetic seawater	same as above	LaRoche, et al (1970), AMIC-445
DO	Nereis virens	BSA	--	0.0002-0.001 (T4)	a*,c,e, and synthetic seawater	same as above	LaRoche,et al (1970), AMIC-445
DSS	Nereis virens	BSA	--	13.5 (T4)	a*,c,e, and synthetic seawater	same as above	LaRoche, et al(1970), AMIC-445
DTMC	Palaemonetes kadiakensis (adult)	BCF	--	0.07 (residue)	a*	Magnification of DDT and Aldrin tagged with C-14 occurred rapidly. Biological magnification factors of 2900 to 114,100 depending on the species were found for DDT, and 22,800 to 141,000 for Aldrin. Marked degradation of DDT as determined by analysis for DDT metabolites occurred. The authors conclude that aquatic invertebrates influence quality and quantity of insecticide residue passed via the fish food chain.	Johnson, et al(1971), AMIC-3820
DTMC	Libellula sp. (naiad)	BCF	--	0.01 (residue)	a*	same as above	Johnson, et al (1971),AMIC-3820
DTMC	Palaemonetes kadiakensis (adult)	BCF	--	0.0001 (SB3)	a*	same as above	Johnson,et al (1971), AMIC-3820
DTMC	Libellula sp. (naiad)	BCF	--	0.0001 (SB3)	a*	same as above	Johnson,et al (1971), AMIC-3820
Dursban	Tubifex tubifex	FL and BSA	Belzoni, Miss.	2.0 (NTE)	--	The response of pesticide-resistant aquatic organisms to various pesticides was compared to the response of non-resistant species.	Naqvi, et al(1969), AMIC-5979

						Pesticide-resistant species were collected at Belzoni and non-resistant species at State College. Copepods, clams, snails, and sludge worms from Belzoni were considerably more tolerant to pesticides than the non-resistant organisms. The authors note that the effect of increased tolerance in the organisms is an increase in the amount of pesticide residues available to animals of higher trophic levels.	
Dylox	Roccus saxatilis (fingerlings)	BSA	--	5.2 (T4)	a*,c,d,e,f,p and iron	Striped bass fingerlings were apparently much more sensitive to therapeutic and herbicidal compounds than many freshwater fish.	Wellborn (1969), AMIC-5723
D.B. Granular	Salmo gairdneri	BCFA and BSA	--	2,050 (T2)	a*,c,e,f, hard (HW) or SOFT(SW) synthetic dilution water, or seawater forsome species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425
Econal 13086	Rasbora heteromorpha	BCFA and BSA	--	0.19 (T2)	a*,c,e,f, hard (HW) or SOFT(SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425
EC-90	Rasbora heteromorpha	BCFA and BSA	--	1.2 (T2, hardwater)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy	Alabaster (1969), AMIC-5425

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
					seawater for some species	predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	
EC-90	Rasbora heteromorpha	BCFA and BSA	--	1.2 (T2, softwater)	a*,c,e,f, hard (HW)or soft (SW) synthetic dilution water, or seawater for some species	same as above	Alabaster (1969), AMIC-5425
Emcol H-146 (80 percent plus 20 percent Emcol H-500X)	Rasbora heteromorpha	BCFA and BSA	--	10 (T2)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425
Emcol 702	Rasbora heteromorpha	BCFA and BSA	--	6.0 (T2)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	same as above	Alabaster (1969), AMIC-5425
EMID	Crassostrea virginica	L	--	16.8 (T2)	--	The effect of 52 pesticides on embryonic development of clams and	Davis, et al (1969),

	(eggs)					oysters was reported. Synergistic effects with solvents were also reported. Most of the compounds affected development more than survival. Some, however, drastically reduced larval growth. The authors point out the necessity of evaluating the effects of pesticides on all life stages of an organism and note the possibility of selecting chemicals for pest control that would not have serious effect on shellfish.	AMIC-5990
EMID	Crassostrea virginica (larvae)	L	--	30.0 (T14)	--	same as above	Davis, et al (1969), AMIC-5990
Empilan	Crangon crangon	BSA	--	100-330 (T4)	a*(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701
Emkem spill-wash	Crangon crangon	BSA	--	1.0-3.3 (T4)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Emulsifier blend 350	Crangon crangon	BSA	--	100-330 (T4)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Endosulfan	Fish (not specified)	--	--	greater than 0.000001-0.00001 (K)	--	Approximate toxicities of numerous pesticides commonly used in Britain were summarized. An excellent brief, general discussion of toxicity testing is also present.	Mawdesley-Thomas (1971 AMIC-1056

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
Endosulfan	Rasbora heteromorpha	BCFA and BSA	--	0.000003 (T2)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425
Endosulfan	Agonus cataphractus	BSA	--	0.03-1.0 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701
Endosulfan	Cardium edule	BSA	--	greater than 10 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Endosulfan	Crangon crangon	BSA	--	0.01 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Endothall	Rasbora heteromorpha	BCFA and BSA	--	460 (T2)	a*,c,e,f, hard (HW) or soft (SW) syn-	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders	Alabaster (1969), AMIC-5425

					thetic dilution water, or seawater for some species	of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	
Endothall	Mercenaria mercenaria (eggs)	L	--	51.0 (T2)	--	The effect of 52 pesticides on embryonic development of clams and oysters was reported. Synergistic effects with solvents were also reported. Most of the compounds affected development more than survival. Some, however, drastically reduced larval growth. The authors point out the necessity of evaluating the effects of pesticides on all life stages of an organism and note the possibility of selecting chemicals for pest control that would not have serious effect on shellfish.	Davis, et al (1969), AMIC-5990
Endothall	Mercenaria mercenaria (larvae)	L	--	12.5 (T12)	--	same as above	Davis, et al (1969), AMIC-5990
Endothall	Crassostrea virginica (eggs)	L	--	28.2 (T2)	--	same as above	Davis, et al (1969), AMIC-5990
Endothall	Crassostrea virginica (larvae)	L	--	48.1 (T14)	--	same as above	Davis, et al (1969), AMIC-5990
Endothal	Fish (not specified)	--	--	greater than 10-100 (K)	--	Approximate toxicities of numerous pesticides commonly used in Britain were summarized. An excellent brief, general discussion of toxicity testing is also present.	Mawdesley-Thomas (1971), AMIC-1056
Endrin	Fish (not specified)	--	--	greater than 0.0001-0.001 (K)	--	same as above	Mawdesley-Thomas(1971), AMIC-1056
Endrin	Anacystis nidulans	L	--	0.5-1.0 (growth inhibited)	a*,c*,r SM	Metabolic products of Aldrin, Dieldrin, and Endrin can be as toxic as the parent compounds, as shown by OD measurement.	Batterton, et al (1971),

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
							AMIC-1471
Endrin	Agmenellium quadrup-licatum	L	--	0.5-1.0 (growth inhibited)	a*,c*,r SM	same as above	Batterton, et al (1971), AMIC-1471
Endrin	Salvelinus fontinalis (1.15 g)	BCFA	--	0.355 (T4)	a*,c,d, e,f,i,o, sulfate, copper, manganese, iron, and chromium	Four insecticides were evaluated on four fish species at two body weights. Standard method bioassay procedures were followed. Symptomology was also reported. Generally, toxicity was significantly different at the two body weights, i.e., more toxic at the lower body weight, except for Malathion. Well-defined experimental conditions were said to result in truer measurement of toxicity.	Post, et al (1971), AMIC-1812
Endrin	Salvelinus fontinalis (2.04 g)	BCFA	--	0.59 (T4)	a*,c,d, e,f,i,o, sulfate, copper, manganese, iron, and chromium	same as above	Post, et al (1971), AMIC-1812
Endrin	Salmo clarki (0.37 g)	BCFA	--	0.00001 (T4)	a*,c,d, e,f,i,o, sulfate, copper, manganese, iron, and chromium	same as above	Post, et al (1971), AMIC-1812
Endrin	Salmo clarki (1.30 g)	BCFA	--	0.00002 (T4)	a*,c,d, e,f,i,o, sulfate, copper, manganese, iron, and chromium	same as above	Post, et al (1971), AMIC-1812
Endrin	Salmo gairdneri (1.24 g)	BCFA	--	0.0004 (T4)	a*,c,d, e,f,i,o, sulfate, copper, manganese, iron, and chromium	same as above	Post, et al (1971), AMIC-1812

Endrin	Limnephilus rhombicus (larvae)	FS	Knights CRFEK, DunCounty, Wisc.	0.003 (whole body residue)	--	Samples of water, silt, bottom debris, bottom organisms, and fish were taken in 1966 from a creek adjacent to an orchard which had been treated in 1963-1965 with various chlorinated hydrocarbon pesticides. No residues were found in water samples. Silt samples contained 0.002-0.013 ppm endrin and 0-0.005 ppm dieldrin. Endrin residues of 0.011-0.025 ppm and 0.002-0.006 ppm dieldrin were found in debris samples. Despite limited control data, residue analyses indicated that contamination of the environment studied was limited.	Moubry, et al (1968), AMIC-3753
Endrin	Sialis sp. (larvae)	FS	Knights Creek, Dun County, Wisc.	0.009 (wholebody residue)	--	same as above	Moubry, et al (1968), AMIC-3753
Endrin	Gammarus sp.	FS	Knights Creek, Dun County, Wisc.	0.013-0.025 (wholebody residue)	--	same as above	Moubry, et al (1968), AMIC-3753
Endrin	Pimephales promelas	BCFA	--	0.25 ppb (T4)	a*,e	LAS acted synergistically with parathion to cause less survival of fatheds but had an indeterminate effect with DDT and no synergistic effect with Endrin.	Solon, et al (1969), AMIC-3785
Endrin	Carassius auratus	BCF	--	0.0043 (oral dose per day, SB 4 mo)	a*,c,q	No effects were noted at lower concentrations while higher doses caused some mortality, lowered growth rate, decreased thyroid cell height, decreased gametogenesis, lowered total body fat, less vacuolization of liver cells, elevated serus Na concentrations, osmo-regulatory disturbance, and other effects. The authors note that sublethal	Grant, et al (1970), AMIC-3826
Endrin	Oncorhynchus kisutch (1.50 g)	BCFA	--	0.76 (T4)	a*,c,d, e,f,i,o, sulfate, copper, manganese, iron, and chromium	same as above	Post, et al (1971), AMIC-1812

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
						effects could adversely affect fish populations.	
Endrin	Endomychura craveri (eggs)	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	0.17 (residue)	--	Peregrine falcons, falcon prey, and other predator species were collected widely and analyzed for DDT, DDE, PCB, and a few other pesticides to a lesser degree. PCB and DDT were found to be widely dispersed globally. PCB was found to be a powerful inducer of hepatic enzymes that degrade oestradiol. Reductions in thickness of egg shells, eggshell weight, and water retention occurred. All affect hatching success. The authors state that the peregrine may be the first species extirpated by global contamination.	Risebrough, et al (1968), AMIC-3844
Endrin	Pelecanus occidentalis (eggs)	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	0.07-1.13 (residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
Endrin	Sula leucogaster (eggs)	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	0.01-0.06 (residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
Endrin	Pandion haliaetus (eggs)	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	0.25 (residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
Endrin	Gambusia affinis (resistant)	L	--	0.05-0.4 (SB 3 hr)	--	Endrin resistant mosquitofish exhibited no consistent change in rate of oxygen consumption. The susceptible strain had decreased oxygen consumption	McIngvale, et al (1968), AMIC-5475

						at higher concentrations. Some mortality occurred at .02-.075 ppm in susceptible fish and at .40 ppm in the resistant strain.	
Endrin	Gambusia affinis (susceptible)	L	--	0.00001-0.2 (SB 3 hr)	--	same as above	McInqvale, et al (1968), AMIC-5475
Endrin	Pimephales promelas (3 cm)	BSA	--	0.00077 (T2)	a*,c,e,f, k,l,n, and magnesium, sulfates, iron, calcium	Bioassays conducted simultaneously indicated that DDT was considerably more toxic to fathead minnows under static conditions than under continuous flow conditions. Decreasing oxygen and increasing metabolites may have enhanced DDT toxicity. An identical study with Endrin resulted in only slightly higher toxicity under continuous flow conditions. Average pH, oxygen, and ammonia nitrogen were followed throughout the experiments. The results were comprehensively discussed taking into consideration many contributing factors.	Lincer, et al (1970), AMIC-5509
Endrin	Pimephales promelas (3 cm)	BCFA	--	0.00057 (T2)	a*,c,e,f, k,l,n, and magnesium, sulfates, iron, calcium	same as above	Lincer, et al (1970), AMIC-5509
Endrin	Palaemonetes kadiakensis (resistant)	BSA	--	0.0028-0.0137 (T1)	a*	Bioassays were conducted with shrimp from three areas of intensive pesticide use and from an unexposed area. Previously exposed shrimp were from 1 to 25 times more resistant than unexposed shrimp. Both types of shrimp were also exposed in cages to waters of the contaminated areas. Susceptible shrimp suffered 66 percent more mortality than did resistant shrimp. The toxicity of the insecticides ranked in descending order was as follows: most toxic, Endrin, DDT, Methyl parathion, Parathion: medium toxicity, Guthion, Lindane, Toxaphene, Strobane: lease toxic Chlordane, Sevin, and Heptachlor.	Naqvi, et al (1970), AMIC-5519
Endrin	Palaemonetes	BSA	--	0.0009 (T1)	a*	same as above	Naqvi, et al

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
	kadiakensis (non-resistant)						(1970), AMIC-5519
Endrin	Gambusia affinis (resistant)	L	--	0.5-2 (S86-9)	--	Resistant mosquitofish were exposed to Endrin for varying periods of time then fed to susceptible green sunfish. Other experimental variables were studied. Edible portions of sunfish exposed to sublethal concentrations of Endrin for short periods of time contained up to 26 ppm of this chemical. The authors note that zero tolerances have been established for Endrin and that those fish would be rendered unfit for human consumption in the event of Endrin spillage.	Ferguson, et al (1967), AMIC-5976
Endrin	Gambusia affinis (resistant)	L	--	24.9-1042 (whole body residue)	--	same as above	Ferguson, et al (1967), AMIC-5976
Endrin	Lepomis cyanellus (susceptible)	L	--	greater than 1 (44 percent K5)	--	same as above	Ferguson, et al (1967), AMIC-5976
Endrin	Lepomis cyanellus (susceptible)	L	--	0.4-0.9 (whole body residue)	--	same as above	Ferguson, et al (1967), AMIC-5976
Endrin	Copepods (Cyclops bicuspidus, Cyclops varicans, Cyclops vernalis, Eucyclops agilis, Macrocyclops albidus, Orthocyclops modestus)	FL and BSA	State College, Miss.	0.08 (85 percent K2)	--	The response of pesticide-resistant aquatic organisms to various pesticides was compared to the response of non-resistant species. Pesticide-resistant species were collected at Belzoni and non-resistant species at State College. Copepods, clams, snails, and sludge worms from Belzoni were considerably more tolerant to pesticides than the non-resistant organisms. The authors note that the effect of increased tolerance in the organisms is an increase in the amount of pesticide residues available to animals	Naqvi, et al (1969), AMIC-5979

						of higher trophic levels.	
Endrin	Copepods (Cyclops bicuspidus, Cyclops varicans, Cyclops vernalis, Eucyclops agilis, Macrocyclops albidus, Orthocyclops modestus)	FL and BSA	Belzoni, Miss	0.08 (20 percent K2)	--	same as above	Naqvi, et al (1969), AMIC-5979
Endrin	Tubifex tubifex	FL and BSA	Belzoni, Miss.	6.0 (NTE)	--	same as above	Naqvi, etal (1969), AMIC-5979
Endrin	Physa gyrina	FL and BSA	State College, Miss.	0.55 (K3)	--	same as above	Naqvi,et al (1969), AMIC-5979
Endrin	Physa gyrina	FL and BSA	Belzoni, Miss.	0.55 (20 percent (K3)	--	same as above	Naqvi, et al (1969), AMIC-5979
Endrin	Eupera singleyi	FL and BSA	State College, Miss.	0.075 (K3)	--	same as above	Naqvi, et al (1969), AMIC-5979
Endrin	Lepomis macrochirus	BSA	--	0.0001 (SB1)	a*c,e	In a flow-through respirometer, the sublethal dosage caused increased oxygen consumption while the lethal dosage decreased it. Exercise had no effect on oxygen consumption but affected mucus production and hastened death. Symptomology of Endrin treatment included high excitability, loss of body color, increased opercular activity, convulsionary loss of equilibrium, short quiescience periods, and body hemorrhage. Unexercised fish treated with 0.001 ppm Endrin began to die two weeks after treatment.	Huner, et al(1967), AMIC-5981
Endrin	Lepomis macrochirus	BSA	--	0.001 (K1)	a*,c,e	same as above	Huner, et al (1967),AMIC-5981

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
Endrin	Crassostrea virginica (eggs)	L	--	0.79 (T2)	--	same as above	Davis, et al (1969), AMIC-5990
Endrin	Crassostrea virginica (larvae)	L	--	greater than 10.0 (T14)	--	same as above	Davis, et al(1969), AMIC-5990
Endrin	Lepomis macrochirus	BSA	--	0.001-0.002 (K)	a	Lab. tests were followed by tests in ponds to eradicate fish. Endrin toxicity persisted in one pond study (46 ppb) even after the pond had been emptied and refilled twice. In ponds, Endrin toxicity varied widely. The author stated that this chemical was too dangerous for use as a pesciside except in extremely isolated instances.	McReynolds (1969),AMIC-108
Endrin	Lepomis microlophus	BSA	--	0.001-0.002 (K)	a	same as above	McReynolds (1969), AMIC-108
Endrin	Lepomis macrochirus	FP	Driftwood Farm Ponds, Indiana	0.004 (K2)	a	same as above	McReynolds (1969), AMIC-108
Endrin	Lepomis macrochirus	FP	Driftwood Farm Ponds, Indiana	0.001 (K21)	a	same as above	McReynolds (1969), AMIC-108
Endrin	Lepomis macrochirus	FP	Driftwood Farm Ponds, Indiana	0.046 (K1)	a	same as above	McReynolds (1969), AMIC-108
Endrin	Lepomis macrochirus	BCFA	--	0.002 (T1)	--	Endrin absorbed by bluegill in lethal and sublethal exposures was determined by electron capture gas chromatography. Absorption was measured at varying times up to 24 hr. The authors stated that a temporary decrease in absorption at the sublethal concentration level suggests the fish were metabolizing and excreting the Endrin.	Bennett, et al(1970), AMIC-195

Endrin	Lepomis macrochirus	BCFA	--	0.0002 (SB1)	--	same as above	Bennett,et al (1970),AMIC-195
Endrin	Lepomis macrochirus	BCFA	--	0.0002 (0.04-0.13 ppm muscle residue)	--	same as above	Bennett, et al (1970), AMIC-195
Endrin	Lepomis macrochirus	BCFA	--	0.0002 (0.60-0.70 ppm gut residue)	--	same as above	Bennett, et al (1970), AMIC-195
Endrin	Lepomis macrochirus	BCFA	--	0.0002 (0.80-1.0 ppm liver residue)	--	same as above	Bennett, et al (1970), AMIC-195
Endrin	Lepomis macrochirus	BCFA	--	0.0002 (0.80-0.30 ppm whole body residue)	--	same as above	Bennett, et al (1970), AMIC-195
Endrin	Cyprinodon variegatus (50-70 mm)	BSA	--	0.001 (K)	a*, seawater	Sensitivity of three generations of sheepshead minnows to DDT and Endrin was determined. Sensitivity to DDT varied seasonally. Fish were bred in ponds 15m X 5m X 1.25m exposed to pesticides in aquaria, and survivors used for breeding. The results for DDT were not entirely clear due to the seasonal variability. Increased and decreased sensitivity were recorded for the F1 generation at different times, increased sensitivity for the F2, and decreased for the F3. The authors stated that incorporation of DDT in ova via lipids may have caused increased sensitivity. Endrin toxicity was decreased in the F1 and increased in the F2 generation.	Holland, et al (1970), AMIC-726
Epichlorhydrin	Rasbora heteromorpha	BCFA and BSA	--	36 (T2)	a*,c,e,f, hard (HW) or SOFT(SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true.	Alabaster (1969), AMIC-5425

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
						Testing the actual material as sold was found to be essential.	
Eptam	Gammarus fasciatus	BSA	--	23.0 (T4)	a*	Of the aquatic weed herbicides evaluated, Diclone was the most toxic. Daphnia was generally the most sensitive organism. All of the crustacea were affected by much lower concentration levels of herbicides than indicated by the TL sub 50 values. All of the animals represent important food chain links.	Sanders (1970), AMIC-453
Eserine sulfate	Negaprion brevirostris (1-3 kg)	BSA	--	11 (NTE 3 hr)	a,c,e	Data from study of drug effects on young lemon sharks were treated mathematically to demonstrate applicability of classical rate theory to the study of chemical shark deterrents. Incapacitation (narcosis) was the primary parameter timed for effectiveness. This was usually quite rapid for the more effective drugs.	Baldridge(1969), AMIC-3832
Essolvene	Carcinus maenas	BSA	--	10-33 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971),AMIC-7701
Essolvene	Cardium edule	BSA	--	33-100 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971),AMIC-7701
Essolvene	Crangon crangon	BSA	--	10 (T2)	a*(continuous aeration, seawater, and	same as above	Portmann, et al (1971), AMIC-7701

					daily solution renewal)		
Essolvene	Ostrea edulis	BSA	--	33-100 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Essolvene	Pandalus montagui	BSA	--	10 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Esso solvent FG-155	Crangon crangon	BSA	--	10-33 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701
Ethanediol	Crangon crangon	BSA	--	greater than 100 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701
Ethanolamine	Crangon crangon	BSA	--	greater than 100 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al(1971), AMIC-7701

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
Ethanol	Betta splendens	L	--	2850 (SB 6 hr)	a*	The effects of ethanol and bourbon on the aggressive response of Siamese fighting fish were determined. Ethanol increased gill show (aggressiveness) and bourbon and bourbon congeners decreased it. The authors tentatively concluded that the delayed effect of the congener resulted from involvement of a different physiological mechanism and that this may be related to hangover effects in man.	Raynes, et al (1968), AMIC 5712
Ethion	Rasbora heteromorpha	BCFA and BSA	--	0.52 (T2)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425
Ethion	Tubifex tubifex	FL and BSA	Belzoni, Miss.	1.50 (NTE)	--	The response of pesticide-resistant aquatic organisms to various pesticides was compared to the response of non-resistant species. Pesticide-resistant species were collected at Belzoni and non-resistant species at State College. Copepods, clams, snails, and sludge worms from Belzoni were considerably more tolerant to pesticides than the non-resistant organisms. The authors note that the effect of increased tolerance in the organisms is an increase in the amount of pesticide residues available to animals of higher trophic levels.	Naqvi, et al(1969), AMIC-5979
Ethomeen S-25	Rasbora heteromorpha	BCFA and BSA	--	0.35 (T2, hardwater)	a*,c,e,f, hard (HW) or soft (SW) syn-	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425

					thetic dilution water, or seawater for some species		
Ethomeen S-25	Rasbora heteromorpha	BCFA and BSA	--	0.68 (T2, softwater)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	same as above	Alabaster (1959),AMIC-5425
Ethylene phosphite	Pimephales promelas	BSA	--	34.0 (T4)	a*,d,e,o, and Fe	Malathion and its hydrolysis products were evaluated with the finding that one such product (diethyl fumarate) was more toxic than Malathion to fathead minnows. Synergism occurred between Malathion and two products of hydrolysis. Continuous exposure resulted in increased toxicity.	Bender(1969), AMIC-3787
Ethyl parathion	Cardium edule	BSA	--	3.3-10 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701
Ethyl parathion	Crangon crangon	BSA	--	0.003-0.01 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
E-314	Steelhead trout (fingerlings)	BSA	--	22.5 (T4)	--	Evaluation of 11 oil dispersants resulted in a ranking for each and a recommendation for use according to the ranking. Ranking was based on toxicity and oil dispersal effectiveness. Corexit 7764 appeared to have the least toxicity	Tracy, et al (1969),AMIC-3834

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
						with fair to good oil dispersion capability.	
E-314	Coho salmon (fingerlings)	BSA in situ	Hood Canal, Hoodsport, Wash.	0.01 (K)	--	same as above	Tracy, et al (1969), AMIC-3834
Fenac (Na salt)	Gammarus fasciatus	BSA	--	greater than 100.0 (T2)	a*	Of the aquatic weed herbicides evaluated, Dicione was the most toxic. Daphnia was generally the most sensitive organism. All of the crustacea were affected by much lower concentration levels of herbicides than indicated by the TL sub 50 values. All of the animals represent important food chain links.	Sanders (1970), AMIC-453
Fenac (Na salt)	Paleomontes kadiakensis	BSA	--	greater than 100.0 (T2)	a*	same as above	Sanders(1970), AMIC-453
Fenac (Na salt)	Asellus brevicaudus	BSA	--	greater than 100.0(T2)	a*	same as above	Sanders(1970), AMIC-453
Fenac (Na salt)	Orconectes nais	BSA	--	greater than 100.0 (T2)	a*	same as above	Sanders (1970),AMIC-453
Fenac (Na salt)	Daphnia magna	BSA	--	greater than 100.0 (T2)	a*	same as above	Sanders (1970),AMIC-453
Fenac (Na salt)	Cypridopsis vidua	BSA	--	greater than 100.0 (T2)	a*	same as above	Sanders (1970),AMIC-453
Fenac (Na salt)	Lepomis macrochirus	BSA	--	19.0 (T2)	a*	same as above	Sanders (1970), AMIC-453
Fenoprop	Rasbora heteromorpha	BCFA and BSA	--	37 (T2)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a	Alabaster (1969), AMIC-5425

					for some species	mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	
Fentin acetate	Pandalus montagui	BSA	--	greater than 33 (T2)	a#(continuous aeration, sea-water, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701
Fenuron	Mercenaria mercenaria (eggs)	L	--	greater than 10.0 (T2)	--	The effect of 52 pesticides on embryonic development of clams and oysters was reported. Synergistic effects with solvents were also reported. Most of the compounds affected development more than survival. Some, however, drastically reduced larval growth. The authors point out the necessity of evaluating the effects of pesticides on all life stages of an organism and note the possibility of selecting chemicals for pest control that would not have serious effect on shellfish.	Davis, et al(1969), AMIC-5990
Fenuron	Mercenaria mercenaria (larvae)	L	--	greater than 5.0 (T12)	--	same as above	Davis, et al(1969), AMIC-5990
Ferric chloride	Carassius auratus	L	--	5-10 (K4)	--	Iron salts were most harmful immediately after dissolving, resulting in gill blockage (reversible), absorption in digestive tract, and iron precipitates in epithelium and renal tubules.	Ashley (1970),AMIC-5436
Ferric sulfate	Carassius auratus	L	--	5-10 (K4)	--	same as above	Ashley (1970), AMIC-5436
Ferrous chloride	Carassius auratus	L	--	5-10 (K4)	--	same as above	Ashley(1970), AMIC-5436
Ferrous sulfate (as Fe)	Acroneuria	BSA	--	16 (T9)	a*,c,d,e,f	Ephemerella (mayfly) was the most sensitive aquatic insect of those studied, and copper the most broadly toxic metal. The authors suggest that	Warnick, et al(1969), AMIC-3767

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
						aquatic insects may not be as sensitive to heavy metals as fish.	
Ferrous sulfate (as Fe)	Ephemerella	BSA	--	0.32 (T4)	a*,c,d,e,f	same as above	Warnick, etal (1969), AMIC-3767
Ferrous sulfate (as Fe)	Hydropsyche	BSA	--	16 (T7)	a*,c,d,e,f	same as above	Warnick, et al(1969), AMIC-3767
Ferrous sulfate	Carassius auratus	L	--	5-10 (K4)	--	Iron salts were most harmful immediately after dissolving, resulting in gill blockage (reversible), absorption in digestive tract, and iron precipitates in epithelium and renal tubules.	Ashley (1970), AMIC-5436
Finasol ESK	Crangon crangon	BSA	--	100-330 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701
Finasol OSR2	Crangon crangon	BSA	--	3300 (T4)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Finasol SC	Crangon crangon	BSA	--	33-100 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Flock o.p. Fly dip	Pasbora	BCFA	--	0.73 (T2)	a*,c,e,f,	One hundred sixty-four	Alabaster,

	heteromorpha	and BSA			hard (HW)or soft (SW) synthetic dilution water, or seawater for some species	pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	(1969),AMIC-5425
Fluorescein sodium	Salmo gairdneri	BSA	--	1,372 (T4)	a*	The dyes Rhodamine B and Fluorescein sodium were found to be relatively non-toxic in ppm concentrations while antimycin was toxic at ppb levels. The author states that neither dye at field use concentrations should significantly influence the activity of Antimycin A against fish.	Marking (1969), AMIC-5729
Fluorescein sodium	Ictalurus punctatus	BSA	--	2,267 (T4)	a*	same as above	Marking (1969),AMIC-5729
Fluorescein sodium	Lepomis macrochirus	BSA	--	3,433 (T4)	a*	same as above	Marking (1969),AMIC-5729
Fluorokill	Rasbora heteromorpha	BCFA and BSA	--	3,500 (T2)	a*,c,e,f, hard (HW) or SOFT(SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425
Fluorokill	Salmo gairdneri	BCFA and BSA	--	1,800 (T2)	a*,c,e,f, hard (HW) or SOFT(SW) synthetic dilution water, or seawater	same as above	Alabaster (1969), AMIC-5425

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
					for some species		
Fluorokill	Platessa vulgaris	BCFA and BSA	--	1,200 (T2)	a*,c,e,f, hard (HW) or SOFT(SW) synthetic dilution water, or seawater for some species	same as above	Alabaster (1969), AMIC-5425
Folizoil	Cardium edule	BSA	--	33-100 (T2)	a*(continuous aeration, sea-water, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701
Folizoil	Crangon crangon	BSA	--	330-1000 (T2)	a*(continuous aeration, sea-water, and daily solution renewal)	same as above	Portmann, et al (1971),AMIC-7701
Folpet	Brachydanio rerio (larvae)	L	--	1.0 (T 30 min)	--	Folpet, Difolatan, and Captan were found to be toxic to zebrafish larvae within 90 min. Difolatan was most toxic while Captan was least toxic. Effects observed were cessation of heartbeat and loss of pigmentation. The authors recommended this as a sensitive, rapid bioassay for these and related compounds.	Abedi,et al (1968), AMIC-3717
Formaldehyde	Salmo gairdneri	BCFA and BSA	--	50 (T2)	a*,c,e,f, hard (HW) or soft	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a	Alabaster (1969), AMIC-5425

					(SW) synthetic dilution water, or seawater for some species	wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	
Formaldehyde	Salmo trutta	BCFA and BSA	--	50 (T2)	a*,c,e,f, hard (HW) or soft (SW)synthetic dilution water, or seawater for some species	same as above	Alabaster (1969), AMIC-5425
Formaldehyde	Crangon crangon	BSA	--	330-1000 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701
Formaldehyde	Platicthys flesus	BSA	--	100-330 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Formalin	Salmo gairdneri	L	--	200-400 (SB, 4-6 hr)	f	Caudal arterial blood samples were taken at selected time intervals and evaluated for acid-base balance and for gill, kidney, and liver function by measuring O2 consumption, total CO2, HCO3, Cl(minus), Ca(2 plus), bilirubin, whole blood pH, and Vitamin C depletion. Formalin treatments seemed to be a more severe stress to rainbow gelscff ptele data and discussion are presented.	Wedemeyer (1971),AMIC-3287

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
Formalin	Oncorhynchus kisutch	L	--	200-400 (SB, 4-6 hr)	f	same as above	Wedemeyer (1971), AMIC-3287
Formalin	Trachinotus carolinus (juvenile)	BSA	--	69.1-74.9 (T4)	a,c,e,f,i, and sulfate, sodium, calcium, potassium, magnesium, carbonate, bicarbonate, salinity	In this study of pompano salinity was controlled at 10, 20, and 30 ppt and investigated as a variable. Acriflavin, formalin, and potassium permanganate were slightly more toxic at the highest salinity, while copper sulfate was slightly less toxic. These compounds are used as prophylactic bacterial treatments. All appeared to be reasonably safe to use excepte possibly potassium permanganate.	Birdsong, et al (1971), AMIC-5570
Formalin	Roccus saxatilis (fingerlings)	BSA	--	18 (T4)	a*,c,d,e, f,p, and iron	Striped bass fingerlings were apparently much more sensitive to therapeutic and herbicidal compounds than many freshwater fish.	Wellborn (1969), AMIC-5723
Formic acid	Carcinus maenas	BSA	--	80-90 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701
Formothion	Puntius ticto	--	--	0.165 (T4)	a,c,d,e,f	Of the pesticides investigated, the most toxic was Klofos followed in decreasing order by Sumithion, Malathion, Formithion, Dimecron, Sevin, and BHC. The author cites the need for more selective pesticides nontoxic to fish or antagonistic agents for reducing fish toxicity.	Bhatia (1971), AMIC-5423
Formothion	Rasbora heteromorpha	BCFA and BSA	--	1.2 (T2)	a*,c,e,f, hard (HW) or soft (SW) synthetic	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude.. Knowing the toxicity and	Alabaster (1969), AMIC-5425

					dilution water, or seawater for some species	percentage of all comoonents of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	
Furfural	Rasbora heteromorpha	BCFA and BSA	--	23 (T2)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opoosite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425
F.O. 300-B	Steelhead trout (fingerlings)	BSA	--	65.0 (T4)	--	Evaluation of 11 oil disoersants resulted in a ranking for each and a recommendation for use according to the ranking. Ranking was based on toxicity and oil dispersal effectiveness. Corexit 7764 anoeared to have the least toxicity with fair to good oil dispersion capability.	Tracy, et al (1969), AMIC-3834
F.O. 300-B	Coho salmon (fingerlings)	BSA in situ	Hood Canal, Hoodsport, Wash.	4.0 (K)	--	same as above	Tracy, et al (1969), AMIC-3834
Gamlen CW	Cardium edule	BSA	--	33-100 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, oure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701
Gamlen CW	Pandalus montagui	BSA	--	10-33 (T2)	a*(continuous aeration, seawater, and daily solution	same as above	Portmann, et al (1971), AMIC-7701

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
					renewal)		
Gamlen D	Cardium edule	BSA	--	33 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Gamlen D	Crangon crangon	BSA	--	10 (T2)	a*(continuous aeration, sea water, and daily solution ronewal)	same as above	Portmann, et al (1971), AMIC-7701
Gamlen D	Pandalus montagui	BSA	--	10 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971),AMIC-7701
Gamlen OSR	Carcinus maenas	BSA	--	10-33 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Gamlen OSR	Cardium edule	BSA	--	10-33 (T2)	a*(continuous aoration, seawater, and daily	same as above	Portmann, et al (1971), AMIC-7701

					solution renewal)		
Gamlen OSR	Crangon crangon	BSA	--	10 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Gamlen OSR	Ostrea edulis	BSA	--	15-55 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Gamlen PBX	Crangon crangon	BSA	--	330-1000 (T4)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Gamlen WBX	Crangon crangon	BSA	--	100-330 (T4)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Gamma BHC	Rasbora heteromorpha	BCFA and BSA	--	0.045 (T2)	a*,c,e,f, hard (HW) or SOFT(SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was	Alabaster (1969), AMIC-5425

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
						found to be essential.	
Gesapax	Pandalus montaqui	BSA	--	33 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701
Globe terramycin pet tabs	Roccus saxatilis (fingerlings)	BSA	--	178 (T4)	a*,c,d,e, f,p, and iron	Striped bass fingerlings were apparently much more sensitive to therapeutic and herbicidal compounds than many freshwater fish.	Wellborn (1969), AMIC-5723
Gloquat C	Crangon crangon	BSA	--	100-300 (T2)	a*(continuous aeration, sea water, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701
Gramoxone W (J.F. 1137)	Rasbora heteromorpha	BCFA and BSA	--	17 (T2, hardwater)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425
Gramoxone W (J.F. 1137)	Rasbora heteromorpha	BCFA and BSA	--	46 (T2, softwater)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution	same as above	Alabaster (1969), AMIC-5425

					water, or seawater for some species		
Gramoxone (J.F. 1341)	Rasbora heteromorpha	BCFA and BSA	--	570 (T2, hardwater)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	same as above	Alabaster (1969), AMIC-5425
Gramoxone (J.F. 1341)	Rasbora heteromorpha	BCFA and BSA	--	200 (T2, softwater)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	same as above	Alabaster (1969), AMIC-5425
Griseofulvin	Mercenaria mercenaria (eggs)	L	--	less than 0.25 (T2)	--	The effect of 52 pesticides on embryonic development of clams and oysters was reported. Synergistic effects with solvents were also reported. Most of the compounds affected development more than survival. Some, however, drastically reduced larval growth. The authors point out the necessity of evaluating the effects of pesticides on all life stages of an organism and note the possibility of selecting chemicals for pest control that would not have serious effect on shellfish.	Davis, et al(1969), AMIC-5990
Griseofulvin	Mercenaria mercenaria (larvae)	L	--	less than 1.0 (T12)	--	same as above	Davis, et al(1969), AMIC-5990
Gulf agent 1009	Crangon crangon	BSA	--	330 (T4)	a*(continuous aeration, seawater, and daily solution	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most	Portmann, et al (1971), AMIC-7701

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
					renowal)	published data of this type deal with toxicity of chemicals to freshwater organisms.	
Guthion	Ictalurus punctatus	BSA	--	3.29 (T4)	a, synthetic testwater	Organochlorine insecticides were the most toxic compounds, organophosphates intermediate, carbamates the least toxic. Brown trout was the species most susceptible to organochlorines, coho salmon the most susceptible to carbamates, and goldfish were the least susceotible of all species. Safe concentrations established by bioassays with salmonids or centrarchids would likely be safe for cyprinids and ictalurids. Safe levels for ictalurids or cyprinids would probably be hazardous for centrarchids and salmonids. The use of goldfish in bioassays was discouraged.	Macek, et al(1970), AMIC-5510
Guthion	Ictalurus melas	BSA	--	3.50 (T4)	a, synthetic test water	same as above	Macek, et al(1970), AMIC-5510
Guthion	Carassius auratus	BSA	--	4.27 (T4)	a, synthetic test water	same as above	Macek, et al (1970),AMIC-5510
Guthion	Cyprinus carpio	BSA	--	0.695 (T4)	a, synthetic test water	same as above	Macek, et al(1970), AMIC-5510
Guthion	Pimephales promelas	BSA	--	0.295 (T4)	a, synthetic test water	same as above	Macek, et al(1970), AMIC-5510
Guthion	Lepomis macrochirus	BSA	--	0.022 (T4)	a, synthetic test water	same as above	Macek, et al(1970), AMIC-5510
Guthion	Lepomis microlophus	BSA	--	0.052 (T4)	a, synthetic test water	same as above	Macek, et al(1970), AMIC-5510

Guthion	Micropterus salmoides	BSA	--	0.005 (T4)	a, synthetic test water	same as above	Macek, et al(1970), AMIC-5510
Guthion	Salmo gairdneri	BSA	--	0.014 (T4)	a, synthetic test water	same as above	Macek, et al(1970), AMIC-5510
Guthion	Salmo trutta	BSA	--	0.004 (T4)	a, synthetic test water	same as above	Macek, et al(1970), AMIC-5510
Guthion	Oncorhynchus kisutch	BSA	--	0.017 (T4)	a, synthetic test water	same as above	Macek, et al(1970), AMIC-5510
Guthion	Perca flavescens	BSA	--	0.013 (T4)	a, synthetic test water	same as above	Macek, et al(1970), AMIC-5510
Guthion	Palaemonetes kadiakensis (resistant)	BSA	--	0.0044-0.0168 (T1)	a*	Bioassays were conducted with shrimp from three areas of intensive pesticide use and from an unexposed area. Previously exposed shrimp were from 1 to 25 times more resistant than unexposed shrimp. Both types of shrimp were also exposed in cages to waters of the contaminated areas. Susceptible shrimp suffered 66 percent more mortality than did resistant shrimp. The toxicity of the insecticides ranked in descending order was as follows: most toxic, Endrin, DDT, Methyl parathion, Parathion; medium toxicity, Guthion, Lindane, Toxaphene, Strobane; lease toxic Chlordane, Sevin, and Heptachlor.	Naqvi, et al (1970), AMIC-5519
Guthion	Palaemonetes kadiakensis (non-resistant)	BSA	--	0.0089 (T1)	a*	same as above	Naqvi, et al (1970), AMIC-5519
Guthion	Tubifex tubifex	FL and BSA	Belzoni, Miss.	1.00 (NTE)	--	The response of pesticide-resistant aquatic organisms to various pesticides was compared to the response of non-resistant species. Pesticide-resistant species were collected at Belzoni and non-resistant species at State College. Copepods, clams, snails, and sludge worms from Belzoni were considerably more tolerant to pesticides than the non-resistant	Naqvi, etal (1969), AMIC-5979

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
						organisms. The authors note that the effect of increased tolerance in the organisms is an increase in the amount of pesticide residues available to animals of higher trophic levels.	
Guthion	Mercenaria mercenaria (eggs)	L	--	0.86 (T2)	--	The effect of 52 pesticides on embryonic development of clams and oysters was reported. Synergistic effects with solvents were also reported. Most of the compounds affected development more than survival. Some, however, drastically reduced larval growth. The authors point out the necessity of evaluating the effects of pesticides on all life stages of an organism and note the possibility of selecting chemicals for pest control that would not have serious effect on shellfish.	Davis, et al (1969), AMIC-5990
Guthion	Mercenaria mercenaria (larvae)	L	--	0.86 (T12)	--	same as above	Davis, et al (1969), AMIC-5990
Guthion	Crassostrea virginica (eggs)	L	--	0.62 (T2)	--	same as above	Davis, et al (1969), AMIC-5990
Heptachlor epoxide	Brown bullhead	FRL	Misc. states	0.34 residue (SB)	--	The Bureau of Sport Fisheries continued its fish monitoring program by collecting 147 composite fish samples from 50 nationwide monitoring stations during the fall of 1969. Fish were analyzed for residues of 11 organochlorine insecticides, lipids, and PCB"s.	Henderson, et al (1971), AMIC-1407
Heptachlor epoxide	Carp	FRL	Misc. states	0.04 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1407
Heptachlor epoxide	Channel catfish	FRL	Misc. states	0.03 residue (SB)	--	same as above	Henderson, et al

							(1971), AMIC-1407
Heptachlor epoxide	Smallmouth buffalo	FRL	Misc. states	0.16 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1407
Heptachlor epoxide	Falco peregrinus (immature)	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	0.09 (whole body residue)	--	Peregrine falcons, falcon prey, and other predator species were collected widely and analyzed for DDT, DDE, PCB, and a few other pesticides to a lesser degree. PCB and DDT were found to be widely dispersed globally. PCB was found to be a powerful inducer of hepatic enzymes that degrade oestradiol. Reductions in thickness of egg shells, eggshell weight, and water retention occurred. All affect hatching success. The authors state that the peregrine may be the first species extirpated by global contamination.	Risebrough, et al (1968), AMIC-3844
Heptachlor epoxide	Falco peregrinus (adult)	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	0.18-1.0 (whole body residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
Heptachlor	Gizzard shad	FRL	Misc. states	0.45 residue (SB)	--	The Bureau of Sport Fisheries continued its fish monitoring program by collecting 147 composite fish samples from 50 nationwide monitoring stations during the fall of 1969. Fish were analyzed for residues of 11 organochlorine insecticides, lipids, and PCB"s.	Henderson, etal (1971), AMIC-1407
Heptachlor	Blue catfish	FRL	Misc. states	0.22 residue (SB)	--	same as above	Henderson, etal (1971), AMIC-1407
Heptachlor	Rasbora heteromorpha	BCFA and BSA	--	0.05 (T2)	a#,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a	Alabaster (1969), AMIC-5425

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
					for some species	mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	
Heptachlor	Lepomis cyanellus (Resistant)	BSA	--	1.98 (T2)	a*	Green sunfish from Belzoni, Miss. were resistant to Chlordane, Heptachlor, Lindane, and Strobane, but not to Parathion. Golden shiners from the same location were resistant to Lindane and Strobane, tolerant to Chlordane and Heptachlor, and susceptible to Parathion. Lack of resistance to Parathion indicated lack of agricultural usage of organophosphates in that area. Resistant fish were compared to susceptible ones collected at Starkville.	Minchew, et al(1970), AMIC-5471
Heptachlor	Lepomis cyanellus (Susceptible)	BSA	--	0.07 (T2)	a*	same as above	Minchew, et al(1970), AMIC-5471
Heptachlor	Notemigonus crysoleucas (Resistant)	BSA	--	2.34 (T2)	a*	same as above	Minchew, etal (1970), AMIC-5471
Heptachlor	Notemigonus crysoleucas (Susceptible)	BSA	--	0.49 (T2)	a*	same as above	Mincnew, etal (1970), AMIC-5471
Heptachlor	Palaemonetes kadiakensis (resistant)	BSA	--	0.169-0.273 (T1)	a*	Bioassays were conducted with shrimp from three areas of intensive pesticide use and from an unexposed area. Previously exposed shrimp were from 1 to 25 times more resistant than unexposed shrimp. Both types of shrimp were also exposed in cages to waters of the contaminated areas. Susceptible shrimp suffered 66 percent more mortality than did resistant shrimp. The toxicity of the insecticides ranked in descending order was as follows: most toxic, Endrin, DDT, Methyl parathion, Parathion;	Naqvi, et al (1970), AMIC-5519

						medium toxicity, Guthion, Lindane, Toxaphene, Strobane: lease toxic Chlordane, Sevin, and Heptachlor.	
Heptachlor	Palaemonetes kadlakensis (non-resistant)	BSA	--	0.0406 (T1)	a*	same as above	Naqvi, et al (1970), AMIC-5519
Heptachlor	Heteropneus-tes fossilis	L	--	1.0 (SB 2 hr,K 44 hr)	--	Epidermal lesions of catfish barbels were moderate to severe after exposure noted. Barbel curling and inactivation were associated effects.	Konar (1969), AMIC-5726
Heptachlor	Amphipnous cuchia	BSA	--	2.0 (K3)	a,c,d,e,f	All bioassay animals were collected locally apparently near Muzaffarpur, Bihar, India. The bioassay consisted of a simple jar (8-liter) with daily solution renewal (except for plankton studies in which solutions were not renewed). A safe application rate of 0.813 lb/acre was suggested for survival of most aquatic species.	Konar (1970), AMIC-448
Heptachlor	Anabus testudineus	BSA	--	0.5 (K3)	a,c,d,e,f	same as above	Konar (1970), AMIC-448
Heptachlor	Channa punctatus (fry)	BSA	--	0.001 (K11)	a,c,d,e,f	same as above	Konar (1970), AMIC-448
Heptachlor	Channa punctatus (adult)	BSA	--	2.0 (K2)	a,c,d,e,f	same as above	Konar (1970), AMIC-448
Heptachlor	Esomus danrica	BSA	--	0.2 (K4)	a,c,d,e,f	same as above	Konar (1970), AMIC-448
Heptachlor	Heteropneus-tes fossilis (fry)	BSA	--	0.016 (K2)	a,c,d,e,f	same as above	Konar (1970),AMIC-448
Heptachlor	Heteropneus-tes fossilis (adult)	BSA	--	1.0 (K2)	a,c,d,e,f	same as above	Konar(1970), AMIC-448

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
							AMIC-448
Heptachlor	Daphnia	BSA	--	0.1 (K)	a,c,d,e,f	same as above	Konar (1970),AMIC-448
Heptachlor	Diaptomus	BSA	--	0.1 (K)	a,c,d,e,f	same as above	Konar (1970), AMIC-448
Heptachlor	Gastrotricha	BSA	--	0.1 (NT)	a,c,d,e,f	same as above	Konar (1970), AMIC-448
Heptachlor	Nauplius	BSA	--	0.1 (K)	a,c,d,e,f	same as above	Konar (1970), AMIC-448
Heptachlor	Pandorina	BSA	--	0.001 (K)	a,c,d,e,f	same as above	Konar (1970), AMIC-448
Heptachlor	Volvox	BSA	--	0.001 (K)	a,c,d,e,f	same as above	Konar (1970), AMIC-448
Heptachlor	Anisoptera (nymphs)	BSA	--	0.01 (K5)	a,c,d,e,f	same as above	Konar (1970), AMIC-448
Heptachlor	Belostoma indica	BSA	--	2.0 (K3)	a,c,d,e,f	same as above	Konar (1970), AMIC-448
Heptachlor	Cybister sp.	BSA	--	0.1 (K3)	a,c,d,e,f	same as above	Konar (1970), AMIC-448
Heptachlor	Dytiscus sp. (larvae)	BSA	--	0.05 (K2)	a,c,d,e,f	same as above	Konar (1970),AMIC-448
Heptachlor	Dytiscus sp. (adult)	BSA	--	0.1 (K3)	a,c,d,e,f	same as above	Konar (1970), AMIC-448

Heptachlor	Hydrophilus sp.	BSA	--	0.08 (K3)	a,c,d,e,f	same as above	Konar(1970), AMIC-448
Heptachlor	Nepa sp.	BSA	--	0.04 (K6)	a,c,d,e,f	same as above	Konar (1970), AMIC-448
Heptachlor	Notonecta sp.	BSA	--	0.006 (K2)	a,c,d,e,f	same as above	Konar (1970), AMIC-448
Heptachlor	Ranatra filiformis	BSA	--	0.006 (K3)	a,c,d,e,f	same as above	Konar (1970), AMIC-448
Heptachlor	Sphaerodema annulatum	BSA	--	0.007 (K3)	a,c,d,e,f	same as above	Konar (1970), AMIC-448
Heptachlor	Mystus vittatus	BSA	--	0.5 (K1)	a,c,d,e,f	same as above	Konar (1970), AMIC-448
Heptachlor	Nandus nandus	BSA	--	0.16 (K2)	a,c,d,e,f	same as above	Konar (1970), AMIC-448
Heptachlor	Puntius sophore	BSA	--	0.1 (K1)	a,c,d,e,f	same as above	Konar (1970), AMIC-448
Heptachlor	Trichogaster fasciatus (young)	BSA	--	0.04 (K1)	a,c,d,e,f	same as above	Konar (1970),AMIC-448
Heptachlor	Trichogaster fasciatus (adult)	BSA	--	0.3 (K3)	a,c,d,e,f	same as above	Konar (1970),AMIC-448
Heptachlor	Brachionus	BSA	--	0.1 (NTE)	a,c,d,e,f	same as above	Konar (1970), AMIC-448
Heptachlor	Ceriodaphnia	BSA	--	0.1 (K)	a,c,d,e,f	same as above	Konar (1970), AMIC-448
Heptachlor	Closterium	BSA	--	0.001 (K)	a,c,d,e,f	same as above	Konar (1970), AMIC-448
Heptachlor	Cyclops	BSA	--	0.1 (K)	a,c,d,e,f	same as above	Konar (1970),AMIC-448
Heptachlor	Cypris	BSA	--	0.1 (K)	a,c,d,e,f	same as above	Konar (1970),

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
Heptachlor	Labeo rohita (early fingerling)	BSA	--	0.02 (K1)	a,c,d,e,f	same as above	Konar (1970),AMIC-448
Heptachlor	Labeo rohita (late fingerling)	BSA	--	0.20 (K2)	a,c,d,e,f	same as above	Konar (1970),AMIC-448
Hexachlorobenzene	Anguilla rostrata	FRL	St. John, N.B., Can.	0.01 (residue)	--	PCB"s were found in higher concentrations than organochlorine pesticides in all fish analyzed. The authors point out that PCB is less toxic in an acute sense than organochlorines, that little is known of sublethal PCB effects, and that more knowledge of PCB distribution and effects is needed.	Zitko (1971), AMIC-3715
Hexachlorobenzene	Esox niger	FRL	St. John, N.B., Can.	0.03 (residue)	--	same as above	Zitko(1971), AMIC-3715
Hexachlorobenzene	Salmo salar	FRL	St. John, N.B., Can.	0.002 (residue)	--	same as above	Zitko(1971), AMIC-3715
Hexachlorobenzene	Clupea harengus	FRL	St. John, N.B., Can.	0.003-0.006 (residue)	--	same as above	Zitko (1971), AMIC-3715
Hexachlorobenzene	Scomber scombrus	FRL	St. John, N.B., Can.	0.001 (residue)	--	same as above	Zitko (1971), AMIC-3715
Hexachlorodimethyl sulfone	Phormidium ambiguum	L	--	0.5-10.0 (NTE)	--	Of 74 chemicals evaluated as algicides, only 9 were more toxic than CuSO4. None inhibited growth of mat-forming algae for more than 2 weeks. CuSO4 formulated with certain wetting agents was more toxic than CuSO4 alone. Copper chloramine was also found to be more toxic than CuSO4. No wetting agents were found to be inhibitory at the concentrations investigated (0.05 and 0.005 ppm). Also reported are factors affecting growth of algae in canals to determine whether there were leads to controlling algae by environmental	Otto(1970), AMIC-892

						management. No practical environmental means were found.	
Hexadecanol (Praparat Alfol WV 10)	Copepods	BSA	--	(NTE)	--	The formulation was applied to the water surface at concentration levels to yield a more or less continuous monomolecular layer. Gerris and other surface-oriented aquatic insects as well as insect larvae that surface to breathe and hatch could not maintain themselves at the surface and therefore sank and suffocated.	Mann (1971),AMIC-3079
Hexadecanol (Praparat Alfol WV 10)	Daphnia	BSA	--	(NTE)	--	same as above	Mann (1971),AMIC-3079
Hexadecanol (Praparat Alfol WV 10)	Tubificids	BSA	--	(NTE)	--	same as above	Mann (1971),AMIC-3079
Hexadecanol (Praparat Alfol WV 10)	Lebistes reticulatus	BSA	--	(NTE)	--	same as above	Mann(1971), AMIC-3079
Hexadecanol (Praparat Alfol WV 10)	Salmo gairdneri	BSA	--	(NTE)	--	same as above	Mann (1971),AMIC-3079
Hexadecanol (Praparat Alfol WV 10)	Gerris	BSA	--	(Suffocation)	--	same as above	Mann (1971),AMIC-3079
Hilivale Fly dip	Rasbora heteromorpha	BCFA and BSA	--	2.1 (T1)	a*,c,e,f, hard (HW) or soft (SW) synthetic water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster, (1969),AMIC-5425
Histamine phosphate	Negaprion brevirostris (1-3 kg)	BSA	--	48 (NTE 2 hr)	a,c,e	Data from study of drug effects on young lemon sharks were treated mathematically to demonstrate applicability of classical rate theory to the study of chemical shark deterrents.	Baldridge (1969), AMIC-3832

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
						Incapacitation (narcosis) was the primary parameter timed for effectiveness. This was usually quite rapid for the more effective drugs.	
Hobstone OSO	Crangon crangon	BSA	--	1.0-3.3 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701
Hoc SC 1780	Crangon crangon	BSA	--	330-1000 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701
Holl-Chem 622	Steelhead trout (fingerlings)	BSA	--	3.2 (T4)	--	Evaluation of 11 oil dispersants resulted in a ranking for each and a recommendation for use according to the ranking. Ranking was based on toxicity and oil dispersal effectiveness. Corexit 7764 appeared to have the least toxicity with fair to good oil dispersion capability.	Tracy, et al(1969), AMIC-3834
Holl-Chem 622	Coho salmon (fingerlings)	BSA in situ	Hood Canal, Hoodsport, Wash.	0.1 (K)	--	same as above	Tracy, et al (1969), AMIC-3834
Houghtosolve	Crangon crangon	BSA	--	10-33 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater	Portmann, et al (1971), AMIC-7701

						organisms.	
Hydrochloric acid	Brook trout	L	--	pH 3.5 (SB4)	--	Excessive mucin accumulated in the gill region of exposed trout. No evidence of enhanced hemopoiesis or increased red cell destruction was found. The authors concluded that one of the reasons for trout deaths in acid water is that compensatory erythropoiesis does not occur or is not rapidly initiated.	Vaala, et al (1969), AMIC-5709
Hydrochloric acid	Brachycentrus americanus (larvae and nymphs)	BCFA	--	pH 1.21-1.8 (T4)	a,c,d,e	Aquatic insects generally were tolerant of acid conditions for at least one week. The organisms died at pH values below those normally found in streams. The authors point out that ecological factors in streams may cause different results. Research on long-term effects on molting, growth, reproduction, and survival was recommended.	Bell, et al (1969), AMIC-5988
Hydrochloric acid	Ephemerella subvaria (larvae and nymphs)	BCFA	--	pH 4.35-5.05 (T4)	a,c,d,e	same as above	Bell, et al (1969), AMIC-5988
Hydrochloric acid	Hydropsyche betteni (larvae and nymphs)	BCFA	--	pH 3-3.35 (T4)	a,c,d,e	same as above	Bell, et al (1959), AMIC-5988
Hydrochloric acid	Taeniopteryx maura (larvae and nymphs)	BCFA	--	pH 3.07-3.48 (T4)	a,c,d,e	same as above	Bell, et al (1969), AMIC-5988
Hydrochloric acid	Boyeria vinosa (larvae and nymphs)	BCFA	--	pH 3.18-3.35 (T4)	a,c,d,e	same as above	Bell, et al (1969), AMIC-5988
Hydrochloric acid	Acroneuria lycorias (larvae and nymphs)	BCFA	--	pH 2.90-3.74 (T4)	a,c,d,e	same as above	Bell, et al (1969), AMIC-5988
Hydrochloric acid	Stenonema rubrum (larvae and nymphs)	BCFA	--	pH 3.15-3.41 (T4)	a,c,d,e	same as above	Bell, et al (1969), AMIC-5988
Hydrochloric acid	Ophiogomphus rupinsulensis	BCFA	--	pH 3.31-3.71 (T4)	a,c,d,e	same as above	Bell, et al (1969),

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
	(larvae and nymphs)						AMIC-5988
Hydrochloric acid	Isogenus frontalis (larvae and nymphs)	BCFA	--	pH 3.20-4.04 (T4)	a,c,d,e	same as above	Bell, et al (1969), AMIC-5988
Hydrochloric acid	Pteronarcys dorsata (larvae and nymphs)	BCFA	--	pH 3.90-4.73 (T4)	a,c,d,e	same as above	Bell, et al (1969), AMIC-5988
Hydrochloric acid	Carcinus maenas	BSA	--	240 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701
Hydrochloric acid	Crangon crangon	BSA	--	260 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Hydrogen sulfide	Esox lucius (eggs)	BSCFA	--	0.030-0.032 (T4)	a,c,e	Laboratory studies were designed to test the effect of hydrogen sulfide on pike eggs and sac fry and the effect of oxygen concentrations on hydrogen sulfide toxicity. Eggs subjected to hydrogen sulfide produced a higher percentage of sac fry with anatomical malformations. Sac fry hatched from eggs held at the higher hydrogen sulfide concentrations were smaller than the controls. Sac fry subjected to hydrogen sulfide showed decreased growth rates at the higher concentrations. The level of dissolved oxygen was significant only in relation	Adelman, et al (1970), AMIC-5516

						to mortality of sac fry. Experiments with pike eggs indicate that hydrogen sulfide and oxygen acted independently in causing mortality.	
Hydrogen sulfide	Esox lucius (sac fry)	BSCFA	--	0.009-0.026 (T4)	a,c,e	same as above	Adelman, et al (1970), AMIC-5516
Hydrothol 191	Lepomis microlophus	FP	Tishomingo, Okla.	0.03-0.3 (SB14)	--	Of a number of organs inspected, the gills, liver, and testes of redear sunfish were apparently the most severely affected. Systemic blood dyscrasia was also noted at 0.5 ppm Hydrothol in histopathological sections.	Eller (1969), AMIC-5459
Hydrothol 191	Gammarus fasciatus	BSA	--	0.48 (T4)	a*	Of the aquatic weed herbicides evaluated, Dicione was the most toxic, Daphnia was generally the most sensitive organism. All of the crustacea were affected by much lower concentration levels of herbicides than indicated by the TL sub 50 values. All of the animals represent important food chain links.	Sanders (1970), AMIC-453
Hydroxyacetic acid (glycolic acid)	Phormidium ambiguum	L	--	0.5-10.0 (NTE)	--	Of 74 chemicals evaluated as algicides, only 9 were more toxic than CuSO4. None inhibited growth of mat-forming algae for more than 2 weeks. CuSO4 formulated with certain wetting agents was more toxic than CuSO4 alone. Copper chloramine was also found to be more toxic than CuSO4. No wetting agents were found to be inhibitory at the concentrations investigated (0.05 and 0.005 ppm). Also reported are factors affecting growth of algae in canals to determine whether there were leads to controlling algae by environmental management. No practical environmental means were found.	Otto (1970), AMIC-892
H2SiF6 (as FLUORIDE)	Gammarus pseudo-limnaeus	BCF	--	0.08-0.13 (NTE)	a*,c,d,e,f,r*,s	Chloramine toxicity was very carefully studied using weight reduction and reproduction over 15 to 21 week exposure periods. Loss of weight and ability to reproduce were observed at concentrations less than that observed for toxicity. The lowest chloramine concentration having no significant effect was less than 3.4 ppb for Gammarus and 0.017 ppb for the fathead minnow.	Arthur, et al (1971), AMIC-3290

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
H_2SIF_6 (as FLUORIDE)	Pimephales promelas	BCF	--	0.8-0.13 (NT)	a*,c,d,e,f,r*,s	same as above	Arthuret al (1971), AMIC-3290
IAA	Wolffia papulifera	L	--	100 (K)	Hunter's medium diluted 1:5	All compounds were harmful to duckweed to some degree. Decreased populations were noted at non-lethal concentrations and some compounds (Malathion and 2,4-D) caused teratogenic effects at concentrations as low as 1 ppm.	Worthley, et al (1971), AMIC-3233
Ialine brushweed killer	Salmo gairdneri	BCFA and BSA	--	27 (T2)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425
Ialine grass growth regulator (Regulox)	Salmo gairdneri	BCFA and BSA	--	56 (T2)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	same as above	Alabaster (1969), AMIC-5425
Ialine vergicide weedkiller D	Salmo gairdneri	BCFA and BSA	--	3.3 (T2)	a*,c,e,f, hard(HW) or soft (SW) synthetic dilution water, or seawater for some species	same as above	Alabaster (1969), AMIC-5425

Iodoacetic acid	Phormidium ambiguum	L	--	0.5-10.0 (100 percent growth inhibited 14)	--	Of 74 chemicals evaluated as algicides, only 9 were more toxic than $CuSO_4$. None inhibited growth of mat-forming algae for more than 2 weeks. $CuSO_4$ formulated with certain wetting agents was more toxic than $CuSO_4$ alone. Copper chloramine was also found to be more toxic than $CuSO_4$. No wetting agents were found to be inhibitory at the concentrations investigated (0.05 and 0.005 ppm). Also reported are factors affecting growth of algae in canals to determine whether there were leads to controlling algae by environmental management. No practical environmental means were found.	Otto (1970), AMIC-892
Ioxynil Na	Rasbora heteromorpha	BCFA and BSA	--	68 (T2, hardwater)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1959), AMIC-5425
Ioxynil Na	Rasbora heteromorpha	BCFA and BSA	--	3.3 (T2, softwater)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	same as above	Alabaster (1969), AMIC-5425
IPC	Gammarus fasciatus	BSA	--	19.0 (T4)	a*	Of the aquatic weed herbicides evaluated, Dicione was the most toxic, Daphnia was generally the most sensitive organism. All of the crustacea were affected by much lower concentration levels of herbicides than indicated by	Sanders (1970), AMIC-453

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
						the TL sub 50 values. All of the animals represent important food chain links.	
Iron	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	44 (dorsal muscle residue)	--	Fish collected from an effluent pipe of a steam plant and from offshore waters of Catalina Island were analyzed for trace element content. Trace element content of the effluent water was at least 5 times greater than that of normal sea water for cadmium, copper, nickel, zinc, and chromium. Livers of fish from the effluent were nearly twice the size of those from the ocean. Greatest differences in concentration occurred with aluminum, cadmium, and nickel. Silver, barium, lithium, and lead showed the least differences. The author concluded that trace element analysis of tissues could be used to determine the effect of pollutants on marine organisms.	Stapleton (1968), AMIC-5980
Iron	Paralabrax clathratus	FM	Catalina Island, Cal.	32 (dorsal muscle residue)	--	same as above	Stapleton (1968), AMIC-5980
Iron	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	46 (ventral muscle residue)	--	same as above	Stapleton (1968), AMIC-5980
Iron	Paralabrax clathratus	FM	Catalina Island, Cal.	43 (ventral muscle residue)	--	same as above	Stapleton (1968), AMIC-5980
Iron	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	83 (gonads residue)	--	same as above	Stapleton (1968), AMIC-5980
Iron	Paralabrax clathratus	FM	Catalina Island, Cal.	122 (gonads residue)	--	same as above	Stapleton (1968), AMIC-5980
Iron	Paralabrax clathratus (gravid	FM	Catalina Island, Cal.	110 (gonads residue)	--	same as above	Stapleton (1968), AMIC-5980

	females)						
Iron	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	160 (liver residue)	--	same as above	Stapleton (1968), AMIC-5980
Iron	Paralabrax clathratus	FM	Catalina Island, Cal.	205 (liver residue)	--	same as above	Stapleton (1968), AMIC-5980
Iron	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	72 (integument residue)	--	same as above	Stapleton (1968), AMIC-5980
Iron	Paralabrax clathratus	FM	Catalina Island, Cal.	72 (integument residue)	--	same as above	Stapleton (1968), AMIC-5980
Iron	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	480 (heart residue)	--	same as above	Stapleton (1968), AMIC-5980
Iron	Paralabrax clathratus	FM	Catalina Island, Cal.	640 (heart residue)	--	same as above	Stapleton (1968), AMIC-5980
Iron	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	120 (eyeball residue)	--	same as above	Stapleton (1968), AMIC-5980
Iron	Paralabrax clathratus	FM	Catalina Island, Cal.	165 (eyeball residue)	--	same as above	Stapleton (1968), AMIC-5980
Iso-propyl 2,4,dinitro-6-sec-butylphenyl carbonate	Rasbora heteromorpha	BCFA and BSA	--	0.024 (T2)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater forsome species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
I.C.I. Summer sheep dip	Rasbora heteromorpha	BCFA and BSA	--	4.1 (T2)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster, (1969), AMIC-5425
Jansolv-60	Pimephales promelas	BSA	--	approx. 56.0 (T4)	c,d,e,f	Toxicity of six oil spill dispersants was determined along with BOD values. Pond water was used as diluent and oil was included in the experiment. Oil markedly reduced toxicity of all dispersants. Data are given as "most probable" 96-hr TL sub m.	Zillich (1969), AMIC-2909
Jansolv-60	Pimephales promelas	BSA	--	approx. 7.5 (MSC)	c,d,e,f	same as above	Zillich (1969), AMIC-2909
Jansolv-60	Biochemical oxygen demand	L	--	350,000	c,d,e,f	same as above	Zillich (1969), AMIC-2909
Jan-Solv-60	Steelhead trout (fingerlings)	BSA	--	35.5 (T4)	--	Evaluation of 11 oil dispersants resulted in a ranking for each and a recommendation for use according to the ranking. Ranking was based on toxicity and oil dispersal effectiveness. Corexit 7764 appeared to have the least toxicity with fair to good oil dispersion capability.	Tracy, et al (1969), AMIC-3834
Jan-Solv-60	Coho salmon (fingerlings)	BSA in situ	Hood Canal, Hoodsport, Wash.	0.8 (K)	--	same as above	Tracy, et al (1969), AMIC-3834
Juglone	Salmo gairdneri	BSA	--	0.0382 (T4)	c	Bioassays were conducted at 12 C. The toxicity of Juglone to rainbow trout and bluegills was not altered	Marking (1970), AMIC-5517

						significantly in waters of different temperature or hardness. Standard (pH 7.4) and buffered (pH 9.0) solutions of Juglone aged for one week effectively killed rainbow trout although approximately three times as much Juglone was required at the higher pH. Juglone is easily reduced to less toxic components by factors in the natural environment. However, Juglone is sufficiently persistent to eliminate target fish.	
Juglone	Esox lucius	BSA	--	0.0271 (T4)	c	same as above	Marking (1970), AMIC-5517
Juglone	Carassius auratus	BSA	--	0.080 (T4)	c	same as above	Marking (1970), AMIC-5517
Juglone	Cyprinus carpio	BSA	--	0.088 (T4)	c	same as above	Marking (1970), AMIC-5517
Juglone	Catostomus commersoni	BSA	--	0.060 (T4)	c	same as above	Marking (1970), AMIC-5517
Juglone	Ictalurus melas	BSA	--	0.0757 (T4)	c	same as above	Marking (1970), AMIC-5517
Juglone	Ictalurus punctatus	BSA	--	0.0367 (T4)	c	same as above	Marking (1970), AMIC-5517
Juglone	Lepomis cyanellus	BSA	--	0.0469 (T4)	c	same as above	Marking (1970), AMIC-5517
Juglone	Lepomis macrochirus	BSA	--	0.0429 (T4)	c	same as above	Marking (1970), AMIC-5517
Karmex	Roccus saxatilis (fingerlings)	BSA	--	3.0 (T4)	a*,c,d,e,f,p and iron	Striped bass fingerlings were apparently much more sensitive to therapeutic and herbicidal compounds than many freshwater fish.	Wellborn (1969), AMIC-5723
Kelthane	Tubifex tubifex	FL and	Belzoni, Miss.	0.50 (NTE)	--	The response of pesticide-resistant aquatic organisms to	Naqvi, et al (1969),

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
		BSA				various pesticides was compared to the response of non-resistant species. Pesticide-resistant species were collected at Belzoni and non-resistant species at State College. Copepods, clams, snails, and sludge worms from Belzoni were considerably more tolerant to pesticides than the non-resistant organisms. The authors note that the effect of increased tolerance in the organisms is an increase in the amount of pesticide residues available to animals of higher trophic levels.	AMIC-5979
Ketoendrin	Anacystis nidulans	L	--	0.5-1.0 (growth inhibited)	a*,c*,r SM	Metabolic products of Aldrin, Dieldrin, and Endrin can be as toxic as the parent compounds, as shown by OD measurement.	Batterton, al (1971), AMIC-1471
Ketoendrin	Agmenellum quadrup-licatum	L	--	NTE	a*,c*,r SM	same as above	Batterton, et al(1971), AMIC-1471
Klofos	Puntius ticto	--	--	0.00017 (T4)	a,c,d,e,f	Of the pesticides investigated, the most toxic was Klofos followed in decreasing order by Sumithion, Malathion, Formithion, Dimecron, Sevin, and BHC. The author cites the need for more selective pesticides nontoxic to fish or antagonistic agents for reducing fish toxicity.	Bhatia (1971),AMIC-5423
LAS	Pimephales promelas	BCFA	--	3.5 (T4)	a*,e	LAS acted synergistically with parathion to cause less survival of fatheds but had an indeterminate effect with DDT and no synergistic effect with Endrin.	Solon, et al (1969), AMIC-3785
Lauryl ether sulfate (plus ethylene oxide)	Cardium edule	BSA	--	24 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater	Portmann, et al (1971),AMIC-7701

						organisms.	
Lauryl ether sulfate (plus ethylene oxide)	Crangon crangon	BSA	--	greater than100 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann,et al (1971), AMIC-7701
Lauryl ether sulfate (plus ethylene oxide)	Carcinus maenas	BSA	--	greater than100 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann,et al (1971), AMIC-7701
Lauryl ether sulfate (plus ethylene oxide)	Pandalus montaqui	BSA	--	greater than100 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann,et al (1971), AMIC-7701
Lead arsenate	Fish (not specified)	--	--	greater than 10-100 (K)	--	Approximate toxicities of numerous pesticides commonly used in Britain were summarized. An excellent brief, general discussion of toxicity testing is also present.	Mawdesley-Thomas(1971) AMIC-1056
Lead carbonate	Carassius auratus	L	--	110 (T7)	a,c	In addition to toxicity data, conditioned avoidance response was studied at sublethal concentrations. The lowest concentration of metal resulting in significant impairment was; arsenic, 0.10; lead, 0.07; mercury, 0.003; and selenium, 0.25. Deleterious effects occurred at metal concentrations approximately similar to potable water standards.	Weir, etal (1970), AMIC-739
Lead nitrate (as lead)	Cardium edule	BSA	--	greater than 500 (T2)	a*(continuous aeration, seawater, and daily solution	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most	Portmann, et al (1971), AMIC-7701

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
					renewal)	published data of this type deal with toxicity of chemicals to freshwater organisms.	
Lead nitrate (as lead)	Pandalus montagui	BSA	--	375 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Lead nitrate	Carassius auratus	L	--	6.6 (T7)	a,c	In addition to toxicity data, conditioned avoidance response was studied at sublethal concentrations. The lowest concentration of metal resulting in significant impairment was: arsenic, 0.10; lead, 0.07; mercury, 0.003; and selenium, 0.25. Deleterious effects occurred at metal concentrations approximately similar to potable water standards.	Weir, et al (1970), AMIC-739
Lead sulfate (as Pb)	Acroneuria	BSA	--	64 (T14)	a*,c,d,e,f	Ephemerella (mayfly) was the most sensitive aquatic insect of those studied, and copper the most broadly toxic metal. The authors suggest that aquatic insects may not be as sensitive to heavy metals as fish.	Warnick, et al(1969), AMIC-3767
Lead sulfate (as Pb)	Ephemerella	BSA	--	16 (T7)	a*,c,d,e,f	same as above	Warnick, et al(1969), AMIC-3767
Lead sulfate (as Pb)	Hydropsyche	BSA	--	32 (T7)	a*,c,d,e,f	same as above	Warnick, et al(1969), AMIC-3767
Lead	Coregonus clupeaformis	FL	Moose Lake, Can.	0.5 (residue)	--	Concentrations of 13 toxic elements in dressed fish from heavily industrialized and non-industrialized areas were determined. Only mercury exceeded regulatory limits, and concentrations of most elements were essentially the same in fish from both	Uthe, et al (1971), AMIC-3819

						areas.	
Lead	Coregonus clupeaformis	FL	Lake Ontario, Can.	0.5 (residue)	--	same as above	Uthe, et al (1971), AMIC-3819
Lead	Esox lucius	FL	Moose Lake, Can.	0.5 (residue)	--	same as above	Uthe, et al (1971),AMIC-3819
Lead	Esox lucius	FL	Lake St. Pierre, Can.	0.5 (residue)	--	same as above	Uthe, et AL(1971), AMIC-3819
Lead	Esox lucius	FL	Lake Erie, Can.	0.5 (residue)	--	same as above	Uthe, et al (1971),AMIC-3819
Lead	Osmerus mordax	FL	Lake Erie, Can.	0.5 (residue)	--	same as above	Uthe, et al (1971),AMIC-3819
Lead	Perca flavescens	FL	Lake Erie, Can.	0.5 (residue)	--	same as above	Uthe, et al (1971),AMIC-3819
Lead	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	2.1 (dorsal muscle residue)	--	Fish collected from an effluent pipe of a steam plant and from offshore waters of Catalina Island were analyzed for trace element content. Trace element content of the effluent water was at least 5 times greater than that of normal sea water for cadmium, copper, nickel, zinc, and chromium. Livers of fish from the effluent were nearly twice the size of those from the ocean. Greatest differences in concentration occurred with aluminum, cadmium, and nickel. Silver, barium, lithium, and lead showed the least differences. The author concluded that trace element analysis of tissues could be used to determine the effect of pollutants on marine organisms.	Stapleton (1968), AMIC-5980
Lead	Paralabrax clathratus	FM	Catalina Island, Cal.	1.3 (dorsal muscle residue)	--	same as above	Stapleton (1968), AMIC-5980
Lead	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	1.1 (ventral muscle residue)	--	same as above	Stapleton (1968), AMIC-5980

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
Lead	Paralabrax clathratus	FM	Catalina Island, Cal.	1.3 (ventral muscle residue)	--	same as above	Stapleton (1968), AMIC-5980
Lead	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	2.3 (gonads residue)	--	same as above	Stapleton (1968), AMIC-5980
Lead	Paralabrax clathratus	FM	Catalina Island, Cal.	2.2 (gonads residue)	--	same as above	Stapleton (1968), AMIC-5980
Lead	Paralabrax clathratus (gravid females)	FM	Catalina Island, Cal.	1.3 (gonads residue)	--	same as above	Stapleton (1968), AMIC-5980
Lead	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	0.7 (liver residue)	--	same as above	Stapleton (1968), AMIC-5980
Lead	Paralabrax clathratus	FM	Catalina Island, Cal.	1.5 (liver residue)	--	same as above	Stapleton (1968), AMIC-5980
Lead	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	1 (integument residue)	--	same as above	Stapleton (1968), AMIC-5980
Lead	Paralabrax clathratus	FM	Catalina Island, Cal.	1.6 (integument residue)	--	same as above	Stapleton (1968), AMIC-5980
Lead	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	1.3 (heart residue)	--	same as above	Stapleton (1968), AMIC-5980
Lead	Paralabrax clathratus	FM	Catalina Island, Cal.	0.9 (heart residue)	--	same as above	Stapleton (1968), AMIC-5980

Lead	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	2.2 (eyeball residue)	--	same as above	Stapleton (1968), AMIC-5980
Lead	Paralabrax clathratus	FM	Catalina Island, Cal.	3.4 (eyeball residue)	--	same as above	Stapleton (1968), AMIC-5980
Lindane (gamma BHC)	Fish (not specified)	--	--	greater than 0.01-1.0 (K)	--	Approximate toxicities of numerous pesticides commonly used in Britain were summarized. An excellent brief, general discussion of toxicity testing is also present.	Hawdesley-Thomas (1971 AMIC-1056
Lindane	Lepomis cyanellus (Resistant)	BSA	--	1.93 (T2)	a*	Green sunfish from Belzoni, Miss. were resistant to Chlordane, Heptachlor, Lindane, and Strobane, but not to Parathion. Golden shiners from the same location were resistant to Lindane and Strobane, tolerant to Chlordane and Heptachlor, and susceptible to Parathion. Lack of resistance to Parathion indicated lack of agricultural usage of organophosphates in that area. Resistant fish were compared to susceptible ones collected at Starkville.	Minchew, et al(1970), AMIC-5471
Lindane	Lepomis cyanellus (Susceptible)	BSA	--	0.05 (T2)	a*	same as above	Minchew, et al(1970), AMIC-5471
Lindane	Notemigonus crysoleucas (Resistant)	BSA	--	3.14 (T2)	a*	same as above	Minchew, et al(1970), AMIC-5471
Lindane	Notemigonus crysoleucas (Susceptible)	BSA	--	0.15 (T2)	a*	same as above	Minchew, et al(1970), AMIC-5471
Lindane	Ictalurus punctatus	BSA	--	0.044 (T4)	a, synthetic test water	Organochlorine insecticides were the most toxic compounds, organophosphates intermediate, carbamates the least toxic. Brown trout was the species most susceptible to organochlorines, coho salmon the most susceptible to carbamates, and goldfish were the least susceptible of all species. Safe concentrations established by bioassays with salmonids or	Macek, et al(1970), AMIC-5510

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
						centrarchids would likely be safe for cyprinids and ictalurids. Safe levels for ictalurids or cyprinids would probably be hazardous for centrarchids and salmonids. The use of goldfish in bioassays was discouraged.	
Lindane	Ictalurus melas	BSA	--	0.064 (T4)	a, synthetic test water	same as above	Macek, etal (1970), AMIC-5510
Lindane	Carassius auratus	BSA	--	0.131 (T4)	a, synthetic test water	same as above	Macek, etal (1970), AMIC-5510
Lindane	Cyprinus carpio	BSA	--	0.090 (T4)	a, synthetic test water	same as above	Macek, et al(1970), AMIC-5510
Lindane	Pimephales promelas	BSA	--	0.087 (T4)	a, synthetic test water	same as above	Macek, etal (1970), AMIC-5510
Lindane	Lepomis macrochirus	BSA	--	0.068 (T4)	a, synthetic test water	same as above	Macek, etal (1970), AMIC-5510
Lindane	Lepomis microlophus	BSA	--	0.083 (T4)	a, synthetic test water	same as above	Macek, etal (1970), AMIC-5510
Lindane	Micropterus salmoides	BSA	--	0.032 (T4)	a, synthetic test water	same as above	Macek,et al (1970), AMIC-5510
Lindane	Salmo gairdneri	BSA	--	0.027 (T4)	a, synthetic test water	same as above	Macek, etal (1970), AMIC-5510
Lindane	Salmo trutta	BSA	--	0.002 (T4)	a, synthetic test water	same as above	Macek, et al(1970), AMIC-5510
Lindane	Oncorhynchus kisutch	BSA	--	0.041 (T4)	a, synthetic test water	same as above	Macek,et al (1970), AMIC-5510

Lindane	Perca flavescens	BSA	--	0.068 (T4)	a, synthetic test water	same as above	Macek, etal (1970), AMIC-5510
Lindane	Palaemonetes kadlakensis (resistant)	BSA	--	0.014-0.0373 (T1)	a*	Bioassays were conducted with shrimp from three areas of intensive pesticide use and from an unexposed area. Previously exposed shrimp were from 1 to 25 times more resistant than unexposed shrimp. Both types of shrimp were also exposed in cages to waters of the contaminated areas. Susceptible shrimp suffered 66 percent more mortality than did resistant shrimp. The toxicity of the insecticides ranked in descending order was as follows: most toxic, Endrin, DDT, Methyl parathion, Parathion: medium toxicity, Guthion, Lindane, Toxaphene, Strobane: lease toxic Chlordane, Sevin, and Heptachlor.	Naqvi, et al (1970), AMIC-5519
Lindane	Palaemonetes kadlakensis (non-resistant)	BSA	--	0.0051 (T1)	a*	same as above	Naqvi, et al (1970), AMIC-5519
Lindane	Morone saxatilis (fingerlings)	BSA	--	0.4 (T4)	a,c,d,e,f, p	All compounds were investigated because of their probable usage in hatchery production of white bass. Compounds that can be used at recommended concentrations were Aquathol, Casaron, Lindane, and Terramycin concentrate. Those that should not be used were Acriflavine, Bayluscide, Malachite green oxalate, and Malathion.	Wellborn (1971), AMIC-5571
Lindane	Copepods (Cyclops bicuspidus, Cyclops varicans, Cyclops vernalis, Eucyclops agilis, Macrocyclops albidus, Orthocyclops modestus)	FL and BSA	State College, Miss.	0.60 (K2)	--	The response of pesticide-resistant aquatic organisms to various pesticides was compared to the response of non-resistant species. Pesticide-resistant species were collected at Belzoni and non-resistant species at State College. Copepods, clams, snails, and sludge worms from Belzoni were considerably more tolerant to pesticides than the non-resistant organisms. The authors note that the effect of increased tolerance in the organisms is an increase in the amount of pesticide residues available to animals of higher trophic levels.	Naqvi, et al (1969), AMIC-5979

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
Lindane	Copepods (Cyclops bicuspidus, Cyclops varicans, Cyclops vernalis, Eucyclops agilis, Macrocyclops albidus, Orthocyclops modestus)	FL and BSA	Belzoni, Miss	0.60 (87 percent K2)	--	same as above	Naqvi, et al (1969), AMIC-5979
Lindane	Tubifex tubifex	FL and BSA	Belzoni, Miss.	4.0 (NTE)	--	same as above	Naqvi, et al (1969), AMIC-5979
Lindane	Mercenaria mercenaria (eggs)	L	--	greater than 10.0 (T2)	--	The effect of 52 pesticides on embryonic development of clams and oysters was reported. Synergistic effects with solvents were also reported. Most of the compounds affected development more than survival. Some, however, drastically reduced larval growth. The authors point out the necessity of evaluating the effects of pesticides on all life stages of an organism and note the possibility of selecting chemicals for pest control that would not have serious effect on shellfish.	Davis, et al (1969), AMIC-5990
Lindane	Mercenaria mercenaria (larvae)	L	--	greater than 10.0 (T12)	--	same as above	Davis, et al (1969), AMIC-5990
Lindane	Crassostrea virginica (eggs)	L	--	9.1 (T2)	--	same as above	Davis, et al (1969), AMIC-5990
Lindane	Gambusia affinis (female, 4.3	BSA	--	0.13 (T4)	a,c,d, e,f,i, (Honolulu	The five fish species are commonly found in streams and estuaries in semi-tropical areas. G. affinis was	Nunogawa, et al (1970), AMIC-6567

	cm, 1.9 g)				tap water)	the most tolerant. Varied sensitivity to the toxicants were found. K. sandvicensis was the most sensitive fish studied. The standard method procedure was followed.	
Lindane	Lebistes reticulatus (male, 1.8 cm, 0.2 g)	BSA	--	0.05 (T4)	a,c,d, e,f,i, (Honolulu tap water)	same as above	Nunogawa, et al (1970), AMIC-6567
Lindane	Tilapia mossambica (3.4 cm, 1.3 G)	BSA	--	0.06 (T4)	a,c,d,e,f,i (Honolulu tap water)	same as above	Nunogawa, et al (1970), AMIC-6567
Lindane	Kuhlia sandvicensis (4.3 cm, 1.5 G)	BSA	--	0.04 (T4)	a,c,d,e,f,i, salt water	same as above	Nunogawa, et al (1970), AMIC-6567
Lindane	Stolephorus purpurea (3.6 cm, 0.4 G)	BSA	--	0.004 (T 12 hr)	a,c,d,e,f,i, salt water	same as above	Nunogawa, et al (1970), AMIC-6567
Linear alkylate sulfonate	Pimephales promelas	BCFA	--	4.2-4.5 (T4)	a*,c,d,f*, i,j,n, calcium, magnesium, sodium, potassium, sulfate, beryllium, strontium, iron, boron, barium, aluminum, zinc, copper, cadmium	Acute and chronic toxicity studies resulted in a laboratory fish production index for fathead minnow. Lethality of LAS to newly hatched fry was the most critical factor with no effect at 0.6 ppm on spawning egg production, or hatchability at this concentration. A fungus infection of mature males occurred and was controlled by means of antibiotics. No accumulative mortality occurred. The application factor was calculated to be between 14 and 28 percent. The concentration of 0.63 ppm was determined to be the maximum acceptable concentration of LAS for fatheads.	Pickering, et al(1970), AMIC-65
Linear alkylate sulfonate	Pimephales promelas	BCFCH	--	0.63 (NTE)	a*,c,d,f*, i,j,n, calcium, magnesium, sodium, potassium, sulfate, beryllium, strontium, iron, boron, barium, aluminum, zinc,	same as above	Pickering, etal(1970), AMIC-65

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
					copper, cadmium		
Linuron	Fish (not specified)	--	--	greater than 10-100 (K)	--	Approximate toxicities of numerous pesticides commonly used in Britain were summarized. An excellent brief, general discussion of toxicity testing is also present.	Mawdesley-Thomas(1971) AMIC-1056
Lirostanol	Rasbora heteromorpha	BCFA and BSA	--	0.044 (T2)	a*,c,e,f, hard (HW) or SOFT(SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425
Lissapol IPA	Crangon crangon	BSA	--	1000-3300 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Lissapol NM	Crangon crangon	BSA	--	330-1000 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Lissapol NX	Rasbora heteromorpha	BCFA and BSA	--	3.6 (T2)	a*,c,e,f, hard (HW) or SOFT(SW) synthetic	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude.. Knowing the toxicity and	Alabaster (1969), AMIC-5425

					dilution water, or seawater for some species	percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	
Lissapol NX	Crangon crangon	BSA	--	1000-3300 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701
Lithium	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	6.9 (dorsal muscle residue)	--	Fish collected from an effluent pipe of a steam plant and from offshore waters of Catalina Island were analyzed for trace element content. Trace element content of the effluent water was at least 5 times greater than that of normal sea water for cadmium, copper, nickel, zinc, and chromium. Livers of fish from the effluent were nearly twice the size of those from the ocean. Greatest differences in concentration occurred with aluminum, cadmium, and nickel. Silver, barium, lithium, and lead showed the least differences. The author concluded that trace element analysis of tissues could be used to determine the effect of pollutants on marine organisms.	Stapleton (1968),AMIC-5980
Lithium	Paralabrax clathratus	FM	Catalina Island, Cal.	6.2 (dorsal muscle residue)	--	same as above	Stapleton (1968), AMIC-5980
Lithium	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	6.7 (ventral muscle residue)	--	same as above	Stapleton (1968), AMIC-5980
Lithium	Paralabrax clathratus	FM	Catalina Island, Cal.	5.6 (ventral muscle RESIDUE)	--	same as above	Stapleton (1968), AMIC-5980
Lithium	Paralabrax clathratus	FM	Scattergood Steam Plant,	8.6 (gonads residue)	--	same as above	Stapleton (1968),

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
			Los Angeles, Cal.				AMIC-5980
Lithium	Paralabrax clathratus	FM	Catalina Island, Cal.	8.4 (gonads residue)	--	same as above	Stapleton (1968), AMIC-5980
Lithium	Paralabrax clathratus (gravid females)	FM	Catalina Island, Cal.	7.7 (gonads residue)	--	same as above	Stapleton (1968), AMIC-5980
Lithium	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	5.8 (liver residue)	--	same as above	Stapleton (1968), AMIC-5980
Lithium	Paralabrax clathratus	FM	Catalina Island, Cal.	7.3 (liver residue)	--	same as above	Stapleton (1968), AMIC-5980
Lithium	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	6.8 (integument residue)	--	same as above	Stapleton (1968), AMIC-5980
Lithium	Paralabrax clathratus	FM	Catalina Island, Cal.	7.7 (integument residue)	--	same as above	Stapleton (1968), AMIC-5980
Lithium	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	7.6 (heart residue)	--	same as above	Stapleton (1968), AMIC-5980
Lithium	Paralabrax clathratus	FM	Catalina Island, Cal.	8.5 (heart residue)	--	same as above	Stapleton (1968), AMIC-5980
Lithium	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	580 (eyeball residue)	--	same as above	Stapleton (1968), AMIC-5980
Lithium	Paralabrax clathratus	FM	Catalina Island, Cal.	124 (eyeball residue)	--	same as above	Stapleton (1968),

Lubrol APNS	Cardium edule	BSA	--	10-33 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701
Lubrol APNS	Crangon crangon	BSA	--	33-100 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Lubrol L	Rasbora heteromorpha	BCFA and BSA	--	16 (T2, hardwater)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425
Lubrol L	Rasbora heteromorpha	BCFA and BSA	--	12.5 (T2, softwater)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	same as above	Alabaster (1969), AMIC-5425
Magic Power	Pimephales promelas	BSA	--	14.0 (T4)	c,d,e,f	Toxicity of six oil spill dispersants was determined along with BOD values. Pond water was used as diluent and oil was included in the experiment. Oil markedly reduced toxicity of all dispersants. Data are	Zillich (1969),AMIC 2909

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
						given as "most probable" 96-hr TL sub m.	
Magic Power	Pimephales promelas	BSA	--	2.7 (MSC)	c,d,e,f	same as above	Zillich (1969),AMIC-2909
Magic Power	Biochemical oxygen demand	L	--	880,000	c,d,e,f	same as above	Zillich (1969), AMIC-2909
Magnesium	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	1670 (dorsal muscle residue)	--	Fish collected from an effluent pipe of a steam plant and from offshore waters of Catalina Island were analyzed for trace element content. Trace element content of the effluent water was at least 5 times greater than that of normal sea water for cadmium, copper, nickel, zinc, and chromium. Livers of fish from the effluent were nearly twice the size of those from the ocean. Greatest differences in concentration occurred with aluminum, cadmium, and nickel. Silver, barium, lithium, and lead showed the least differences. The author concluded that trace element analysis of tissues could be used to determine the effect of pollutants on marine organisms.	Stapleton (1968), AMIC-5980
Magnesium	Paralabrax clathratus	FM	Catalina Island, Cal.	2190(dorsal muscle residue)	--	same as above	Stapleton (1968), AMIC-5980
Magnesium	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	1820 (ventral muscle residue)	--	same as above	Stapleton (1968), AMIC-5980
Magnesium	Paralabrax clathratus	FM	Catalina Island, Cal.	2190(ventral muscle residue)	--	same as above	Stapleton (1968), AMIC-5980
Magnesium	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	1010 (gonads residue)	--	same as above	Stapleton (1968), AMIC-5980

Magnesium	Paralabrax clathratus	FM	Catalina Island, Cal.	2420(gonads residue)	--	same as above	Stapleton (1968), AMIC-5980
Magnesium	Paralabrax clathratus (gravid females)	FM	Catalina Island, Cal.	1420 (gonads residue)	--	same as above	Stapleton (1968), AMIC-5980
Magnesium	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	690 (liver residue)	--	same as above	Stapleton (1968), AMIC-5980
Magnesium	Paralabrax clathratus	FM	Catalina Island, Cal.	1040(liver residue)	--	same as above	Stapleton (1968), AMIC-5980
Magnesium	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	730 (integument residue)	--	same as above	Stapleton (1968), AMIC-5980
Magnesium	Paralabrax clathratus	FM	Catalina Island, Cal.	840 (integument residue)	--	same as above	Stapleton (1968), AMIC-5980
Magnesium	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	1280 (heart residue)	--	same as above	Stapleton (1968), AMIC-5980
Magnesium	Paralabrax clathratus	FM	Catalina Island, Cal.	950 (heart residue)	--	same as above	Stapleton (1968), AMIC-5980
Magnesium	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	1080 (eyeball residue)	--	same as above	Stapleton (1968), AMIC-5980
Magnesium	Paralabrax clathratus	FM	Catalina Island, Cal.	1470(eyeball residue)	--	same as above	Stapleton (1968), AMIC-5980
Malachite green	Rasbora heteromorpha	BCFA and BSA	--	0.46 (TL, hardwater)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water,	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy	Alabaster(1969), AMIC-5425

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
					or seawater for some species	predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	
Malachite green	Rasbora heteromorpha	BCFA and BSA	--	0.08 (T1, softwater)	a*,c,e,f,hard (HW) or soft (SW) synthetic dilution water, orseawater for some species	same as above	Alabaster (1969),AMIC-5425
Malachite green	Salmo gairdneri	BCFA and BSA	--	0.09 (T2, hardwater)	a*,c,e,f, hard (HW)or soft (SW) synthetic dilution water, or seawater for some species	same as above	Alabaster (1969),AMIC-5425
Malachite green	Rasbora heteromorpha	BCFA and BSA	--	0.17 (T1, hardwater)	a*,c,e,f, hard(HW) or soft (SW) synthetic dilution water, or seawater for some species	same as above	Alabaster (1969),AMIC-5425
Malachite green	Rasbora heteromorpha	BCFA and BSA	--	0.14 (T1, softwater)	a*,c,e,f, hard(HW) or soft (SW) synthetic dilution	same as above	Alabaster (1969),AMIC-5425

					water, or seawater for some species		
Malachite green	Morone saxatilis (fingerlings)	BSA	--	0.3 (T1)	a,c,d,e,f, p	All compounds were investigated because of their probable usage in hatchery production of white bass. Compounds that can be used at recommended concentrations were Aquathol, Casaron, Lindane, and Terramycin concentrate. Those that should not be used were Acriflavine, Bayluscide, Malachite green oxalate, and Malathion.	Wellborn (1971), AMIC-5571
Malathion	Fish (not specified)	--	--	greater than 0.1-1.0 (K)	--	Approximate toxicities of numerous pesticides commonly used in Britain were summarized. An excellent brief, general discussion of toxicity testing is also present.	Mawdesley-Thomas (1971), AMIC-1056
Malathion	Lepomis macrochirus	BCFCH	--	0.028 (K54)	a,c,d,e,f, conduc-tivity	Bluegills were exposed to seven concentrations of Malathion from 0.00125 to 0.08 ppm. Fish spawned under the test conditions and the effects were noted in all life stages. Reproduction and early fry survival were unaffected by the 0.0074 ppm concentration that crippled adult fish over several months. A "maximum acceptable toxicant concentration" was calculated.	Eaton (1970), AMIC-1312
Malathion	Lepomis macrochirus	BCFCH	--	0.066 (K16)	a,c,d,e,f, conduc-tivity	same as above	Eaton (1970), AMIC-1312
Malathion	Lepomis macrochirus	BCFCH	--	0.089-0.131 (T4)	a,c,d,e,f, conduc-tivity	same as above	Eaton (1970), AMIC-1312
Malathion	Salvelinus fontinalis (1.15 g)	BCFA	--	130.0 (T4)	a*,c,d, e,f,i,o, sulfate, copper, manganese, iron, and chromium	Four insecticides were evaluated on four fish species at two body weights. Standard method bioassay procedures were followed. Symptomology was also reported. Generally, toxicity was significantly different at the two body weights, i.e., more toxic at the lower body weight, except for Malathion. Well-defined experimental conditions were said to result in truer measurement of	Post, et AL(1971), AMIC-1812

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
						toxicity.	
Malathion	Salvelinus fontinalis (2.13 g)	BCFA	--	120.0 (T4)	a*,c,d, e,f,i,o, sulfate, copper, manganese, iron, and chromium	same as above	Post, et AL(1971), AMIC-1812
Malathion	Salmo clarki (0.33 g)	BCFA	--	0.15 (T4)	a*,c,d, e,f,i,o, sulfate, copper, manganese, iron, and chromium	same as above	Post, et al (1971), AMIC-1812
Malathion	Salmo clarki (1.25 g)	BCFA	--	0.20 (T4)	a*,c,d, e,f,i,o, sulfate, copper, manganese, iron, and chromium	same as above	Post, et al (1971), AMIC-1812
Malathion	Salmo gairdneri (0.41 g)	BCFA	--	0.12 (T4)	a*,c,d, e,f,i,o, sulfate, coppor, manganese, iron, and chromium	same as above	Post, et al (1971), AMIC-1812
Malathion	Oncorhynchus kisutch (1.70 g)	BCFA	--	0.265 (T4)	a*,c,d, e,f,i,o, sulfate, copper, manganese, iron, and chromium	same as above	Post, et al (1971), AMIC-1812
Malathion	Cyprinus carpio	L	--	0.010 (SB)	--	This study was conducted to determine whether components of tissues from various fish would interfere with GLC determinations for Malathion. Good	Ragab(1968), AMIC-3728

						recovery (80-96 percent) was obtained with best recovery from skin, flesh, and gills. Recovery was less successful in liver, brain, and blood. The author recommends the GLC procedure as simpler than the use of activated charcoal.	
Malathion	Catostomus commersoni	L	--	0.010 (SB)	--	same as above	Ragab (1968), AMIC-3728
Malathion	Perca flavescens	L	--	0.010 (SB)	--	same as above	Ragab (1968), AMIC-3728
Malathion	Esox niger	L	--	0.010 (SB)	--	same as above	Ragab (1968), AMIC-3728
Malathion	Notemigonus crysoleucas	L	--	0.010 (SB)	--	same as above	Ragab (1968), AMIC-3728
Malathion	Pimephales promelas	BSA	--	16.0 (T4)	a#,d,e,o, and Fe	Malathion and its hydrolysis products were evaluated with the finding that one such product (diethyl fumarate) was more toxic than Malathion to fathead minnows. Synergism occurred between Malathion and two products of hydrolysis. Continuous exposure resulted in increased toxicity.	Bender (1969),AMIC-3787
Malathion	Pimephales promelas	BCFA	--	11.0 (T14)	a*,d,e,o, and Fe	same as above	Bender (1969),AMIC-3787
Malathion	Puntius ticto	--	--	0.0074 (T4)	a,c,d,e,f	Of the pesticides investigated, the most toxic was Klofos followed in decreasing order by Sumithion, Malathion, Formithion, Dimecron, Sevin, and BHC. The author cites the need for more selective pesticides nontoxic to fish or antagonistic agents for reducing fish toxicity.	Bhatia (1971),AMIC-5423
Malathion	Rasbora heteromorpha	BCFA and BSA	--	8 (T2)	a#,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy	Alabaster (1969), AMIC-5425

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
					seawater for some species	predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	
Malathion	Ictalurus punctatus	BSA	--	8.97 (T4)	a, synthetic test water	Organochlorine insecticides were the most toxic compounds, organophosphates intermediate, carbamates the least toxic. Brown trout was the species most susceptible to organochlorines, coho salmon the most susceptible to carbamates, and goldfish were the least susceptible of all species. Safe concentrations established by bioassays with salmonids or centrarchids would likely be safe for cyprinids and ictalurids. Safe levels for ictalurids or cyprinids would probably be hazardous for centrarchids and salmonids. The use of goldfish in bioassays was discouraged.	Macek,et al (1970), AMIC-5510
Malathion	Ictalurus melas	BSA	--	12.90 (T4)	a, synthetic testwater	same as above	Macek, et al(1970), AMIC-5510
Malathion	Carassius auratus	BSA	--	10.70 (T4)	a, synthetic test water	same as above	Macek,et al (1970), AMIC-5510
Malathion	Cyprinus carpio	BSA	--	6.59 (T4)	a, synthetic test water	same as above	Macek, et al(1970), AMIC-5510
Malathion	Pimephales promelas	BSA	--	8.65 (T4)	a, synthetic test water	same as above	Macek,et al (1970), AMIC-5510
Malathion	Lepomis macrochirus	BSA	--	0.103 (T4)	a, synthetic test water	same as above	Macek,et al (1970), AMIC-5510
Malathion	Lepomis microlophus	BSA	--	0.170 (T4)	a, synthetic	same as above	Macek,et al (1970),

					test water		AMIC-5510
Malathion	Micropterus salmoides	BSA	--	0.285 (T4)	a, synthetic test water	same as above	Macek,et al (1970), AMIC-5510
Malathion	Salmo gairdneri	BSA	--	0.170 (T4)	a, synthetic test water	same as above	Macek, etal (1970), AMIC-5510
Malathion	Salmo trutta	BSA	--	0.200 (T4)	a, synthetic test water	same as above	Macek, et al(1970), AMIC-5510
Malathion	Oncorhynchus kisutch	BSA	--	0.101 (T4)	a, synthetic test water	same as above	Macek,et al (1970), AMIC-5510
Malathion	Perca flavescens	BSA	--	0.263 (T4)	a, synthetic test water	same as above	Macek, etal (1970), AMIC-5510
Malathion	Morone saxatilis (fingerlings)	BSA	--	0.24 (T4)	a,c,d,e,f, p	All compounds were investigated because of their probable usage in hatchery production of white bass. Compounds that can be used at recommended concentrations were Aquathol, Casaron, Lindane, and Terramycin concentrate. Those that should not be used were Acriflavine, Bayluscide, Malachite green oxalate, and Malathion.	Wellborn (1971), AMIC-5571
Malathion	Cyprinus carpio	L	--	5 (SB4)	--	Malathion residues in carp occurred primarily in the liver and flesh with lesser amounts in the brain, blood, and gills. Retention time was relatively brief with most of the residue passing on or being metabolized within 1-2 days. Metabolism in the fish foregut, degradation biochemically, and lack of uptake due to low permeability were cited as possible explanations for the results obtained. Lack of persistence in fish coupled with slow hydrolysis in the environment seem to indicate that this compound has desirable characteristics regarding safety to humans.	Bender(1969), AMIC-5731
Malathion	Cyprinus carpio	L	--	2.6-66.6 (residue)	--	same as above	Bender(1969), AMIC-5731
Malathion	Copepods	FL	State	0.025 (K2)	--	The response of	Naqvi, et al

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
	(Cyclops bicuspidus, Cyclops varicans, Cyclops vernalis, Fucyclops agilis, Macrocyclops albidus, Orthocyclops modestus)	and BSA	College, Miss.			pesticide-resistant aquatic organisms to various pesticides was compared to the response of non-resistant species. Pesticide-resistant species were collected at Belzoni and non-resistant species at State College. Copepods, clams, snails, and sludge worms from Belzoni were considerably more tolerant to pesticides than the non-resistant organisms. The authors note that the effect of increased tolerance in the organisms is an increase in the amount of pesticide residues available to animals of higher trophic levels.	(1969), AMIC-5979
Malathion	Copepods (Cyclops bicuspidus, Cyclops varicans, Cyclops vernalis, Fucyclops agilis, Macrocyclops albidus, Orthocyclops modestus)	FL and BSA	Belzoni, Miss	0.025 (13 percent K2)	--	same as above	Naqvi, et al (1969), AMIC-5979
Malathion	Tubifex tubifex	FL and BSA	Belzoni, Miss.	3.0 (NTE)	--	same as above	Naqvi, et al(1969), AMIC-5979
Malathion	Crassostrea virginica (eggs)	L	--	9.07 (T2)	--	The effect of 52 pesticides on embryonic development of clams and oysters was reported. Synergistic effects with solvents were also reported. Most of the compounds affected development more than survival. Some, however, drastically reduced larval growth. The authors point out the necessity of evaluating the effects of pesticides on all life stages of an organism and note the possibility of selecting chemicals for pest control that would not have serious effect on	Davis, et al (1969),AMIC-5990

						shellfish.	
Malathion	Crassostrea virginica (larvae)	L	--	2.66 (T14)	--	same as above	Davis, et al (1969), AMIC-5990
Malathion	Cardium edule	BSA	--	3.3-10 (T2)	a*(continuous, aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701
Malathion	Crangon crangon	BSA	--	0.33-1.0 (T2)	a*(continuous, aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Malathion	Wolffia papulifera	L	--	100 (K)	Hunter's medium diluted 1:5	All compounds were harmful to duckweed to some degree. Decreased populations were noted at non-lethal concentrations and some compounds (Malathion and 2,4-D) caused teratogenic effects at concentrations as low as 1 ppm.	Worthley, et al (1971), AMIC-3233
Maleic acid	Pimephales promelas	BSA	--	5.0 (T4)	a*,d,e,o, and Fe	Malathion and its hydrolysis products were evaluated with the finding that one such product (diethyl fumarate) was more toxic than Malathion to fathead minnows. Synergism occurred between Malathion and two products of hydrolysis. Continuous exposure resulted in increased toxicity.	Bender (1969), AMIC-3787
Manazon	Fish (not specified)	--	--	greater than 100-1000 (K)	--	Approximate toxicities of numerous pesticides commonly used in Britain were summarized. An excellent brief, general discussion of toxicity testing is also present.	Mawdesley-Thomas(1971) AMIC-1056
Mancozeb	Fish (not specified)	--	--	greater than 1.0-10.0 (K)	--	same as above	Mawdesley-Thomas(1971), AMIC-1056
Maneb	Fish (not specified)	--	--	greater than 0.1-1.0 (K)	--	Approximate toxicities of numerous pesticides commonly used in Britain were summarized. An excellent brief, general discussion of toxicity testing is also present.	Mawdesley-Thomas (1971), AMIC-1056
Maneb	Agonus	BSA	--	0.33-1.0 (T2)	a*	One hundred-forty surface active	Portmann, et

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
	cataphractus				(continuous, aeration, sea water, and daily solution renewal)	agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	al (1971), AMIC-7701
Maneb	Asterias rubens	BSA	--	33-100 (T2)	a*(continuous, aeration, sea water, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Maneb	Cardium edule	BSA	--	100-330 (T2)	a*(continuous aeration, sea-water, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Maneb	Crangon crangon	BSA	--	3.3-10 (T2)	a*(continuous aeration, sea-water, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Manganese	Coregonus clupeaformis	FL	Moose Lake, Can.	0.7 (residue)	--	Concentrations of 13 toxic elements in dressed fish from heavily industrialized and non-industrialized areas were determined. Only mercury exceeded regulatory limits, and concentrations of most elements were essentially the same in fish from both areas.	Uthe, et AL(1971), AMIC-3819
Manganese	Coregonus	FL	Lake	0.7 (residue)	--	same as above	Uthe, etal

	clupeaformis		Ontario, Can.				(1971), AMIC-3819
Manganese	Esox lucius	FL	Moose Lake, Can.	3.0 (residue)	--	same as above	Uthe, et al (1971), AMIC-3819
Manganese	Esox lucius	FL	Lake St. Pierre, Can.	3.2 (residue)	--	same as above	Uthe, et AL(1971), AMIC-3819
Manganese	Esox lucius	FL	Lake Erie, Can.	0.9 (residue)	--	same as above	Uthe, et al (1971), AMIC-3819
Manganese	Osmerus mordax	FL	Lake Erie, Can.	0.02 (residue)	--	same as above	Uthe, et al (1971), AMIC-3819
Manganese	Perca flavescens	FL	Lake Erie, Can.	0.21 (residue)	--	same as above	Uthe, et al (1971), AMIC-3819
Manganese	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	0.5 (dorsal muscle residue)	--	Fish collected from an effluent pipe of a steam plant and from offshore waters of Catalina Island were analyzed for trace element content. Trace element content of the effluent water was at least 5 times greater than that of normal sea water for cadmium, copper, nickel, zinc, and chromium. Livers of fish from the effluent were nearly twice the size of those from the ocean. Greatest differences in concentration occurred with aluminum, cadmium, and nickel. Silver, barium, lithium, and lead showed the least differences. The author concluded that trace element analysis of tissues could be used to determine the effect of pollutants on marine organisms.	Stapleton (1968), AMIC-5980
Manganese	Paralabrax clathratus	FM	Catalina Island, Cal.	0.6 (dorsal muscle residue)	--	same as above	Stapleton (1968), AMIC-5980
Manganese	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	0.5 (ventral muscle residue)	--	same as above	Stapleton (1968), AMIC-5980
Manganese	Paralabrax clathratus	FM	Catalina Island, Cal.	0.5 (ventral muscle	--	same as above	Stapleton (1968),

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
				residue)			AMIC-5980
Manganese	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	1.1 (gonads residue)	--	same as above	Stapleton (1968), AMIC-5980
Manganese	Paralabrax clathratus	FM	Catalina Island, Cal.	1.7 (gonads residue)	--	same as above	Stapleton (1968), AMIC-5980
Manganese	Paralabrax clathratus (gravid females)	FM	Catalina Island, Cal.	2.2 (gonads residue)	--	same as above	Stapleton (1968), AMIC-5980
Manganese	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	2.4 (liver residue)	--	same as above	Stapleton (1968), AMIC-5980
Manganese	Paralabrax clathratus	FM	Catalina Island, Cal.	4.2 (liver residue)	--	same as above	Stapleton (1968), AMIC-5980
Manganese	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	0.7 (integument residue)	--	same as above	Stapleton (1968), AMIC-5980
Manganese	Paralabrax clathratus	FM	Catalina Island, Cal.	0.8 (integument residue)	--	same as above	Stapleton (1968), AMIC-5980
Manganese	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	1.6 (heart residue)	--	same as above	Stapleton (1968), AMIC-5980
Manganese	Paralabrax clathratus	FM	Catalina Island, Cal.	1.4 (heart residue)	--	same as above	Stapleton (1968), AMIC-5980
Manganese	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles,	1.6 (eyeball residue)	--	same as above	Stapleton (1968), AMIC-5980

			Cal.				
Manganese	Paralabrax clathratus	FM	Catalina Island, Cal.	2.6 (eyeball residue)	--	same as above	Stapleton (1968), AMIC-5980
Manoxol	Rasbora heteromorpha	BCFA and BSA	--	16 (T2)	a*,c,e,f, hard (HW) or soft (SW)synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425
MCPA	Fish (not specified)	--	--	greater than 10-100 (K)	--	Approximate toxicities of numerous pesticides commonly used in Britain were summarized. An excellent brief, general discussion of toxicity testing is also present.	Mawdesley-Thomas (1971),AMIC-1056
MCPA	Crassostrea virginica (eggs)	L	--	15.6 (T2)	--	The effect of 52 pesticides on embryonic development of clams and oysters was reported. Synergistic effects with solvents were also reported. Most of the compounds affected development more than survival. Some, however, drastically reduced larval growth. The authors point out the necessity of evaluating the effects of pesticides on all life stages of an organism and note the possibility of selecting chemicals for pest control that would not have serious effect on shellfish.	Davis, et al (1969), AMIC-5990
MCPA	Crassostrea virginica (larvae)	L	--	31.3 (T14)	--	same as above	Davis, et al (1969),AMIC-5990
Mecarbam	Fish (not specified)	--	--	greater than 0.001-0.01 (K)	--	Approximate toxicities of numerous pesticides commonly used in Britain were summarized. An excellent brief, general discussion of toxicity testing is also present.	Mawdesley-Thomas(1971) AMIC-1056

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
Menazon	Rasbora heteromorpha	BCFA and BSA	--	154 (T2)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	same as above	Alabaster (1969), AMIC-5425
Mercuric chloride (as Hg)	Acroneuria	BSA	--	2 (T4)	a*,c,d,e,f	Ephemerella (mayfly) was the most sensitive aquatic insect of those studied, and copper the most broadly toxic metal. The authors suggest that aquatic insects may not be as sensitive to heavy metals as fish.	Warnick, et al(1969), AMIC-3767
Mercuric chloride (as Hg)	Ephemerella	BSA	--	2 (T4)	a*,c,d,e,f	same as above	Warnick, et al(1969), AMIC-3767
Mercuric chloride (as Hg)	Hydropsyche	BSA	--	2 (T4)	a*,c,d,e,f	same as above	Warnick, et al(1969), AMIC-3767
Mercuric chloride (as Hg)	Watersipora cucullata (larvae)	L	--	0.10 (T 2hr)	a,c,i, and salinity	This study was conducted to determine species of marine larvae suitable for use in test screening antifouling chemicals. A. salina (brine shrimp) appeared to have the best potential for this purpose. A. salina larvae sensitivity was greatest starting at age 20-80 hr, and tolerated relatively low pH (5.0).	Wisely, et al (1967), AMIC-5708
Mercuric chloride (as Hg)	Bugula neritina (larvae)	L	--	0.20 (T 2 hr)	a,c,i, and salinity	same as above	Wisely, et al (1967), AMIC-5708
Mercuric chloride (as Hg)	Spirorbis lamellosa (larvae)	L	--	0.14 (T 2 hr)	a,c,i, and salinity	same as above	Wisely, et al (1967), AMIC-5708
Mercuric chloride (as Hg)	Galeolaria caespitosa	L	--	0.12 (T 2 hr)	a,c,i, and salinity	same as above	Wisely, et al (1967),

	(larvae)						AMIC-5708
Mercuric chloride (as Hg)	Mytilus edulis planulatus (larvae)	L	--	13.1 (T 2 hr)	a,c,i, and salinity	same as above	Wisely, et al (1967), AMIC-5708
Mercuric chloride (as Hg)	Crassostrea commercialis (larvae)	L	--	180.9 (T 2 hr)	a,c,i, and salinity	same as above	Wisely, et al (1967), AMIC-5708
Mercuric chloride (as Hg)	Artemia salina (larvae)	L	--	1809 (T 2 hr)	a,c,i, and salinity	same as above	Wisely, et al (1967), AMIC-5708
Mercuric chloride (as mercury)	Carcinus maenas	BSA	--	1.2 (T2)	a*(continuous, aeration, sea water, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701
Mercuric chloride (as mercury)	Cardium edule	BSA	--	9.0 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Mercuric chloride (as mercury)	Crangon crangon	BSA	--	0.10-0.33(T4)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Mercuric chloride (as mercury)	Ostrea edulis	BSA	--	4.2 (T2)	a*(continuous, aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Mercuric chloride	Pandalus	BSA	--	0.08 (T2)	a*	same as above	Portmann, et

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
(as mercury)	montagui				(continuous aeration, seawater, and daily solution renewal)		al (1971), AMIC-7701
Mercuric chloride (as mercury)	Platicthys flesus	BSA	--	3.3 (T2)	a* (continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Mercuric chloride	Carassius auratus	BSA	--	0.25 (SB1)	a*,e	Mercury accumulated rapidly in goldfish. The higher the concentration up to 1.0 ppm, the more rapid was the accumulation. At higher concentrations, heavy mucus formation occurred with most of the mercury being found in the mucus. The authors noted that bacterial methylation occurs in dead fish but only if muchus is present.	McKone, et al (1971), AMIC-1492
Mercuric chloride	Carassius auratus	BSA	--	0.25 (15 ppm tissue residue 1 d)	a*,e	same as above	McKone, et al (1971), AMIC-1492
Mercuric chloride	Carassius auratus	BSA	--	0.25 (40-50 ppm tissue residue 100 hr)	a*,e	same as above	McKone, et al (1971), AMIC-1492
Mercuric chloride	Ambassis safgha	BSA	--	2.8 (T1)	a*, seawater	Measurement of residual dissolved oxygen during exposure of fish to toxicants resulted in data similar to that obtained from 24- and 48-hr bioassays by the standard method. The residual oxygen method required only 8 hr to conduct. Variables studied included density per unit volume, temperature, and fish size. The authors conclude that the residual oxygen method is a quick and reliable procedure for routine monitoring work.	Ballard,et al (1969), AMIC-300

Mercuric chloride	Carassius auratus	L	--	0.82 (T7)	a,c	In addition to toxicity data, conditioned avoidance response was studied at sublethal concentrations. The lowest concentration of metal resulting in significant impairment was; arsenic, 0.10; lead, 0.07; mercury, 0.003; and selenium, 0.25. Deleterious effects occurred at metal concentrations approximately similar to potable water standards.	Weir, et al (1970),AMIC-739
Mercury (total)	Salvelinus namaycush (1 yr)	FL	Cayuga Lake, Ithaca, N.Y.	0.24(residue)	--	Lake trout stocked annually as tagged fingerlings were netted and analyzed for mercury and methylmercury. Total mercury and the proportion of methylmercury to mercury increased with age but not sex.	Bache, et al (1971), AMIC-3818
Mercury (total)	Salvelinus namaycush (11 yr)	FL	Cayuga Lake, Ithaca, N.Y.	0.58 (residue)	--	same as above	Bache, et al (1971), AMIC-3818
Mercury (total)	Salvelinus namaycush (12 yr)	FL	Cayuga Lake, Ithaca, N.Y.	0.57 (residue)	--	same as above	Bache, et al (1971), AMIC-3818
Mercury (total)	Salvelinus namaycush (2 yr)	FL	Cayuga Lake, Ithaca, N.Y.	0.27 (residue)	--	same as above	Bache, et al (1971), AMIC-3818
Mercury (total)	Salvelinus namaycush (3 yr)	FL	Cayuga Lake, Ithaca, N.Y.	0.37 (residue)	--	same as above	Bache, et al (1971), AMIC-3818
Mercury (total)	Salvelinus namaycush (4 yr)	FL	Cayuga Lake, Ithaca, N.Y.	0.43 (residue)	--	same as above	Bache, et al (1971), AMIC-3818
Mercury (total)	Salvelinus namaycush (5 yr)	FL	Cayuga Lake, Ithaca, N.Y.	0.43 (residue)	--	same as above	Bache, et al (1971), AMIC-3818
Mercury (total)	Salvelinus namaycush (6 yr)	FL	Cayuga Lake, Ithaca, N.Y.	0.50 (residue)	--	same as above	Bache, et al (1971), AMIC-3818
Mercury (total)	Salvelinus namaycush (7 yr)	FL	Cayuga Lake, Ithaca, N.Y.	0.43 (residue)	--	same as above	Bache, et al (1971), AMIC-3818
Mercury (total)	Salvelinus	FL	Cayuga Lake,	0.55 (residue)	--	same as above	Bache, et al

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
	namaycush (8 yr)		Ithaca, N.Y.				(1971), AMIC-3818
Mercury (total)	Salvelinus namaycush (9 yr)	FL	Cayuga Lake, Ithaca, N.Y.	0.53 (residue)	--	same as above	Bache, et al (1971), AMIC-3818
Mercury	Coregonus clupeaformis	FL	Moose Lake, Can.	0.07 (residue)	--	Concentrations of 13 toxic elements in dressed fish from heavily industrialized and non-industrialized areas were determined. Only mercury exceeded regulatory limits, and concentrations of most elements were essentially the same in fish from both areas.	Uthe, etal (1971), AMIC-3819
Mercury	Coregonus clupeaformis	FL	Lake Ontario, Can.	0.17 (residue)	--	same as above	Uthe, etal (1971), AMIC-3819
Mercury	Esox lucius	FL	Moose Lake, Can.	0.11 (residue)	--	same as above	Uthe, et al (1971),AMIC-3819
Mercury	Esox lucius	FL	Lake St. Pierre, Can.	0.70 (residue)	--	same as above	Uthe, et AL(1971), AMIC-3819
Mercury	Esox lucius	FL	Lake Erie, Can.	0.49 (residue)	--	same as above	Uthe, et al (1971),AMIC-3819
Mercury	Osmerus mordax	FL	Lake Erie, Can.	0.05 (residue)	--	same as above	Uthe, et al (1971),AMIC-3819
Mercury	Perca flavescens	FL	Lake Erie, Can.	0.22 (residue)	--	same as above	Uthe, et al (1971),AMIC-3819
Metasystox	Rasbora heteromorpha	BCFA and BSA	--	6.5 (T2)	a*,c,e,f, hard (HW) or SOFT(SW) synthetic dilution	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a	Alabaster (1969), AMIC-5425

					water, or seawater for some species	formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	
Methanol	Agonus cataphractus	BSA	--	10,000-33,000 (T2)	a*(continuous, aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701
Methanol	Cardium edule	BSA	--	3300-10,000 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Methanol	Crangon crangon	BSA	--	1700 (T4)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-701
Methoxychlor (tritium labelled)	Sorghum halpense	L (model ecosystem)	--	1 lb per A (NTE)	a,c,g, standard reference water and sand	This small laboratory model ecosystem procedure was developed to study pesticide biodegradability and ecological magnification. The food-chain pathways in this system were: (1) sorghum - caterpiller (larva), (2) caterpiller (excreta) - Oedogonium, (3) Oedogonium - snail, (4) Estigmene (excreta) - diatoms, (5) Diatoms - plankton, (6) Plankton - Culex (larvae), (7) Culex - Gambusia. The fish is the top of the food chain. Using isotopically labeled pesticides (1 lb/acre application rate), residues were determined for only selected organisms (snail, mosquito, and fish) and water.	Metcalf, et al (1971), AMIC-1495

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
						Reproducibility appeared to be good. The authors state that the method gives a good estimation of the potential toxicity of pesticides and their breakdown products to a variety of organisms and is suitable for computer modeling.	
Methoxychlor (tritium labelled)	Estigmene acrea	L (Model ecosystem)	--	1 lb per A (K-NTE)	a,c,g, standard reference water and sand	same as above	Metcalf, et al (1971), AMIC-1495
Methoxychlor (tritium labelled)	Physa spp	L (Model ecosystem)	--	15.7 (residue)	a,c,g, standard reference water and sand	same as above	Metcalf, et al (1971), AMIC-1495
Methoxychlor (tritium labelled)	Daphnia magna	L (Model ecosystem)	--	1 lb per A (K-NTE)	a,c,g, standard reference water and sand	same as above	Metcalf, et al (1971), AMIC-1495
Methoxychlor (tritium labelled)	Culex pipiens quinquefasciatus	L (model ecosystem)	--	0.48(residue)	a,c,g, standard reference water and sand	same as above	Metcalf, et al (1971), AMIC-1495
Methoxychlor (tritium labelled)	Oedogonium cardiacum	L (model ecosystem)	--	1 lb per A(NTE)	a,c,g, standard reference water and sand	same as above	Metcalf, et al (1971), AMIC-1495
Methoxychlor (tritium labelled)	Gambusia affinis	L (model ecosy	--	0.33 (residue)	a,c,g, standard reference water and	same as above	Metcalf, et al (1971), AMIC-1495

		stem)			sand		
Methoxychlor (tritium labelled)	Diatoms (Navicula, Coscinodiscus, Diploness, and Diatomella)	L (model ecosystem)	--	1 lb per A (NTE)	a,c,g, standard reference water and sand	same as above	Metcalf, et al(1971), AMIC-1495
Methoxychlor (tritium labelled)	Protozoa (Nuclearia, Coleps, Vorticella, and Paramecium)	L (model ecosystem)	--	1 lb per A (NTE)	a,c,g, standard reference water and sand	same as above	Metcalf, etal (1971), AMIC-1495
Methoxychlor (tritium labelled)	Rotifers (Asplanchnopus, Notomatta, Euclaris, Scardium)	L(model ecosystem)	--	1 lb per A (NTE)	a,c,g, standard reference water and sand	same as above	Metcalf, etal (1971), AMIC-1495
Methoxychlor (tritium labelled)	Water	L (model ecosystem)	--	0.0016 (residue)	a,c,g, standard reference water and sand	same as above	Metcalf, et al (1971), AMIC-1495
Methoxychlor	Chironomus tentans (instar)	BSACF	--	5.5 (T4)	c,d,e	This chemical was evaluated primarily because it is one of the principal substitutes for DDT. Rapid breakdown of the chemical occurred when living organisms were present. The half-life of methoxychlor was 7 days in Ann Arbor city water, but was much more rapid (less than 1 day) in local creek water and slow (approximately 200 days) in distilled water. These studies were to be continued to determine long term effects but no data are presented.	Bender,et al (1971), AMIC-3279
Methoxychlor	Stenonema candidum (instar)	BSACF	--	2.1 (T4)	c,d,e	same as above	Bender, et al(1971), AMIC-3279
Methoxychlor	Taeniopteryx nivalis (instar)	BSACF	--	0.98 (T4)	c,d,e	same as above	Bender,et al (1971), AMIC-3279
Methylene bis	Phormidium	L	--	0.5-10.0 (16	--	Of 74 chemicals evaluated as	Otto (1970),

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
thiocyanate	ambiguum			percent growth inhibited 14)		algicides, only 9 were more toxic than CuSO4. None inhibited growth of mat-forming algae for more than 2 weeks. CuSO4 formulated with certain wetting agents was more toxic than CuSO4 alone. Cooper chloramine was also found to be more toxic than CuSO4. No wetting agents were found to be inhibitory at the concentrations investigated (0.05 and 0.005 ppm). Also reported are factors affecting growth of algae in canals to determine whether there were leads to controlling algae by environmental management. No practical environmental means were found.	AMIC-692
Methylmercury	Salvelinus namaycush (1 yr)	FL	Cayuga Lake, Ithaca, N.Y.	0.07 (residue)	--	Lake trout stocked annually as tagged fingerlings were netted and analyzed for mercury and methylmercury. Total mercury and the proportion of methylmercury to mercury increased with age but not sex.	Bache, et al (1971), AMIC-3818
Methylmercury	Salvelinus namaycush (2 yr)	FL	Cayuga Lake, Ithaca, N.Y.	0.11 (residue)	--	same as above	Bache, et al (1971), AMIC-3818
Methylmercury	Salvelinus namaycush (3 yr)	FL	Cayuga Lake, Ithaca, N.Y.	0.21 (residue)	--	same as above	Bache, et al (1971), AMIC-3818
Methylmercury	Salvelinus namaycush (4 yr)	FL	Cayuga Lake, Ithaca, N.Y.	0.34 (residue)	--	same as above	Bache, et al (1971), AMIC-3818
Methylmercury	Salvelinus namaycush (5 yr)	FL	Cayuga Lake, Ithaca, N.Y.	0.35 (residue)	--	same as above	Bache, et al (1971), AMIC-3818
Methylmercury	Salvelinus namaycush (6 yr)	FL	Cayuga Lake, Ithaca, N.Y.	0.45 (residue)	--	same as above	Bache, et al (1971), AMIC-3818
Methylmercury	Salvelinus namaycush (7 yr)	FL	Cayuga Lake, Ithaca, N.Y.	0.31 (residue)	--	same as above	Bache, et al (1971), AMIC-3818

Methylmercury	Salvelinus namaycush (8 yr)	FL	Cayuga Lake, Ithaca, N.Y.	0.51 (residue)	--	same as above	Bache, et al (1971), AMIC-3819
Methylmercury	Salvelinus namaycush (9 yr)	FL	Cayuga Lake, Ithaca, N.Y.	0.43 (residue)	--	same as above	Bache, et al (1971), AMIC-3818
Methylmercury	Salvelinus namaycush (11 yr)	FL	Cayuga Lake, Ithaca, N.Y.	0.41 (residue)	--	same as above	Bache, et al (1971), AMIC-3819
Methylmercury	Salvelinus namaycush (12 yr)	FL	Cayuga Lake, Ithaca, N.Y.	0.47 (residue)	--	same as above	Bache, et al (1971), AMIC-3818
Methylpentynol	Salmo gairdneri	BSA	--	870-1260 (T4)	a*,c,f	Methylpentynol was tested in 96-hour bioassays for its toxicity to rainbow trout, brown trout, brook trout, lake trout, northern pike, channel catfish, bluegills, largemouth bass, and walleyes. Channel catfish were the most resistant and lake trout the most sensitive. Two-inch rainbow trout, brown trout, and lake trout were more sensitive to methylpentynol than larger ones in the 96-hour exposures. The drug was more toxic to bluegills and rainbow trout with elevated temperatures. Toxicity was barely influenced by changes in water hardness.	Marking(1969), AMIC-5477
Methylpentynol	Salmo trutta	BSA	--	680-1100 (T4)	a*,c,f	same as above	Marking (1969),AMIC-5477
Methylpentynol	Salvelinus fontinalis	BSA	--	1100-1200 (T4)	a*,c,f	same as above	Marking(1969), AMIC-5477
Methylpentynol	Salvelinus namaycush	BSA	--	660-1160 (T4)	a*,c,f	same as above	Marking(1969), AMIC-5477
Methylpentynol	Esox lucius	BSA	--	less than 900 (T4)	a*,c,f	same as above	Marking (1969),AMIC-5477
Methylpentynol	Ictalurus punctatus	BSA	--	1700-1890 (T4)	a*,c,f	same as above	Marking(1969), AMIC-5477
Methylpentynol	Lepomis macrochirus	BSA	--	1260-1340 (T4)	a*,c,f	same as above	Marking(1969), AMIC-5477

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
Methylpentynol	Micropterus salmoides	BSA	--	1100-1250 (T4)	a*,c,f	same as above	Marking(1969), AMIC-5477
Methylpentynol	Stizostedion vitreum	BSA	--	1140 (T4)	a*,c,f	same as above	Marking (1969),AMIC-5477
Methyl parathion	Lepomis cyanellus (Resistant)	BSA	--	greater than 5000 (T2)	a*	Green sunfish from Belzoni, Miss. were resistant to Chlordane, Heptachlor, Lindane, and Strobane, but not to Parathion. Golden shiners from the same location were resistant to Lindane and Strobane, tolerant to Chlordane and Heptachlor, and susceptible to Parathion. Lack of resistance to Parathion indicated lack of agricultural usage of organophosphates in that area. Resistant fish were compared to susceptible ones collected at Starkville.	Minchew, et al (1970), AMIC-5471
Methyl parathion	Lepomis cyanellus (Susceptible)	BSA	--	greaterthan 5000 (T2)	a*	same as above	Minchew, et al (1970), AMIC-5471
Methyl parathion	Notemigonus crysoleucas (Resistant)	BSA	--	greater than 5000 (T2)	a*	same as above	Minchew, et al (1970), AMIC-5471
Methyl parathion	Notemigonus crysoleucas (Susceptible)	BSA	--	greater than5000 (T2)	a*	same as above	Minchew, et al (1970), AMIC-5471
Methyl parathion	Ictalurus punctatus	BSA	--	5.71 (T4)	a, synthetic test water	Organochlorine insecticides were the most toxic compounds, organophosphates intermediate, carbamates the least toxic. Brown trout was the species most susceptible to organochlorines, coho salmon the most susceptible to carbamates, and goldfish were the least susceptible of all species. Safe concentrations established by bioassays with salmonids or centrarchids would likely be safe for	Macek, et al (1970), AMIC-5510

						cyprinids and ictalurids. Safe levels for ictalurids or cyprinids would probably be hazardous for centrarchids and salmonids. The use of goldfish in bioassays was discouraged.	
Methyl parathion	Ictalurus melas	BSA	--	6.64 (T4)	a, synthetic test water	same as above	Macek,et al (1970), AMIC-5510
Methyl parathion	Carassius auratus	BSA	--	99.00 (T4)	a, synthetic test water	same as above	Macek, et al (1970), AMIC-5510
Methyl parathion	Cyprinus carpio	BSA	--	7.13 (T4)	a, synthetic test water	same as above	Macek, et al (1970), AMIC-5510
Methyl parathion	Pimephales promelas	BSA	--	8.90 (T4)	a, synthetic test water	same as above	Macek, et al (1970), AMIC-5510
Methyl parathion	Lepomis macrochirus	BSA	--	5.72 (T4)	a, synthetic test water	same as above	Macek, et al (1970), AMIC-5510
Methyl parathion	Lepomis microlophus	BSA	--	5.17 (T4)	a, synthetic test water	same as above	Macek, et al (1970), AMIC-5510
Methyl parathion	Micropterus salmoides	BSA	--	5.22 (T4)	a, synthetic test water	same as above	Macek, et al (1970), AMIC-5510
Methyl parathion	Salmo gairdneri	BSA	--	2.75 (T4)	a, synthetic test water	same as above	Macek, et al (1970), AMIC-5510
Methyl parathion	Salmo trutta	BSA	--	4.74 (T4)	a, synthetic test water	same as above	Macek,et al (1970), AMIC-5510
Methyl parathion	Oncorhynchus kisutch	BSA	--	5.30 (T4)	a, synthetic test water	same as above	Macek, et al (1970), AMIC-5510
Methyl parathion	Perca flavescens	BSA	--	3.06 (T4)	a, synthetic test water	same as above	Macek, et al (1970), AMIC-5510
Methyl parathion	Palaemonetes kadiakensis	BSA	--	0.0025-0.0233 (T1)	a*	Bioassays were conducted with shrimp from three areas of intensive	Naqvi, et al (1970),

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
	(resistant)					pesticide use and from an unexposed area. Previously exposed shrimp were from 1 to 25 times more resistant than unexposed shrimp. Both types of shrimp were also exposed in cages to waters of the contaminated areas. Susceptible shrimp suffered 66 percent more mortality than did resistant shrimp. The toxicity of the insecticides ranked in descending order was as follows: most toxic, Endrin, DDT, Methyl parathion, Parathion: medium toxicity, Guthion, Lindane, Toxaphene, Strobane: lease toxic Chlordane, Sevin, and Heptachlor.	AMIC-5519
Methyl parathion	Palaemonetes kadiakensis (non-resistant)	BSA	--	0.0037 (T1)	a*	same as above	Naqvi, et al (1970), AMIC-5519
Methyl parathion	Tubifex tubifex	FL and BSA	Belzoni, Miss.	6.00 (NTE)	--	The response of pesticide-resistant aquatic organisms to various pesticides was compared to the response of non-resistant species. Pesticide-resistant species were collected at Belzoni and non-resistant species at State College. Copepods, clams, snails, and sludge worms from Belzoni were considerably more tolerant to pesticides than the non-resistant organisms. The authors note that the effect of increased tolerance in the organisms is an increase in the amount of pesticide residues available to animals of higher trophic levels.	Naqvi, et al (1969), AMIC-5979
Mevinfos	Rasbora heteromorpha	BCFA and BSA	--	11.5 (T2)	a*,c,e,f, hard (HW) or SOFT(SW) synthetic dilution water, or seawater for some	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water	Alabaster (1969), AMIC-5425

					species	and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	
Nilbex	Rasbora heteromorpha	BCFA and BSA	--	3.5 (T2)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425
MM	Fundulus heteroclitus	BSA	--	0.0003-0.0006 (T4)	a*,c,e, and synthetic seawater	same as above	LaRoche, et al (1970), AMIC-445
MM	Nereis virens	BSA	--	0.00006-0.00043 (T4)	a*,c,e, and synthetic seawater	same as above	LaRoche,et al (1970), AMIC-445
Moaspill	Crangon crangon	BSA	--	1000-3300 (T4)	a*(continuous, aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701
Mobilsol	Crangon crangon	BSA	--	10-33 (T2)	a*(continuous, aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701
Molinate	Gammarus fasciatus	BSA	--	0.39 (T2), 0.30 (T4)	a*	Of the aquatic weed herbicides evaluated, Diclone was the most toxic. Daphnia was generally the most sensitive organism. All of the crustacea were	Sanders (1970), AMIC-453

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
						affected by much lower concentration levels of herbicides than indicated by the TL sub 50 values. All of the animals represent important food chain links.	
Molinate	Paleomontes kadiakensis	BSA	--	1.0(T2)	a*	same as above	Sanders (1970), AMIC-453
Molinate	Asellus brevicaudus	BSA	--	0.40 (T2)	a*	same as above	Sanders (1970), AMIC-453
Molinate	Orconectes nais	BSA	--	5.6 (T2)	a*	same as above	Sanders (1970), AMIC-453
Molinate	Daphnia magna	BSA	--	0.60 (T2)	a*	same as above	Sanders (1970), AMIC-453
Molinate	Cypridopsis vidua	BSA	--	0.18 (T2)	a*	same as above	Sanders (1970), AMIC-453
Molinate	Lepomis macrochirus	BSA	--	0.48 (T2)	a*	same as above	Sanders (1970), AMIC-453
Molybdenum	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	0.1 (dorsal muscle residue)	--	Fish collected from an effluent pipe of a steam plant and from offshore waters of Catalina Island were analyzed for trace element content. Trace element content of the effluent water was at least 5 times greater than that of normal sea water for cadmium, copper, nickel, zinc, and chromium. Livers of fish from the effluent were nearly twice the size of those from the ocean. Greatest differences in concentration occurred with aluminum, cadmium, and nickel. Silver, barium, lithium, and lead showed the least differences. The author concluded that trace element analysis of tissues could be used to determine the	Stapleton (1968), AMIC-5980

						effect of pollutants on marine organisms.	
Molybdenum	Paralabrax clathratus	FM	Catalina Island, Cal.	0.2(dorsal muscle residue)	--	same as above	Stapleton (1968), AMIC-5980
Molybdenum	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	0.2 (ventral muscle residue)	--	same as above	Stapleton (1968), AMIC-5980
Molybdenum	Paralabrax clathratus	FM	Catalina Island, Cal.	0.2(ventral muscle residue)	--	same as above	Stapleton (1968), AMIC-5980
Molybdenum	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	0.7 (gonads residue)	--	same as above	Stapleton (1968), AMIC-5980
Molybdenum	Paralabrax clathratus	FM	Catalina Island, Cal.	0.8(gonads residue)	--	same as above	Stapleton (1968), AMIC-5980
Molybdenum	Paralabrax clathratus (gravid females)	FM	CatalinaIsland, Cal.	0.6 (gonads residue)	--	same as above	Stapleton (1968), AMIC-5980
Molybdenum	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	0.2 (liver residue)	--	same as above	Stapleton (1968), AMIC-5980
Molybdenum	Paralabrax clathratus	FM	Catalina Island, Cal.	0.4(liver residue)	--	same as above	Stapleton (1968), AMIC-5980
Molybdenum	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	0 (integument residue)	--	same as above	Stapleton (1968), AMIC-5980
Molybdenum	Paralabrax clathratus	FM	Catalina Island, Cal.	0.4(integument residue)	--	same as above	Stapleton (1968), AMIC-5980
Molybdenum	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	0.4 (heart residue)	--	same as above	Stapleton (1968), AMIC-5980

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
Molybdenum	Paralabrax clathratus	FM	Catalina Island, Cal.	0.4(heart residue)	--	same as above	Stapleton (1968), AMIC-5980
Molybdenum	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	1.9 (eyeball residue)	--	same as above	Stapleton (1968), AMIC-5980
Molybdenum	Paralabrax clathratus	FM	Catalina Island, Cal.	4.8(eyeball residue)	--	same as above	Stapleton (1968), AMIC-5980
Monoxone	Salmo gairdneri	BCFA and BSA	--	900 (T2)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425
Mono (N, N dimethyl alkyl amine) salt of endothall	Phormidium ambiquum	L	--	0.5-10.0 (NTE)	--	Of 74 chemicals evaluated as algicides, only 9 were more toxic than CuSO4. None inhibited growth of mat-forming algae for more than 2 weeks. CuSO4 formulated with certain wetting agents was more toxic than CuSO4 alone. Copper chloramine was also found to be more toxic than CuSO4. No wetting agents were found to be inhibitory at the concentrations investigated (0.05 and 0.005 ppm). Also reported are factors affecting growth of algae in canals to determine whether there were leads to controlling algae by environmental management. No practical environmental means were found.	Otto (1970), AMIC-692
Monuron	Salmo gairdneri	BCFA and BSA	--	80 (T2)	a*,c,e,f, hard (HW) or soft (SW) synthetic	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and	Alabaster (1969), AMIC-5425

					dilution water, or seawater for some species	percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	
Monuron	Mercenaria mercenaria (eggs)	L	--	greater than 5.0 (T2)	--	The effect of 52 pesticides on embryonic development of clams and oysters was reported. Synergistic effects with solvents were also reported. Most of the compounds affected development more than survival. Some, however, drastically reduced larval growth. The authors point out the necessity of evaluating the effects of pesticides on all life stages of an organism and note the possibility of selecting chemicals for pest control that would not have serious effect on shellfish.	Davis, et al(1969), AMIC-5990
Monuron	Mercenaria mercenaria (larvae)	L	--	greater than 5.0 (T12)	--	same as above	Davis, et al(1969), AMIC-5990
Morphothion	Cardium edule	BSA	--	greater than 10 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701
Morphothion	Crangon crangon	BSA	--	1.0-3.3 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
MS-222	Negaprion brevirostris (1-3 kg)	BSA	--	20.9 (SB 10 min)	a,c,e	Data from study of drug effects on young lemon sharks were treated mathematically to demonstrate applicability of classical rate theory to the study of chemical shark deterrents. Incapacitation (narcosis) was the primary parameter timed for effectiveness. This was usually quite rapid for the more effective drugs.	Baldridge (1969), AMIC-3832

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
MS-222	Lepomis macrochirus	BSA	--	30 (SB1)	a*	Little difference in nitrogen excretion rate was found between treated and control fish. Anaesthesia should have reduced nitrogen excretion but did not. The author believed that increased mucus secretion was a possible explanation for the results obtained.	Savitz (1969), AMIC-5838
Mystox LSC-P	Rasbora heteromorpha	BCFA and BSA	--	18 (T2, hardwater)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425
Mystox LSC-P	Rasbora heteromorpha	BCFA and BSA	--	5.6 (T2, softwater)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, orseawater for some species	same as above	Alabaster (1969), AMIC-5425
Mystox LSE-L	Salmo gairdneri	BCFA and BSA	--	36 (T2)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	same as above	Alabaster (1969), AMIC-5425
Mystox LSE-P	Salmo gairdneri	BCFA and BSA	--	24 (T2)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater	same as above	Alabaster (1969), AMIC-5425

					for some species		
Mystox LSL-L	Salmo gairdneri	BCFA and BSA	--	180 (T2)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	same as above	Alabaster (1969), AMIC-5425
Mystox LSL-P	Salmo gairdneri	BCFA and BSA	--	68 (T2)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	same as above	Alabaster (1969), AMIC-5425
Mystox LSL	Rasbora heteromorpha	BCFA and BSA	--	8.2 (T2, hardwater)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	same as above	Alabaster (1969),AMIC-5425
Mystox LSL	Rasbora heteromorpha	BCFA and BSA	--	2.5 (T2, softwater)	a*,c,e,f, hard(HW) or soft (SW) synthetic dilution water, or seawater for some species	same as above	Alabaster (1969),AMIC-5425
Nabam	Mercenaria mercenaria (eggs)	L	--	less than 0.5 (T2)	--	The effect of 52 pesticides on embryonic development of clams and oysters was reported. Synergistic effects with solvents were also reported. Most of the compounds affected	Davis, et al (1969),AMIC-5990

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
						development more than survival. Some, however, drastically reduced larval growth. The authors point out the necessity of evaluating the effects of pesticides on all life stages of an organism and note the possibility of selecting chemicals for pest control that would not have serious effect on shellfish.	
Nabam	Mercenaria mercenaria (larvae)	L	--	1.75 (T12)	--	same as above	Davis, et al (1969), AMIC-5990
Nabam	Crassostrea virginica (eggs)	L	--	less than 0.5 (T2)	--	same as above	Davis, et al (1969), AMIC-5990
Nalco 201	Rasbora heteromorpha	BCFA and BSA	--	0.76 (T2)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425
Nalco 240	Rasbora heteromorpha	BCFA and BSA	--	7.4 (T2)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	same as above	Alabaster (1969), AMIC-5425

Nalco 243	Rasbora heteromorpha	BCFA and BSA	--	0.28 (T2)	a*,c,e,f, hard (HW) or SOFT(SW) synthetic dilution water, or seawater for some species	same as above	Alabaster (1969), AMIC-5425
Naphthenic acids	Lepomis macrochirus	BSA, L	--	5.6 (T4)	a#,e, and synthetic dilution water	This study was conducted to determine the relative toxicities of 20 common constituents of industrial wastes to a fish, an alga, and an invertebrate. The experiments were conducted over a 10-year period for varied purposes. The authors recommend bioassays with at least three components of the food web.	Patrick, et al (1968), AMIC-5720
Naphthenic acids	Nitzschia linearis	BSA, L	--	43.1 (T5)	a#,e, and synthetic dilution water	same as above	Patrick, et al (1968), AMIC-5720
Naphthenic acids	Physa heterostropha	BSA, L	--	7.1 (T4)	a#,e, and synthetic dilution water	same as above	Patrick, et al (1968), AMIC-5720
NA	Fundulus heteroclitus	BSA	--	0.00018-0.00054 (T4)	a*,c,e,and synthetic seawater	A laboratory procedure based on Standard Methods for 96-hr toxicity determinations of crude oil and oil-dispersant mixtures was described. The dispersants varied considerably in toxicity, ranging from 0.01 to 7.1 ml/l, TL50 for 96 hr. These did not differ significantly from 240 hr values. The dispersants were designated as CX, DO, CI, OD, AQ, PC, MM, TN, BP, and NA with no further description of their chemical nature or source. Only a few bioassays were conducted with shrimp. Mollusks and echinoderms were suggested as suitable test animals. The authors stated that the method could be used to test any product for toxicity in seawater.	LaRoche, et al (1970), AMIC-445
NA	Nereis virens	BSA	--	0.000007-0.00006 (T4)	a*,c,e, and synthetic seawater	same as above	LaRoche,et al (1970), AMIC-445
Neburon	Mercenaria mercenaria (eggs)	L	--	less than 2.4 (T2)	--	The effect of 52 pesticides on embryonic development of clams and oysters was reported. Synergistic effects with solvents were also reported. Most of the compounds affected development more than survival. Some,	Davis, et al(1969), AMIC-5990

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
						however, drastically reduced larval growth. The authors point out the necessity of evaluating the effects of pesticides on all life stages of an organism and note the possibility of selecting chemicals for pest control that would not have serious effect on shellfish.	
Neburon	Mercenaria mercenaria (larvae)	L	--	less than 2.4 (T12)	--	same as above	Davis, et al(1969), AMIC-5990
Nemagon	Mercenaria mercenaria (eggs)	L	--	10.0 (T2)	--	The effect of 52 pesticides on embryonic development of clams and oysters was reported. Synergistic effects with solvents were also reported. Most of the compounds affected development more than survival. Some, however, drastically reduced larval growth. The authors point out the necessity of evaluating the effects of pesticides on all life stages of an organism and note the possibility of selecting chemicals for pest control that would not have serious effect on shellfish.	Davis, et al (1969), AMIC-5990
Nemagon	Mercenaria mercenaria (larvae)	L	--	0.78 (T12)	--	same as above	Davis, et al (1969), AMIC-5990
Neomycin sulfate	Phormidium ambiguum	L	--	0.5-10.0 (NTE)	--	Of 74 chemicals evaluated as algicides, only 9 were more toxic than CuSO4. None inhibited growth of mat-forming algae for more than 2 weeks. CuSO4 formulated with certain wetting agents was more toxic than CuSO4 alone. Copper chloramine was also found to be more toxic than CuSO4. No wetting agents were found to be inhibitory at the concentrations investigated (0.05 and 0.005 ppm). Also reported are factors affecting growth of algae in canals to determine whether there were leads to controlling algae by environmental management. No practical environmental means were found.	Otto(1970), AMIC-892
New BP 1100	Crangon crangon	BSA	--	3300-10,000 (T2)	a*(continuous, aeration, sea	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure	Portmann, et al (1971), AMIC-7701

					water, and daily solution renewal)	inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	
Nickel sulfate (as nickel)	Carcinus maenas	BSA	--	255 (T2)	a*(continuous, aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701
Nickel sulfate (as nickel)	Cardium edule	BSA	--	greater than 500 (T2)	a*(continuous, aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Nickel sulfate (as nickel)	Crangon crangon	BSA	--	125 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Nickel sulfate (as nickel)	Ostrea edulis	BSA	--	100-150 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Nickel sulfate (as nickel)	Pandalus montagui	BSA	--	13.9 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
Nickel sulfate (as Ni2 plus)	Salmo gairdneri (eggs and sperm)	BSA	--	1.0 (NTE)	a,c,f	Data were given in mg/l which was taken to be the equivalent of ppm. Fertilization rates were statistically similar in both test (Cu and Ni) and control waters. The rate of hatching was significantly different for eggs exposed to Cu and the rate of development was increased. The authors concluded that in hard waters neither Cu nor Ni is likely to impair fertilization in rainbow trout.	Shaw, et al (1971), AMIC-1444
Nickel sulfate (as Ni)	Acroneuria	BSA	--	33.5 (T4)	a*,c,d,e,f	Ephemerella (mayfly) was the most sensitive aquatic insect of those studied, and copper the most broadly toxic metal. The authors suggest that aquatic insects may not be as sensitive to heavy metals as fish.	Warnick, et al(1969), AMIC-3767
Nickel sulfate (as Ni)	Ephemerella	BSA	--	4 (T4)	a*,c,d,e,f	same as above	Warnick, et al(1969), AMIC-3767
Nickel sulfate (as Ni)	Hydropsyche	BSA	--	64 (T14)	a*,c,d,e,f	same as above	Warnick, et al(1969), AMIC-3767
Nickel sulfate (as Ni)	Phormidium ambiguum	L	--	0.5-10.0 (16 percent growth inhibited14)	--	Of 74 chemicals evaluated as algicides, only 9 were more toxic than CuSO4. None inhibited growth of mat-forming algae for more than 2 weeks. CuSO4 formulated with certain wetting agents was more toxic than CuSO4 alone. Copper chloramine was also found to be more toxic than CuSO4. No wetting agents were found to be inhibitory at the concentrations investigated (0.05 and 0.005 ppm). Also reported are factors affecting growth of algae in canals to determine whether there were leads to controlling algae by environmental management. No practical environmental means were found.	Otto (1970), AMIC-892
Nickel (plus copper, zinc)	Salmo gairdneri	BSA	--	0.5-1.8 (T2)	a,c,e	Rainbow trout were exposed to copper, phenol, zinc, or nickel solutions to determine 48-hour LC50 values for	Brown,et al (1970), AMIC-5994

						mixtures of copper and phenol: copper, zinc, and phenol: and copper, zinc, and nickel. It was concluded that acute lethal toxicities of the mixtures could be adequately described by summations of the fractional toxicities.	
Nickel	Coregonus clupeaformis	FL	Moose Lake, Can.	0.2 (residue)	--	Concentrations of 13 toxic elements in dressed fish from heavily industrialized and non-industrialized areas were determined. Only mercury exceeded regulatory limits, and concentrations of most elements were essentially the same in fish from both areas.	Uthe,et al (1971), AMIC-3819
Nickel	Esox lucius	FL	Moose Lake, Can.	0.2 (residue)	--	same as above	Uthe, et al (1971),AMIC-3819
Nickel	Esox lucius	FL	Lake St. Pierre, Can.	0.2 (residue)	--	same as above	Uthe, et AL(1971), AMIC-3819
Nickel	Esox lucius	FL	Lake Erie, Can.	0.2 (residue)	--	same as above	Uthe, et al (1971),AMIC-3819
Nickel	Osmerus mordax	FL	Lake Erie, Can.	0.2 (residue)	--	same as above	Uthe, et al (1971),AMIC-3819
Nickel	Perca flavescens	FL	Lake Erie, Can.	0.2 (residue)	--	same as above	Uthe, et al (1971),AMIC-3819
Nickel	Coregonus clupeaformis	FL	Lake Ontario, Can.	0.2 (residue)	--	same as above	Uthe,et al (1971), AMIC-3819
Nickel	Paralabrax clathratus	FM	Scattergood Steam Plant, LosAngeles, Cal.	5 (dorsal muscle residue)	--	Fish collected from an effluent pipe of a steam plant and from offshore waters of Catalina Island were analyzed for trace element content. Trace element content of the effluent water was at least 5 times greater than that of normal sea water for cadmium, copper, nickel, zinc, and chromium. Livers of fish from the effluent were nearly twice the size of those from the ocean. Greatest differences in concentration occurred with aluminum, cadmium, and nickel.	Stapleton (1968), AMIC-5980

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
						Silver, barium, lithium, and lead showed the least differences. The author concluded that trace element analysis of tissues could be used to determine the effect of pollutants on marine organisms.	
Nickel	Paralabrax clathratus	FM	Catalina Island, Cal.	6.4 (dorsal muscle residue)	--	same as above	Stapleton (1958), AMIC-5980
Nickel	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	5.8 (ventral muscle residue)	--	same as above	Stapleton (1958), AMIC-5980
Nickel	Paralabrax clathratus	FM	Catalina Island, Cal.	6.1 (ventral muscle residue)	--	same as above	Stapleton (1968), AMIC-5980
Nickel	Paralabrax clathratus	FM	Scattergood Steam Plant, LosAngeles, Cal.	14.7 (gonads residue)	--	same as above	Stapleton (1968), AMIC-5980
Nickel	Paralabrax clathratus	FM	Catalina Island, Cal.	22.2 (gonads residue)	--	same as above	Stapleton (1968), AMIC-5980
Nickel	Paralabrax clathratus (gravid females)	FM	Catalina Island, Cal.	8.6 (gonads residue)	--	same as above	Stapleton (1968), AMIC-5980
Nickel	Paralabrax clathratus	FM	Scattergood Steam Plant, LosAngeles, Cal.	3.9 (liver residue)	--	same as above	Stapleton (1958), AMIC-5980
Nickel	Paralabrax clathratus	FM	Catalina Island, Cal.	7.6 (liver residue)	--	same as above	Stapleton (1968), AMIC-5980
Nickel	Paralabrax clathratus	FM	Scattergood Steam Plant, LosAngeles, Cal.	9 (integument residue)	--	same as above	Stapleton (1968), AMIC-5980

Nickel	Paralabrax clathratus	FM	Catalina Island, Cal.	10.2 (integument residue)	--	same as above	Stapleton (1968), AMIC-5980
Nickel	Paralabrax clathratus	FM	Scattergood Steam Plant, LosAngeles, Cal.	6.1 (heart residue)	--	same as above	Stapleton (1968), AMIC-5980
Nickel	Paralabrax clathratus	FM	Catalina Island, Cal.	10.8 (heart residue)	--	same as above	Stapleton (1968), AMIC-5980
Nickel	Paralabrax clathratus	FM	Scattergood Steam Plant, LosAngeles, Cal.	6.4 (eyeball residue)	--	same as above	Stapleton (1968), AMIC-5980
Nickel	Paralabrax clathratus	FM	Catalina Island, Cal.	33.2 (eyeball residue)	--	same as above	Stapleton (1968), AMIC-5980
Nickel	Salmo gairdneri	BSA	--	32.0 (T2)	a,c,e	Rainbow trout were exposed to copper, phenol, zinc, or nickel solutions to determine 48-hour LC50 values for mixtures of copper and phenol: copper, zinc, and phenol: and copper, zinc, and nickel. It was concluded that acute lethal toxicities of the mixtures could be adequately described by summations of the fractional toxicities.	Brown, et al (1970), AMIC-5994
Nicotine	Negaprion brevirostris (1-3 kg)	BSA	--	34 (SB)	a,c,e	Data from study of drug effects on young lemon sharks were treated mathematically to demonstrate applicability of classical rate theory to the study of chemical shark deterrents. Incapacitation (narcosis) was the primary parameter timed for effectiveness. This was usually quite rapid for the more effective drugs.	Baldridge (1969), AMIC-3832
Nicotine	Labeo rohita	L	--	1.0 (SB7)	a,d,e,f	This experiment showed that nicotine could be successfully used to live-capture fish from reservoirs. Fish surfaced and recovered rapidly when placed in freshwater. Fish remaining in test solutions above 4 ppm did not recover. This chemical was considerably less toxic to the aquatic insects studied.	Konar (1970), AMIC-5435

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
Nicotine	Puntius sophore	L	--	1.0 (SB7)	a,d,e,f	same as above	Konar (1970), AMIC-5435
Nicotine	Ranatra filiformis	L	--	40 (NTE7)	a,d,e,f	same as above	Konar (1970), AMIC-5435
Nicotine	Dytiscus sp.	L	--	400 (NTE7)	a,d,e,f	same as above	Konar (1970), AMIC-5435
Nicotine	Heteropneustes fossilis	L	--	3.2 (SB 5 hr), K 18 hr)	--	Epidermal lesions of catfish barbels were moderate to severe after exposure noted. Barbel curling and inactivation were associated effects.	Konar(1969), AMIC-5726
Nitric acid	Agonus cataphractus	BSA	--	100-330 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701
Nitric acid	Asterias rubens	BSA	--	100-330 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Nitric acid	Carcinus maenas	BSA	--	180 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971),AMIC-7701
Nitric acid	Cardium edule	BSA	--	330-1000 (T2)	a*(contin-	same as above	Portmann, et

					uous, aeration, sea-water, and daily solution renewal)		al (1971), AMIC-7701
Nitrilotriacetic acid (NTA)	Amphidinium carteri	L	--	10 (NTE)	SSM and NSW	NTA stimulated algal growth in cultures without added copper and reduced toxicity of copper at all levels of copper addition. See information on CuCl2.H20 (as Cu) under authors cited for further information.	Erickson, et al (1970), AMIC-449
Nitrilotriacetic acid (NTA)	Chaetoceros sp	L	--	10 (NTE)	SSM and NSW	same as above	Erickson, et al(1970), AMIC-449
Nitrilotriacetic acid (NTA)	Cyclotella nana	L	--	10 (NTE)	SSM and NSW	same as above	Erickson, et al(1970), AMIC-449
Nitrilotriacetic acid (NTA)	Dunaliella tertiolecta	L	--	10 (NTE)	SSM and NSW	same as above	Erickson, et al (1970), AMIC-449
Nitrilotriacetic acid (NTA)	Isochrysis galbana	L	--	10 (NTE)	SSM and NSW	same as above	Erickson,et al (1970), AMIC-449
Nitrilotriacetic acid (NTA)	Monochrysis lutheri	L	--	10 (NTE)	SSM and NSW	same as above	Erickson, et al (1970), AMIC-449
Nitrilotriacetic acid (NTA)	Nannochloris oculata	L	--	10 (NTE)	SSM and NSW	Erickson, et al (1970), AMIC-449	Nitrilotriacetic acid (NTA)
Nitrilotriacetic acid	Nitzschia closterium	L	--	10 (NTE)	SSM and NSW	same as above	Erickson, et al (1970), AMIC-449
Nitrilotriacetic acid	Olisthodiscus luteus	L	--	(10 NTE)	SSM and NSW	same as above	Erickson, et al (1970), AMIC-449
Nitrilotriacetic acid	Platymonas subcordiformis	L	--	(10 NTE)	SSM and NSW	same as above	Erickson, et al (1970), AMIC-449
Nitrilotriacetic acid	Porphyridium cruentum	L	--	(10 NTE)	SSM and NSW	same as above	Erickson, et al (1970), AMIC-449

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
Nitrofurazone	Mercenaria mercenaria (eggs)	L	--	greater than 100.0 (T2)	--	The effect of 52 pesticides on embryonic development of clams and oysters was reported. Synergistic effects with solvents were also reported. Most of the compounds affected development more than survival. Some, however, drastically reduced larval growth. The authors point out the necessity of evaluating the effects of pesticides on all life stages of an organism and note the possibility of selecting chemicals for pest control that would not have serious effect on shellfish.	Davis,et al (1969), AMIC-5990
Nitrofurazone	Mercenaria mercenaria (larvae)	L	--	greater than 100.0 (T12)	--	same as above	Davis, et al (1969), AMIC-5990
Nitrogen (dissolved)	Oncorhynchus tshawytscha (juveniles)	FR,BS CH	Priest Rapids Dam, Wash.	Super saturation (K54)	a	The nitrogen gas regime in the Columbia River was studied in 1966 in order to determine whether high levels of dissolved nitrogen might be responsible for losses of adult salmon and poor production of young fish at spawning channels. Examinations of dead juvenile salmon revealed that most fish had symptoms of "gas bubble disease". Juvenile salmon kept at sufficient depth to compensate for the supersaturation of dissolved nitrogen were free of symptoms of gas bubble disease. Fish under stress from the supersaturation of dissolved nitrogen were very intolerant to temperature increases.	Ebel (1969 AMIC-6198
Nitrogen (dissolved)	Salmo gairdneri (adults)	FR	McNary Dam, Wash.	Supersaturation (NTE 35)	a	same as above	Ebel (1969), AMIC-6198
Nitrogen (dissolved)	Oncorhynchus kisutch (juveniles)	FR, BSCH	Priest RapidsDam, Wash.	Super saturation (6-16 percent	a	same as above	Ebel (1969), AMIC-6198

K)

Nitrogen (dissolved)	Oncorhynchus nerka (adults)	FR	McNary Dam, Wash.	Supersaturation (SB35)	a	same as above	Ebel (1969), AMIC-6198
Ni, Cu, Cr, CN, and Zn (wastewater)	Pimephales promelas	BSACF (ML)	Grand River at Wyoming, Michigan	approx. 1.67 percent (T3)	a,c,e, conductivity, Ni,Cu,Cr, CN, and Zn	A mobile bioassay unit was utilized to conduct this study of municipal wastewater containing the indicated toxicants. River water was used as diluent. The conclusion was reached that synergistic or additive toxic effects occurred since toxicity was greater than that of any of the ions singly.	Zillich (1969), AMIC-2906
Ni, Cu, Cr, CN, and Zn (wastewater)	Catostomus commersoni	BSACF (ML)	Grand River atwyoming, Michigan	between 1.25-3.75 percent (T3)	a,c,e, conductivity, Ni,Cu,Cr, CN, and Zn	same as above	Zillich (1969), AMIC-2906
Nonyl phenol 12 (plus ethylene oxide)	Carcinus maenas	BSA	--	greater than 100(T2)	a*(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann,et al (1971), AMIC-7701
Nonyl phenol 12 (plus ethylene oxide)	Cardium edule	BSA	--	92.5 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971),AMIC-7701
Nonyl phenol 12 (plus ethylene oxide)	Crangon crangon	BSA	--	89.5 (T2)	a*(continuous, aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971),AMIC-7701
Nonyl phenol 12 (plus ethylene oxide)	Pandalus montagui	BSA	--	19.3 (T2)	a*(continuous, aeration, sea-	same as above	Portmann, et al (1971),AMIC-

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
					water, and daily solution renewal)		7701
Norea	Gammarus fasciatus	BSA	--	1.4 (T4)	a*	Of the aquatic weed herbicides evaluated, Dicione was the most toxic, Daphnia was generally the most sensitive organism. All of the crustacea were affected by much lower concentration levels of herbicides than indicated by the TL sub 50 values. All of the animals represent important food chain links.	Sanders (1970), AMIC-453
Norseman	Crangon crangon	BSA	--	3.3-10 (T4)	a*(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701
NPH 1253	Rasbora heteromorpha	BCFA and BSA	--	0.14 (T2)	a*,c,e,f, hard (HW) or SOFT(SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425
NPH 1313	Rasbora heteromorpha	BCFA and BSA	--	11 (T2)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or	same as above	Alabaster (1969), AMIC-5425

					seawater for some species		
NPH 1313	Rasbora heteromorpha	BCFA and BSA	--	5.0 (T2)	a#,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	same as above	Alabaster (1969), AMIC-5425
Nucidol diazinon sheep dip	Rasbora heteromorpha	BCFA and BSA	--	1.45 (T1)	a#,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	same as above	Alabaster, (1969), AMIC-5425
Nystatin	Phormidium ambiguum	L	--	0.5-10.0 (NTE)	--	Of 74 chemicals evaluated as algicides, only 9 were more toxic than $CuSO_4$. None inhibited growth of mat-forming algae for more than 2 weeks. $CuSO_4$ formulated with certain wetting agents was more toxic than $CuSO_4$ alone. Copper chloramine was also found to be more toxic than $CuSO_4$. No wetting agents were found to be inhibitory at the concentrations investigated (0.05 and 0.005 ppm). Also reported are factors affecting growth of algae in canals to determine whether there were leads to controlling algae by environmental management. No practical environmental means were found.	Otto (1970), AMIC-892
N-methyl carbamate derivitive	Rasbora heteromorpha	BCFA and BSA	--	0.58 (T2)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes	Alabaster (1969), AMIC-5425

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
					species	pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	
N-3452	Crassostrea virginica (eggs)	L	--	less than 0.5 (T2)	--	The effect of 52 pesticides on embryonic development of clams and oysters was reported. Synergistic effects with solvents were also reported. Most of the compounds affected development more than survival. Some, however, drastically reduced larval growth. The authors point out the necessity of evaluating the effects of pesticides on all life stages of an organism and note the possibility of selecting chemicals for pest control that would not have serious effect on shellfish.	Davis, et al (1969), AMIC-5990
N-3452	Crassostrea virginica (larvae)	L	--	less than 0.5 (T14)	--	same as above	Davis, et al(1969), AMIC-5990
N-3514	Mercenaria mercenaria (eggs)	L	--	less than 1.0 (T2)	--	same as above	Davis, et al (1969), AMIC-5990
N-3514	Mercenaria mercenaria (larvae)	L	--	less than 1.0 (T12)	--	same as above	Davis, et al(1969), AMIC-5990
N-3514	Crassostrea virginica (eggs)	L	--	less than 1.0 (T2)	--	same as above	Davis, et al(1969), AMIC-5990
N-3514	Crassostrea virginica (larvae)	L	--	less than 1.0 (T14)	--	same as above	Davis, et al(1969), AMIC-5990
Octyl phenol 11 (plus ethylene oxide)	Carcinus maenas	BSA	--	greater than100 (T2)	a* (continuous aeration, seawater,	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine	Portmann,et al (1971), AMIC-7701

					and daily solution renewal)	organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	
Octyl phenol 11 (plus ethylene oxide)	Cardium edule	BSA	--	19.6(T2)	a#(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al(1971), AMIC-7701
Octyl phenol 11 (plus ethylene oxide)	Crangon crangon	BSA	--	63(T4)	a#(continuous, aeration, seawater, and daily solution renewal)	same as above	Portmann, et al(1971), AMIC-7701
Octyl phenol 11 (plus ethylene oxide)	Pandalus montagui	BSA	--	10.8 (T2)	a#(continuous, aeration, seawater, and daily solution renewal)	same as above	Portmann, et al(1971), AMIC-7701
Octyl phenol 11 (plus ethylene oxide)	Platicthys flesus	BSA	--	33-100 (T2)	a#(continuous, aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971),AMIC-7701
OD	Fundulus heteroclitus	BSA	--	0.0005 (T4)	a*,c,e, and synthetic seawater	A laboratory procedure based on Standard Methods for 96-hr toxicity determinations of crude oil and oil-dispersant mixtures was described. The dispersants varied considerably in toxicity, ranging from 0.01 to 7.1 ml/l, TL50 for 96 hr. These did not differ significantly from 240 hr values. The dispersants were designated as CX, DO, CI, OD, AQ, PC, MM, TN, BP, and NA with no further description of their chemical nature or source. Only a few bioassays were conducted with shrimp. Mollusks and echinoderms were suggested as suitable test animals. The authors stated that the method could be used to test any product for toxicity in seawater.	LaRoche,et al (1970), AMIC-445

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
OD	Nereis virens	BSA	--	0.00014-0.00094 (T4)	a*,c,e, and synthetic seawater	same as above	LaRoche,et al (1970), AMIC-445
Oil herder	Crangon crangon	BSA	--	3300-10,000 (T4)	a*(continuous aeration, sea-water, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701
Oil (crude)	Palaemonetes vulgaris	BSA	--	greater than 1.0 (T4)	a*,c,e, and synthetic seawater	A laboratory procedure based on Standard Methods for 96-hr toxicity determinations of crude oil and oil-dispersant mixtures was described. The dispersants varied considerably in toxicity, ranging from 0.01 to 7.1 ml/l, TL50 for 96 hr. These did not differ significantly from 240 hr values. The dispersants were designated as CX, DO, CI, OD, AQ, PC, MM, TN, BP, and NA with no further description of their chemical nature or source. Only a few bioassays were conducted with shrimp. Mollusks and echinoderms were suggested as suitable test animals. The authors stated that the method could be used to test any product for toxicity in seawater.	LaRoche, et al (1970), AMIC-445
Oil (crude oil B)	Fundulus heteroclitus	BSA	--	0.0082 (T4)	a*,c,e, and synthetic seawater	same as above	LaRoche, et al (1970), AMIC-445
Oil (crude oil B)	Nereis virens	BSA	--	0.0061 (T4)	a*,c,e, and synthetic seawater	same as above	LaRoche, et al (1970), AMIC-445
Oil (refined)	Palaemonetes vulgaris	BSA	--	0.00005 (T4)	a*,c,e, and synthetic seawater	same as above	LaRoche, et al (1970), AMIC-445
Omazene	Mercenaria mercenaria (eggs)	L	--	0.081 (T2)	--	The effect of 52 pesticides on embryonic development of clams and oysters was reported. Synergistic effects with solvents were also reported.	Davis, et al (1969),AMIC-5990

						Most of the compounds affected development more than survival. Some, however, drastically reduced larval growth. The authors point out the necessity of evaluating the effects of pesticides on all life stages of an organism and note the possibility of selecting chemicals for pest control that would not have serious effect on shellfish.	
Omazene	Mercenaria mercenaria (larvae)	L	--	0.38 (T12)	--	same as above	Davis, et al (1969), AMIC-5990
Omazene	Crassostrea virginica (eggs)	L	--	0.078 (T2)	--	same as above	Davis, et al (1969), AMIC-5990
Omazène	Crassostrea virginica (larvae)	L	--	0.34 (T14)	--	same as above	Davis, et al (1969), AMIC-5990
Orthodichlorobenzene	Mercenaria mercenaria (eggs)	L	--	greater than 100.0 (T2)	--	The effect of 52 pesticides on embryonic development of clams and oysters was reported. Synergistic effects with solvents were also reported. Most of the compounds affected development more than survival. Some, however, drastically reduced larval growth. The authors point out the necessity of evaluating the effects of pesticides on all life stages of an organism and note the possibility of selecting chemicals for pest control that would not have serious effect on shellfish.	Davis, et al (1969), AMIC-5990
Orthodichlorobenzene	Mercenaria mercenaria (larvae)	L	--	greater than 100.0 (T12)	--	same as above	Davis, et al (1969), AMIC-5990
Oxine-copper	Salmo gairdneri	BCFA and BSA	--	0.14 (T2)	a*,c,e,f, hard (HW) or soft (SW)synthetic dilution water, or	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy	Alabaster (1969), AMIC-5425

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
					seawater for some species	predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	
Oxygen	Lepomis macrochirus	BCF	--	0 to saturation (SB8)	a,e*	Fish 15-20 cm long were exposed to gradual hypoxia stress to determine the effect on skeletal muscle and liver lactate and pyruvate. Tests were conducted at 5 and 20 C with DO reduced from saturation to zero over an 8-hour period. Low DO increased lactic acid concentrations in muscle and liver at both temperatures; pyruvic acid levels remained constant. Lactic acid levels were higher at 5 C than at 20 C, and fish were better able to tolerate low oxygen levels at the lower temperature.	Burton (1970), AMIC-6385
o-dichlorobenzene (50 percent plus 20 percent crescylic acid)	Rasbora heteromorpha	BCFA and BSA	--	5.0 (T2)	a*,c,e,f, hard (HW) or SOFT(SW) synthetic dilution water, orseawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425
o,o-diethyl o-2 pyrazinyl phosphorothiate	Rasbora heteromorpha	BCFA and BSA	--	0.05(T2)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	same as above	Alabaster (1969), AMIC-5425

Paraquat-di (methyl) chloride	Rasbora heteromorpha	BCFA and BSA	--	32 (T2)	a*,c,e,f,h ard (HH) or soft (SH) synthetic dilution water, or seawater for some species	same as above	Alabaster (1969),AMIC-5425
Paraquat	Chara sp	FL	Jefferson County., Colo.	1.14(K16)	a,c,d,e,g, and water stage	Paraquat almost eliminated Chara sp. in 16 days and gave initial control of Spirogyra sp. The latter recovered within 3 mos. Fish deaths and other effects occurred within 48 hr. Paraquat was recovered from mud 99 days after application, indicating that this herbicide can be very persistent. This study was conducted in 1964. Livecar exposure of some fish was one technique employed.	Earnest (1971), AMIC-5564
Paraquat	Water (bottom)	FL	Jefferson County., Colo.	1.14 (1.5 ppm max residue3 hr)	a,c,d,e,g, and water stage	same as above	Earnest (1971),AMIC-5564
Paraquat	Mud	FL	Jefferson County., Colo.	1.14 (15.9 ppm maxresidue 16 residue 16d)	a,c,d,e,g, and water stage	same as above	Earnest (1971), AMIC-5564
Paraquat	Spirogyra sp	FL	Jefferson County., Colo.	1.14 (K16)	a,c,d,e,g, and water stage	same as above	Earnest (1971), AMIC-5564
Paraquat	Chara sp	FL	Jefferson County., Colo.	1.14 (2300 ppm max tissue residue 8d)	a,c,d,e,g, and water stage	same as above	Earnest (1971), AMIC-5564
Paraquat	Spirogyra sp	FL	Jefferson County., Colo.	1.14 (1300 ppm max tissue residue 4d)	a,c,d,e,g, and water stage	same as above	Earnest (1971), AMIC-5564
Paraquat	Rainbow trout	FL	Jefferson County., Colo.	1.1 (1.9ppm max tissue 1 residue 1d)	a,c,d,e,g, and water stage	same as above	Earnest (1971),AMIC-5564
Paraquat	Channel catfish	FL	Jefferson County., Colo.	1.1 (1.3 ppm max tissue 1 residue 1d)	a,c,d,e,g, and water stage	same as above	Earnest (1971), AMIC-5564

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
Paraquat	Green sunfish	FL	Jefferson County., Colo.	1.1 (2.1ppm max tissueresidue 16 d)	a,c,d,e,g, and water stage	same as above	Earnest (1971), AMIC-5564
Paraquat	Bluegills	FL	Jefferson County., Colo.	1.1 (1.6 ppmmax tissueresidue 8 d)	a,c,d,e,g, and water stage	same as above	Earnest (1971), AMIC-5564
Paraquat	Water (top)	FL	Jefferson County., Colo.	1.14 (0.6 ppm max residue3 hr-1 d)	a,c,d,e,g, and water stage	same as above	Earnest (1971), AMIC-5564
Paraquat	Cardium edule	BSA	--	greater than 10 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701
Paraquat	Crangon crangon	BSA	--	greater than 10 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Parathion (plus 0.25 ppm LAS)	Pimephales promelas	BCFA	--	0.8 (2.5 percent K)	a*,e	LAS acted synergistically with parathion to cause less survival of fatheds but had an indeterminate effect with DDT and no synergistic effect with Endrin.	Solon, et al (1969), AMIC-3785
Parathion (plus 0.5 ppm LAS)	Pimephales promelas	BCFA	--	0.8 (61.5 percent K)	a*,e	same as above	Solon, et al (1969), AMIC-3785
Parathion (plus 1 ppm LAS)	Pimephales promelas	BCFA	--	0.8 (95 percent K)	a*,e	same as above	Solon, et al (1969), AMIC-3785

Parathion (Sesamex pretreatment at 2 ppm)	Notemigonus chrysoleucas	L	--	0.20 (46percent AChE inhibition)	--	Fish brain AChE activity was not affected by Sesamex alone but was significantly inhibited by parathion. Pretreatment with Sesamex at 2 ppm resulted in decreased inhibition of AChe activity by parathion.	Gibson, et al (1971), AMIC-3799
Parathion (Sesamex pretreatment at 2 ppm)	Lepomis cyanellus	L	--	0.20 (40 percentAChE inhibition)	--	same as above	Gibson, et al (1971), AMIC-3799
Parathion (Sesamex pretreatment at 2 ppm)	Lepomis macrochirus	L	--	0.20 (47percent AChE inhibition)	--	same as above	Gibson, et al (1971), AMIC-3799
Parathion	Lepomis macrochirus (brain tissue)	L	--	0.75 (SB 30 min, invitro)	--	This study was conducted to determine whether brain tissue and handling variables (freezing-thawing) affected AChE assays. AChE inhibition of 25 percent occurred at 750 ppb. Considerable variation occurred, i.e., no symptoms were evident and fish recovered after experiencing 90 percent AChE inhibition. The authors recommend standardization of handling procedures and fish strain.	Gibson, et al (1969), AMIC-3783
Parathion	Pimephales promelas	BCFA	--	1.4 (T4)	a*,e	LAS acted synergistically with parathion to cause less survival of fatheds but had an indeterminate effect with DDT and no synergistic effect with Endrin.	Solon, et al(1969), AMIC-3785
Parathion	Pimephales promelas	BCFA	--	0.8 (5 percent K)	a*,e	same as above	Solon, et al(1969), AMIC-3785
Parathion	Notemigonus chrysoleucas	L	--	0.20 (67 percent AChE inhibition)	--	Fish brain AChE activity was not affected by Sesamex alone but was significantly inhibited by parathion. Pretreatment with Sesamex at 2 ppm resulted in decreased inhibition of AChe activity by parathion.	Gibson, et al (1971), AMIC-3799
Parathion	Lepomis cyanellus	L	--	0.20 (74 percent AChE inhibition)	--	same as above	Gibson, et al (1971), AMIC-3799
Parathion	Lepomis macrochirus	L	--	0.20 (68 percent AChE inhibition)	--	same as above	Gibson, et al(1971), AMIC-3799

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
Parathion	Lepomis cyanellus (Resistant)	BSA	--	0.28 (T2)	a*	Green sunfish from Belzoni, Miss. were resistant to Chlordane, Heptachlor, Lindane, and Strobane, but not to Parathion. Golden shiners from the same location were resistant to Lindane and Strobane, tolerant to Chlordane and Heptachlor, and susceptible to Parathion. Lack of resistance to Parathion indicated lack of agricultural usage of organophosphates in that area. Resistant fish were compared to susceptible ones collected at Starkville.	Minchew, et al(1970), AMIC-5471
Parathion	Lepomis cyanellus (Susceptible)	BSA	--	0.21 (T2)	a*	same as above	Minchew, et al(1970), AMIC-5471
Parathion	Notemigonus crysoleucas (Resistant)	BSA	--	2.80 (T2)	a*	same as above	Minchew, et al(1970), AMIC-5471
Parathion	Notemigonus crysoleucas (Susceptible)	BSA	--	1.90 (T2)	a*	same as above	Minchew, etal (1970), AMIC-5471
Parathion	Palaemonetes kadlakensis (non-resistant)	BSA	--	0.0071 (T1)	a*	same as above	Naqvi, et al (1970), AMIC-5519
Parathion	Palaemonetes kadlakensis (resistant)	BSA	--	0.0066-0.0118 (T1)	a*	Bioassays were conducted with shrimp from three areas of intensive pesticide use and from an unexposed area. Previously exposed shrimp were from 1 to 25 times more resistant than unexposed shrimp. Both types of shrimp were also exposed in cages to waters of the contaminated areas. Susceptible shrimp suffered 66 percent more mortality than did resistant shrimp. The toxicity of the insecticides ranked in descending order was as follows: most toxic, Endrin, DDT, Methyl parathion, Parathion; medium toxicity, Guthion, Lindane,	Naqvi, et al (1970), AMIC-5519

						Toxaphene, Strobane‡ lease toxic Chlordane, Sevin, and Heptachlor.	
Parathion	Notemigonus crysoleucas	L	--	0.5 (SB 1-2)	--	Fish exposed as indicated had significant or highly significant changes in hematocrit, leucocytes, lymphocytes, heterophils, and in body weight. No significant changes were noted in body length, or erythrocyte total and fragility. The authors state that effects on hemopoeisis and cell membranes could produce the results reported.	Butler, et al (1969), AMIC-5977
Parathion	Tubifex tubifex	FL and BSA	Belzoni, Miss.	2.00 (NTE)	--	The response of pesticide-resistant aquatic organisms to various pesticides was compared to the response of non-resistant species. Pesticide-resistant species were collected at Belzoni and non-resistant species at State College. Copepods, clams, snails, and sludge worms from Belzoni were considerably more tolerant to pesticides than the non-resistant organisms. The authors note that the effect of increased tolerance in the organisms is an increase in the amount of pesticide residues available to animals of higher trophic levels.	Naqvi, etal (1969), AMIC-5979
Parathion	Cardium edule	BSA	--	3.3-10 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701
Parathion	Crangon crangon	BSA	--	0.003-0.01 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Parathion	Pleuronectes platessa	BSA	--	0.03-0.10 (T2)	a*(continuous aeration, seawater, and	same as above	Portmann, et al (1971), AMIC-7701

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
					daily solution renewal)		
Parathion	Ictalurus nebulosus	BCFA	--	0.8-3.0 (K up to 30 d)	a*,c,d,e,f ,g	Catfish blood content of parathion was shown to be directly correlatable with water content, lethality, and sublethal symptoms. Freeze-thawing of blood five times resulted in disruption of blood cells and release of unaltered parathion thus indicating that this pesticide is not readily and completely metabolized in fish.	Mount, et al (1959), AMIC-11
Parathion	Ictalurus nebulosus	BCFA	--	10-80 (blood residue)	a*,c,d,e,f ,g	same as above	Mount,et al (1969), AMIC-11
PCB	White sucker	FRL	Misc. states	0.27-14.8 residue (SB)	--	The Bureau of Sport Fisheries continued its fish monitoring program by collecting 147 composite fish samples from 50 nationwide monitoring stations during the fall of 1969. Fish were analyzed for residues of 11 organochlorine insecticides, lipids, and PCB"s.	Henderson, et al(1971), AMIC-1407
PCB	Yellow perch	FRL	Misc. states	0.28-12.6 residue (SB)	--	same as above	Henderson, et al(1971), AMIC-1407
PCB	Chain pickerel	FRL	Misc. states	0.45 residue (SB)	--	same as above	Henderson, etal (1971), AMIC-1407
PCB	White catfish	FRL	Misc. states	less than 0.10-2.16 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1407
PCB	White perch	FRL	Misc. states	less than 0.10-7.68 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1407

PCB	Goldfish	FRL	Misc. states	9.50 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1407
PCB	Pumpkinseed	FRL	Misc. states	2.68 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1407
PCB	Largemouth bass	FRL	Misc. states	less than 0.10-8.07 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1407
PCB	Brown bullhead	FRL	Misc. states	0.34-4.00 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1407
PCB	Carp	FRL	Misc. states	less than 0.10-11.7 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1407
PCB	Channel catfish	FRL	Misc. states	less than 0.10-6.77 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1407
PCB	Redhorse sucker	FRL	Misc. states	less than 0.10-0.25 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1407
PCB	Gizzard shad	FRL	Misc. states	0.22-0.86 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1407
PCB	Spotted sucker	FRL	Misc. states	less than 0.10 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1407
PCB	Bluegills	FRL	Misc. states	0.35-1.19 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1407
PCB	Redbreast sunfish	FRL	Misc. states	0.15 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1407
PCB	Striped mullet	FRL	Misc. states	less than 0.10-1.39 residue (SB)	--	same as above	Henderson, et al (1971),

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
							AMIC-1407
PCB	Blue catfish	FRL	Misc. states	less than 0.10 residue (SB)	--	same as above	Henderson, etal (1971), AMIC -1407
PCB	Rock bass	FRL	Misc. states	0.39-4.10 residue (SB)	--	same as above	Henderson, et al(1971), AMIC-1407
PCB	Freshwater drum	FRL	Misc. states	1.94 residue (SB)	--	same as above	Henderson, et al(1971), AMIC-1407
PCB	Bloater	FRL	Misc. states	1.24-3.47 residue (SB)	--	same as above	Henderson, et al (1971),AMIC-1407
PCB	Lake whitefish	FRL	Misc. states	1.96 residue (SB)	--	same as above	Henderson, et al(1971), AMIC-1407
PCB	Lake trout	FRL	Misc. states	2.64-2.84 residue (SB)	--	same as above	Henderson, et al(1971), AMIC-1407
pcb	White crappie	FRL	Misc. states	0.83-1.79 residue (SB)	--	same as above	Henderson, et al(1971), AMIC-1407
PCB	Bigmouth buffalo	FRL	Misc. states	less than 0.10-1.21 residue(SB)	--	same as above	Henderson, et al (1971), AMIC-1407
PCB	Smallmouth buffalo	FRL	Misc. states	2.66 residue (SB)	--	same as above	Henderson, et al(1971), AMIC-1407
PCB	Flathead catfish	FRL	Misc. states	3.88 residue (SB)	--	same as above	Henderson, et al(1971), AMIC-1407
PCB	Goldeye	FRL	Misc. states	0.18-2.35 residue (SB)	--	same as above	Henderson, et al(1971),

							AMIC-1407
PCB	Walleye	FRL	Misc. states	0.22 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1407
PCB	Sauger	FRL	Misc. states	1.09 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1407
PCB	Flannelmouth sucker	FRL	Misc. states	2.14 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1407
PCB	Black bullhead	FRL	Misc. states	0.15-0.21 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1407
PCB	White bass	FRL	Misc. states	1.04 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1407
PCB	Black crappie	FRL	Misc. states	less than 0.10-1.83 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1407
PCB	Largescale sucker	FRL	Misc. states	less than 0.10-1.16 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1407
PCB	Smallmouth bass	FRL	Misc. states	less than 0.10 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1407
PCB	Northern squawfish	FRL	Misc. states	0.58-1.19 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1407
PCB	Chiselmouth	FRL	Misc. states	0.71-0.98 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1407
PCB	Klamath sucker	FRL	Misc. states	0.13 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1407
PCB	Rainbow trout	FRL	Misc. states	0.27-5.48 residue (SB)	--	same as above	Henderson, et al (1971),

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
							AMIC-1407
PCB	Bridgelip sucker	FRL	Misc. states	2.75 residue (SB)	--	same as above	Henderson, et al(1971), AMIC-1407
PCB	Arctic grayling	FRL	Misc. states	1.42 residue (SB)	--	same as above	Henderson, et al(1971), AMIC-1407
PCB	Round whitefish	FRL	Misc. states	2.62 residue (SB)	--	same as above	Henderson, et al(1971), AMIC-1407
PCB	Longnose sucker	FRL	Misc. states	1.53-3.87 residue (SB)	--	same as above	Henderson, etal (1971), AMIC-1407
PCB	Sebastodes sp.	FO	Pacific Ocean, Cal.	1.0 (liver residue)	--	Samples of marine animals were collected from three locations off the coast of Southern California and analyzed for residues of chlorinated hydrocarbons. The data suggest that Kellet"s whelk would be a good indicator organism for studying the regional distribution of chlorinated hydrocarbons.	Munson (1972),AMIC-3096
PCB	Paralabrax nebulifer	FO	Pacific Ocean, Cal.	0.24 (liver residue)	--	same as above	Munson(1972), AMIC-3096
PCB	Anisotremus davidsoni	FO	Pacific Ocean, Cal.	0.51 (liver residue)	--	same as above	Munson(1972), AMIC-3096
PCB	Pimelometapon pulchrum	FO	Pacific Ocean, Cal.	0.29 (liver residue)	--	same as above	Munson(1972), AMIC-3096
PCB	Haliotis rufescens	FO	Pacific Ocean, Cal.	less than 2.0 (gonad residue)	--	same as above	Munson (1972), AMIC-3096
PCB	Strongylocentrotus franciscanus	FO	Pacific Ocean, Cal.	0.12-0.21 (gonad residue)	--	same as above	Munson (1972), AMIC-3096
PCB	Hinnites multirugosis	FO	Pacific Ocean, Cal.	0.5 (gonad residue)	--	same as above	Munson(1972), AMIC-3096

PCB	Haliotis corrugata	FO	Pacific Ocean, Cal.	0.008 (gonad residue)	--	same as above	Munson (1972),AMIC-3096
PCB	Kelletia kelletii	FO	Pacific Ocean, Cal.	0.23 (residue)	--	same as above	Munson (1972),AMIC-3096
PCB	Panulirua interruptus	FO	Pacific Ocean, Cal.	0.16 (muscle residue)	--	same as above	Munson(1972), AMIC-3096
PCB	Anguilla rostrata	FRL	St. John, N.B., Can.	0.71 (residue)	--	PCB"s were found in higher concentrations than organochlorine pesticides in all fish analyzed. The authors point out that PCB is less toxic in an acute sense than organochlorines, that little is known of sublethal PCB effects, and that more knowledge of PCB distribution and effects is needed.	Zitko (1971); AMIC-3715
PCB	Sebastodes marinus	FRL	St. John, N.B., Can.	trace (residue)	--	same as above	Zitko (1971),AMIC-3715
PCB	Esox niger	FRL	St. John, N.B., Can.	0.33 (residue)	--	same as above	Zitko (1971),AMIC-3715
PCB	Salmo salar	FRL	St. John, N.B., Can.	0.45 (residue)	--	same as above	Zitko (1971),AMIC-3715
PCB	Clupea harengus	FRL	St. John, N.B., Can.	0.32-0.54 (residue)	--	same as above	Zitko(1971), AMIC-3715
PCB	Scomber scombrus	FRL	St. John, N.B., Can.	0.35 (residue)	--	same as above	Zitko (1971),AMIC-3715
PCB	Mytilus edulis	FRL	St. John, N.B., Can.	0.14 (residue)	--	same as above	Zitko (1971),AMIC-3715
PCB	Gadus morhua	FRL	St. John, N.B., Can.	0.02 (residue)	--	same as above	Zitko (1971),AMIC-3715
PCB	Urophycis tenuis	FRL	St. John, N.B., Can.	0.02 (residue)	--	same as above	Zitko (1971),AMIC-3715

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
PCB	Hippo-glossoides platessoides	FRL	St. John, N.B., Can.	0.03 (residue)	--	same as above	Zitko (1971), AMIC-3715
PCB	Falco peregrinus (eggs)	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	10.2 (residue)	--	Peregrine falcons, falcon prey, and other predator species were collected widely and analyzed for DDT, DDE, PCB, and a few other pesticides to a lesser degree. PCB and DDT were found to be widely dispersed globally. PCB was found to be a powerful inducer of hepatic enzymes that degrade oestradiol. Reductions in thickness of egg shells, eggshell weight, and water retention occurred. All affect hatching success. The authors state that the peregrine may be the first species entirpated by global contamination.	Risebrough, et al (1968), AMIC-3844
PCB	Falco peregrinus (immature)	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	0.16-84 (flesh residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
PCB	Falco peregrinus (immature)	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	3.2-1,420 (fat residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
PCB	Falco peregrinus (adult)	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	19.7-41.5 (flesh residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
PCB	Falco peregrinus (adult)	F	Western U.S., Pacific	3.2-1,980 (fat residue)	--	same as above	Risebrough, et al (1968),

			Ocean, Panama, Mexico,and Antarctic					AMIC-3844
PCB	Loomelania melania	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	1.0 (whole body residue)	--		same as above	Risebrough, et al (1968), AMIC-3844
PCB	Halocyptena microsoma	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	0.35 (whole body residue)	--		same as above	Risebrough, et al (1968), AMIC-3844
PCB	Pizonyx vivesi	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	0.02 (whole body residue)	--		same as above	Risebrough, et al (1968), AMIC-3844
PCB	Endomychura craveri (eggs)	F	Western U.S., Pacific Ocean, Panama, Mexico,and Antarctic	4.5 (residue)	--		same as above	Risebrough,et al (1958), AMIC-3844
PCB	Thalasseus elegans (eggs)	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	1.5 (residue)	--		same as above	Risebrough, et al (1968), AMIC-3844
PCB	Larus heermani (eggs)	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	8.1 (residue)	--		same as above	Risebrough, etal (1968), AMIC-3844

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
PCB	Pomoxis annularis	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	0.004 (whole body residue)	--	same as above	Risebrough,et al (1968), AMIC-3844
PCB	Pomoxis nigro-maculatus	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	0.003 (whole body residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
PCB	Lepomis macrochirus	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	0.005 (whole body residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
PCB	Pygoscelis adeliae (eggs)	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	0.044 (residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
PCB	Fulmanus glacialis	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	0.08-6.5 (whole body residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
PCB	Puffinus creatopus	F	Western U.S., Pacific Ocean, Panama,	0.42 (whole body residue)	--	same as above	Risebrough,et al (1968), AMIC-3844

			Mexico, and Antarctic				
PCB	Puffinus griseus	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	0.9-1.2 (whole body residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
PCB	Puffinus tenuirostris	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	2.1 (whole body residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
PCB	Oceanodroma homochroa	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	9.8 (whole body residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
PCB	Pelecanus occidentalis (eggs)	F	Western U.S., Pacific Ocean, Panama, Mexico,and Antarctic	0.0104-0.0231 (residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
PCB	Fregata magnificens (eggs)	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	0.0057-0.084 (residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
PCB	Sula leucogaster	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	0.0048 (residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
PCB	Phalacrocorax	F	Western	0.113	--	same as above	Risebrough,

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
	penicillatus (eggs)		U.S., Pacific Ocean, Panama, Mexico,and Antarctic	(residue)			et al (1968), AMIC-3844
PCB	Phalacrocorax pelagicus (eggs)	F	Western U.S., Pacific Ocean, Panama, Mexico,and Antarctic	0.062 (residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
PCB	Anas cyanoptera	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	0.91 (whole body residue)	--	same as above	Risebrough, etal (1968), AMIC-3844
PCB	Elanus leucurus (eggs)	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	0.00084-0.0064 (residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
PCB	Accipiter cooperii	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	6.3 (whole body residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
PCB	Aquila chrysaetos (eggs)	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	0.23 (whole body residue)	--	same as above	Risebrough, et al (1968), AMIC-3844

PCB	Pandion haliaetus	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	0.0034-0.103 (whole body residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
PCB	Falco columbarius	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	0.39 (whole body residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
PCB	Falco sparverius	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	0.31 (whole body residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
PCB	Falco sparverius (eggs)	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	0.09 (residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
PCB	Nycticorax nycticorax (eggs)	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	0.023-0.33 (residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
PCB	Larus occidentalis (eggs)	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	0.023-1.31 (residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
PCB	Sterna forsteri (eggs)	F	Western U.S., Pacific Ocean,	0.114 (residue)	--	same as above	Risebrough, et al (1968), AMIC-3844

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
			Panama, Mexico, and Antarctic				
PCB	Hydroprogne caspia (eggs)	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	0.114-1.01 (residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
PCB	Phalaropus fulicarius	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	0.10 (whole body residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
PCB	Uria aalge (eggs)	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	45 (residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
PCB	Ptychoramphus aleuticua	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	0.16 (whole body residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
PCB	Synthiliboramphus antiquum	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	0.15 (whole body residue)	--	same as above	Risebrough, et al- (1968), AMIC-3844
PCB	Cerorhinca monocerata	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	0.36 (whole body residue)	--	same as above	Risebrough, et al (1968), AMIC-3844

PCB	Zenaidura macroura	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	No residue	--	same as above	Risebrough, et al (1968), AMIC-3844
PCB	Tyto alba (eggs)	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	0.47-0.66 (residue)	--	same as above	Risebrough, etal (1968), AMIC-3844
PCB	Sturnella neglecta	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	0.0025-0.0261 (residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
PC	Fundulus heteroclitus	BSA	--	0.00024-0.0004 (T4)	a*,c,e, and synthetic seawater	A laboratory procedure based on Standard Methods for 96-hr toxicity determinations of crude oil and oil-dispersant mixtures was described. The dispersants varied considerably in toxicity, ranging from 0.01 to 7.1 ml/l, TL50 for 96 hr. These did not differ significantly from 240 hr values. The dispersants were designated as CX, DO, CI, OD, AQ, PC, MM, TN, BP, and NA with no further description of their chemical nature or source. Only a few bioassays were conducted with shrimp. Mollusks and echinoderms were suggested as suitable test animals. The authors stated that the method could be used to test any product for toxicity in seawater.	LaRoche, et al (1970), AMIC-445
PC	Nereis virens	BSA	--	0.00068-0.00075 (T4)	a*,c,e, and synthetic seawater	same as above	LaRoche,et al (1970), AMIC-445
Pebulate	Gammarus fasciatus	BSA	--	10.0 (T4)	a*	Of the aquatic weed herbicides evaluated, Dicione was the most toxic, Daphnia was generally the most sensitive organism. All of the crustacea were affected by much lower concentration levels of herbicides than indicated by the TL sub 50 values. All of the animals represent important food chain links.	Sanders (1970), AMIC-453
Penetone X	Crangon crangon	BSA	--	10-33 (T2)	a#(continuous, aeration, sea-	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure	Portmann, et al (1971), AMIC-7701

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
					water, and daily solution renewal)	inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	
Pentachlorophenol	Crassostrea virginica (eggs)	L	--	less than 0.25 (T2)	--	The effect of 52 pesticides on embryonic development of clams and oysters was reported. Synergistic effects with solvents were also reported. Most of the compounds affected development more than survival. Some, however, drastically reduced larval growth. The authors point out the necessity of evaluating the effects of pesticides on all life stages of an organism and note the possibility of selecting chemicals for pest control that would not have serious effect on shellfish.	Davis, et al (1969), AMIC-5990
Pentachlorophenol	Crassostrea virginica (larvae)	L	--	0.071 (T14)	--	same as above	Davis, et al(1969), AMIC-5990
Pentachlorophenyl acetate	Crassostrea virginica (eggs)	L	--	less than 0.25 (T2)	--	same as above	Davis, et al (1969), AMIC-5990
Pentachlorophenyl acetate	Crassostrea virginica (larvae)	L	--	less than 0.025 (T14)	--	same as above	Davis, et al (1969), AMIC-5990
Perolin No. 5	Crangon crangon	BSA	--	3.3-10 (T2)	a#(continuous aeration, sea-water, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701
Perthane	Tubifex tubifex	FL and	Belzoni, Miss.	0.50 (NTE)	--	The response of pesticide-resistant aquatic organisms to	Naqvi, etal (1969),

		BSA				various pesticides was compared to the response of non-resistant species. Pesticide-resistant species were collected at Belzoni and non-resistant species at State College. Copepods, clams, snails, and sludge worms from Belzoni were considerably more tolerant to pesticides than the non-resistant organisms. The authors note that the effect of increased tolerance in the organisms is an increase in the amount of pesticide residues available to animals of higher trophic levels.	AMIC-5979
Petrolite W-1439	Steelhead trout (fingerlings)	BSA	--	35.5 (T4)	--	Evaluation of 11 oil dispersants resulted in a ranking for each and a recommendation for use according to the ranking. Ranking was based on toxicity and oil dispersal effectiveness. Corexit 7764 appeared to have the least toxicity with fair to good oil dispersion capability.	Tracy, etal (1969), AMIC-3834
Petrolite W-1439	Coho salmon (fingerlings)	BSA in situ	Hood Canal, Hoodsport, Wash.	1.5 (K̄)	--	same as above	Tracy, et al (1969), AMIC-3834
Phenkapton	Fish (not specified)	--	--	greater than 1.0-10.0 (K)	--	Approximate toxicities of numerous pesticides commonly used in Britain were summarized. An excellent brief, general discussion of toxicity testing is also present.	Mawdesley-Thomas(1971) AMIC-1056
Phenobarbital	Negaprion brevirostris (1-3 kg)	BSA	--	300 (NTE3.25 hr)	a,c,e	Data from study of drug effects on young lemon sharks were treated mathematically to demonstrate applicability of classical rate theory to the study of chemical shark deterrents. Incapacitation (narcosis) was the primary parameter timed for effectiveness. This was usually quite rapid for the more effective drugs.	Baldridge (1969), AMIC-3832
Phenobarital	Carassius auratus	L	--	75 (NTE)	a*	Goldfish were exposed to increasing concentrations of DDT and residues determined after 21 days of exposure. Most DDT had been converted to DDE. Phenobarital had no significant effect on insecticide residues.	Young, et al (1971), AMIC-3796
Phenolics	Fish (not specified)	--	--	greater than 0.1-1.0 (K)	--	Approximate toxicities of numerous pesticides commonly used in	Mawdesley-Thomas

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
						Britain were summarized. An excellent brief, general discussion of toxicity testing is also present.	(1971),AMIC-1056
Phenols (plus ammonia and zinc)	Salmo gairdneri	BSA	--	0.5-2.54 (T2)	a,c*,d,e*, f,m	Rainbow trout were exposed to concentrations of fluctuating levels of ammonia, phenol, and zinc and to constant mixtures of the three. Tests with fluctuating levels of toxicants showed that LC50 values were similar to those for constant concentrations as long as the periodicity of the fluctuation did not exceed the resistance time for the poison. Except when zinc predominated in the mixtures, the fractional toxicities could be summed to give the toxicity of the mixture.	Brown, et al (1969), AMIC-5993
Phenols (plus copper)	Salmo gairdneri	BSA	--	0.5-1.75 (T2)	a,c,e	Rainbow trout were exposed to copper, phenol, zinc, or nickel solutions to determine 48-hour LC50 values for mixtures of copper and phenol; copper, zinc, and phenol; and copper, zinc, and nickel. It was concluded that acute lethal toxicities of the mixtures could be adequately described by summations of the fractional toxicities.	Brown, et al(1970), AMIC-5994
Phenols (plus copper, zinc)	Salmo gairdneri	BSA	--	0.6-2.40 (T2)	a,c,e	same as above	Brown,et al (1970), AMIC-5994
Phenols	Rasbora heteromorpha	BCFA and BSA	--	6.2 (T2, hardwater)	a*,c,e,f, hard (HW) orsoft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425

Phenols	Rasbora heteromorpha	BCFA and BSA	--	7.4 (T2, softwater)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water or seawater for some species	same as above	Alabaster (1959), AMIC-5425
Phenols	Lepomis macrochirus	BSA, L	--	13.5 (T4)	a*,e, and synthetic dilution water	This study was conducted to determine the relative toxicities of 20 common constituents of industrial wastes to a fish, an alga, and an invertebrate. The experiments were conducted over a 10-year period for varied purposes. The authors recommend bioassays with at least three components of the food web.	Patrick, et al (1968), AMIC-5720
Phenols	Nitzschia linearis	BSA, L	--	258 (T5)	a*,e, and synthetic dilution water	same as above	Patrick, et al (1968), AMIC-5720
Phenols	Physa heterostropha	BSA, L	--	94 (T4)	a*,e, and synthetic dilution water	same as above	Patrick, et al (1968), AMIC-5720
Phenols	Mercenaria mercenaria (eggs)	L	--	52.6 (T2)	--	The effect of 52 pesticides on embryonic development of clams and oysters was reported. Synergistic effects with solvents were also reported. Most of the compounds affected development more than survival. Some, however, drastically reduced larval growth. The authors point out the necessity of evaluating the effects of pesticides on all life stages of an organism and note the possibility of selecting chemicals for pest control that would not have serious effect on shellfish.	Davis, et al (1969),AMIC-5990
Phenols	Mercenaria mercenaria (larvae)	L	--	55 (T12)	--	same as above	Davis, et al (1969),AMIC-5990
Phenols	Crassostrea virginica	L	--	58.3 (T2)	--	same as above	Davis, et al

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
	(eggs)						(1969), AMIC-5990
Phenols	Salmo gairdneri	BSA	--	9.4 (T2)	a,c,e	Rainbow trout were exposed to copper, phenol, zinc, or nickel solutions to determine 48-hour LC50 values for mixtures of copper and phenol; copper, zinc, and phenol; and copper, zinc, and nickel. It was concluded that acute lethal toxicities of the mixtures could be adequately described by summations of the fractional toxicities.	Brown, et al (1970), AMIC-5994
Phenols	Gambusia affinis (female, 4.3 cm, 1.9 g)	BSA	--	26 (T4)	a,c,d, e,f,i, (Honolulu tap water)	The five fish species are commonly found in streams and estuaries in semi-tropical areas. G. affinis was the most tolerant. Varied sensitivity to the toxicants were found. K. sandvicensis was the most sensitive fish studied. The standard method procedure was followed.	Nunogawa, et al (1970), AMIC-6567
Phenols	Lebistes reticulatus (male, 1.8 cm, 0.2 g)	BSA	--	31 (T4)	a,c,d, e,f,i, (Honolulu tap water)	same as above	Nunogawa, et al (1970), AMIC-6567
Phenols	Tilapia mossambica (3.4 cm, 1.3 g)	BSA	--	19 (T4)	a,c,d,c, e,f,i, (Honolulu tap water	same as above	Nunogawa, et al (1970), AMIC-6567
Phenols	Kuhlia sandvicensis (4.3 cm, 1.5 g)	BSA	--	11 (T4)	a,c,d,e,f, i, saltwater	same as above	Nunogawa, et al (1970), AMIC-6567
Phenols	Stolephorus purpurea (3.6 cm, 0.4 g)	BSA	--	0.51 (T12 hr)	a,c,d,e,f, i, salt water	same as above	Nunogawa, et al (1970), AMIC-6567
Phenols	Carcinus maenas	BSA	--	56 (T2)	a*(continuous aeration, sea-water, and	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were	Portmann, et al (1971), AMIC-7701

					daily solution renewal)	evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	
Phenols	Cardium edule	BSA	--	greater than 500 (T2)	a*(continuous, aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Phenols	Crangon crangon	BSA	--	23.5 (T2)	a*(continuous, aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Phenols	Pandalus montagui	BSA	--	17.5 (T2)	a*(continuous, aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Phenols	Platicthys flesus	BSA	--	33-100 (T2)	a*(continuous, aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Phenols	Ambassis safgha	BSA	--	13.5 (T1)	a*, seawater	Measurement of residual dissolved oxygen during exposure of fish to toxicants resulted in data similar to that obtained from 24- and 48-hr bioassays by the standard method. The residual oxygen method required only 8 hr to conduct. Variables studied included density per unit volume, temperature, and fish size. The authors conclude that the residual oxygen method is a quick and	Ballard, et al (1969), AMIC-300

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
						reliable procedure for routine monitoring work.	
Phenoxylene	Crangon crangon	BSA	--	greater than 10 (T2)	a*(continuous, aeration, sea-water, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701
Phenoxytol	Rasbora heteromorpha	BCFA and BSA	--	135 (T2)	a*,c,e,f, hard (HW) or soft (SW)synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425
Phenylmercuric acetate	Brachydanio rerio (breeding adults and eggs)	L	--	0.2 and 1.0 ppb (0)	a*,f	Eggs were collected daily from spawning females which were continuously exposed to water solutions of the chemical. Dead and hatched eggs were counted daily with daily water renewal and removal of dead eggs. At 1.0 ppb the number of eggs released was significantly less, and at 0.2 and 1.0 ppb hatching frequency was significantly reduced.	Kihlstrom, et al (1971), AMIC-2707
Phenyl mercuric acetate	Salmo gairdneri	BCFA and BSA	--	0.005 (T1)	a*,c,e,f, hard (HW)or soft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969),AMIC-5425
Phenyl mercuric acetate	Salmo gairdneri	BCFA and BSA	--	0.004 (T2)	a*,c,e,f, hard (HW)or soft (SW) synthetic	same as above	Alabaster (1969),AMIC-5425

					dilution water, or seawater for some species		
Phorate	Fish (not specified)	--	--	greater than 0.01-1.0 (K)	--	Approximate toxicities of numerous pesticides commonly used in Britain were summarized. An excellent brief, general discussion of toxicity testing is also present.	Mawdesley-Thomas (1971),AMIC-1056
Phordene	Crangon crangon	BSA	--	greater than 10 (T2)	a*(continuous, aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701
Phosalone	Rasbora heteromorpha	BCFA and BSA	--	0.4 (T2)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425
Phosdrin	Copepods (Cyclops bicusoidus, Cyclops varicans, Cyclops vernalis, Eucyclops agilis,Macroc Macrocyclops albidus, Orthocyclops modestus)	FL and BSA	State College, Miss.	0.055 (91 percent K2)	--	The response of pesticide-resistant aquatic organisms to various pesticides was compared to the response of non-resistant species. Pesticide-resistant species were collected at Belzoni and non-resistant species at State College. Copepods, clams, snails, and sludge worms from Belzoni were considerably more tolerant to pesticides than the non-resistant organisms. The authors note that the effect of increased tolerance in the organisms is an increase in the amount of pesticide residues available to animals of higher trophic levels.	Naqvi, et al (1969), AMIC-5979
Phosdrin	Copepods (Cyclops bicuspidus, Cyclops varicans, Cyclops vernalis,	FL and BSA	Belzoni, Miss	0.055 (54 percent K2)	--	same as above	Naqvi, et al (1969), AMIC-5979

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
	Eucyclops agilis, Macrocyclops albidus, Orthocyclops modestus)						
Phosdrin	Tubifex tubifex	FL and BSA	Belzoni, Miss.	1.0 (NTE)	--	same as above	Naqvi, et al (1969), AMIC-5979
Phosphamidon	Fish (not specified)	--	--	greater than 1.0-10.0 (K)	--	Approximate toxicities of numerous pesticides commonly used in Britain were summarized. An excellent brief, general discussion of toxicity testing is also present.	Hawdesley-Thomas(1971) AMIC-1056
Phosphamidon	Labeo rohita (fry)	BSA	--	137.7 (T7)	a,c,d,e,f	DDVP and Phosphamidon were shown to be selective toxicants that can be used for eradication of undesirable animals from ponds without injuring carp. DDVP seemed superior since less was needed, it was not influenced by turbidity, and it detoxified more rapidly than phosphamidon.	Konar (1969),AMIC-5453
Phosphamidon	Labeo rohita (fingerling)	BSA	--	177.0-205.2 (T7)	a,c,d,e,f	same as above	Konar(1969), AMIC-5453
Phosphamidon	Trichogaster fasciatus	BSA	--	30.2 (T7)	a,c,d,e,f	same as above	Konar(1969), AMIC-5453
Phosphamidon	Channa punctatus (fry)	BSA	--	19.1 (T7)	a,c,d,e,f	same as above	Konar (1969),AMIC-5453
Phosphamidon	Channa punctatus (fingerling)	BSA	--	25.1 (T7)	a,c,d,e,f	same as above	Konar(1969), AMIC-5453
Phosphamidon	Channa punctatus (adult)	BSA	--	36.3 (T7)	a,c,d,e,f	same as above	Konar (1969),AMIC-5453
Phosphamidon	Mastocembelus pancalus	BSA	--	20.4 (T7)	a,c,d,e,f	same as above	Konar (1969),AMIC-5453
Phosphamidon	Macrognathus aculeatum	BSA	--	41.7 (T7)	a,c,d,e,f	same as above	Konar (1969),AMIC-5453
Phosphamidon	Nandus nandus	BSA	--	34.7 (T7)	a,c,d,e,f	same as above	Konar(1969), AMIC-5453

Phosphamidon	Amphipnous cuchia (young)	BSA	--	11.2 (T7)	a,c,d,e,f	same as above	Konar (1969), AMIC-5453
Phosphamidon	Amphipnous cuchia (adult)	BSA	--	22.4 (T7)	a,c,d,e,f	same as above	Konar (1969), AMIC-5453
Phosphamidon	Mystus vitatus	BSA	--	82.2 (T7)	a,c,d,e,f	same as above	Konar (1969), AMIC-5453
Phosphamidon	Puntius sophore	BSA	--	209.9 (T7)	a,c,d,e,f	same as above	Konar (1969), AMIC-5453
Phosphamidon	Anabas testudineus	BSA	--	68.4 (T7)	a,c,d,e,f	same as above	Konar (1969), AMIC-5453
Phosphamidon	Heteropneus-tes fossilis (fry)	BSA	--	66.8 (T7)	a,c,d,e,f	same as above	Konar (1969), AMIC-5453
Phosphamidon	Heteropneus-tes fossilis (fingerling)	BSA	--	66.1 (T7)	a,c,d,e,f	same as above	Konar (1969), AMIC-5453
Phosphamidon	Esomus danrica (fry)	BSA	--	178.2 (T7)	a,c,d,e,f	same as above	Konar (1969), AMIC-5453
Phosphamidon	Dytiscus sp. (adult)	BSA	--	1.3 (T7)	a,c,d,e,f	same as above	Konar (1969), AMIC-5453
Phosphamidon	Sphaerodema annulatum	BSA	--	2.6 (T7)	a,c,d,e,f	same as above	Konar (1969), AMIC-5453
Phosphamidon	Ranatra filiformis	BSA	--	2.9 (T7)	a,c,d,e,f	same as above	Konar (1969), AMIC-5453
Phosphamidon	Anisoptera (nymphs)	BSA	--	1.5 (T7)	a,c,d,e,f	same as above	Konar (1969), AMIC-5453
Phosphamidon	Cybister sp.	BSA	--	2.3 (T7)	a,c,d,e,f	same as above	Konar (1969), AMIC-5453
Phosphamidon	Nepa sp.	BSA	--	2.4 (T7)	a,c,d,e,f	same as above	Konar (1969), AMIC-5453
Phosphamidon	Belostoma indica	BSA	--	6.3 (T7)	a,c,d,e,f	same as above	Konar (1969),

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
							AMIC-5453
Phosphamidon	Hydrophilus sp.	BSA	--	5.6 (T7)	a,c,d,e,f	same as above	Konar (1969), AMIC-5453
Phosphamidon	Volvox	BSA	--	5.0 (NTE)	a,c,d,e,f	same as above	Konar (1969), AMIC-5453
Phosphamidon	Pandorina	BSA	--	5.0 (NTE)	a,c,d,e,f	same as above	Konar (1969), AMIC-5453
Phosphamidon	Closterium	BSA	--	5.0 (NTE)	a,c,d,e,f	same as above	Konar (1969), AMIC-5453
Phosphamidon	Brachionus	BSA	--	50 (NTE)	a,c,d,e,f	same as above	Konar (1969), AMIC-5453
Phosphamidon	Gastrotricha	BSA	--	10 (NTE)	a,c,d,e,f	same as above	Konar (1969), AMIC-5453
Phosphamidon	Cyoris	BSA	--	10 (NTE)	a,c,d,e,f	same as above	Konar (1969), AMIC-5453
Phosphamidon	Cyclops	BSA	--	2.5 (K)	a,c,d,e,f	same as above	Konar (1969), AMIC-5453
Phosphamidon	Nauplius	BSA	--	2.5 (K)	a,c,d,e,f	same as above	Konar (1969), AMIC-5453
Phosphamidon	Daphnia	BSA	--	2.5 (K)	a,c,d,e,f	same as above	Konar (1969), AMIC-5453
Phosphamidon	Ceriodaphnia	BSA	--	4.0 (K)	a,c,d,e,f	same as above	Konar (1969), AMIC-5453

Phosphorus	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	6320 (dorsal muscle RESIDUE)	--	Fish collected from an effluent pipe of a steam plant and from offshore waters of Catalina Island were analyzed for trace element content. Trace element content of the effluent water was at least 5 times greater than that of normal sea water for cadmium, copper, nickel, zinc, and chromium. Livers of fish from the effluent were nearly twice the size of those from the ocean. Greatest differences in concentration occurred with aluminum, cadmium, and nickel. Silver, barium, lithium, and lead showed the least differences. The author concluded that trace element analysis of tissues could be used to determine the effect of pollutants on marine organisms.	Stapleton (1968), AMIC-5980
Phosphorus	Paralabrax clathratus	FM	Catalina Island, Cal.	7550 (dorsal muscle residue)	--	same as above	Stapleton (1968), AMIC-5980
Phosphorus	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	6440 (ventral muscle residue)	--	same as above	Stapleton (1968), AMIC-5980
Phosphorus	Paralabrax clathratus	FM	Catalina Island, Cal.	6700 (ventral muscle residue)	--	same as above	Stapleton (1968), AMIC-5980
Phosphorus	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	23,620 (gonads residue)	--	same as above	Stapleton (1968), AMIC-5980
Phosphorus	Paralabrax clathratus	FM	Catalina Island, Cal.	23,920 (gonads residue)	--	same as above	Stapleton (1968), AMIC-5980
Phosphorus	Paralabrax clathratus (gravid females)	FM	CatalinaIsland, Cal.	10,550(gonads residue)	--	same as above	Stapleton (1968), AMIC-5980
Phosphorus	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	5600 (liver residue)	--	same as above	Stapleton (1968), AMIC-5980
Phosphorus	Paralabrax clathratus	FM	Catalina Island, Cal.	7270 (liver residue)	--	same as above	Stapleton (1968),

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
							AMIC-5980
Phosphorus	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	2530 (integument residue)	--	same as above	Stapleton (1968), AMIC-5980
Phosphorus	Paralabrax clathratus	FM	Catalina Island, Cal.	2520 (integument residue)	--	same as above	Stapleton (1968), AMIC-5980
Phosphorus	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	5800 (heart residue)	--	same as above	Stapleton (1968), AMIC-5980
Phosphorus	Paralabrax clathratus	FM	Catalina Island, Cal.	5550 (heart residue)	--	same as above	Stapleton (1968), AMIC-5980
Phosphorus	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	7800 (eyeball residue)	--	same as above	Stapleton (1968), AMIC-5980
Phosphorus	Paralabrax clathratus	FM	Catalina Island, Cal.	10,450 (eyeball residue)	--	same as above	Stapleton (1968), AMIC-5980
Phostox	Crangon crangon	BSA	--	greater than 10 (T2)	a#(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701
Photoaldrin	Anacystis nidulans	L	--	1.0 (growth inhibited)	a*,c*,r SM	Metabolic products of Aldrin, Dieldrin, and Endrin can be as toxic as the parent compounds, as shown by OD measurement.	Batterton, et al (1971), AMIC-1471
Photoaldrin	Agmenellum quadruplicatum	L	--	NTE	a*,c*,r SM	same as above	Batterton, et al (1971),AMIC-

Photodieldrin	Agmenellum quadruplicatum	L	--	0.5-1.0 (growth inhibited)	a*,c*,r SM	same as above	Batterton, et al (1971), AMIC-1471
Photodieldrin	Anacystis nidulans	L	--	0.5-1.0 (growth inhibited)	a*,c*,r SM	same as above	Batterton, et al (1971), AMIC-1471
Phygon	Mercenaria mercenaria (eggs)	L	--	0.04 (T2)	--	The effect of 52 pesticides on embryonic development of clams and oysters was reported. Synergistic effects with solvents were also reported. Most of the compounds affected development more than survival. Some, however, drastically reduced larval growth. The authors point out the necessity of evaluating the effects of pesticides on all life stages of an organism and note the possibility of selecting chemicals for pest control that would not have serious effect on shellfish.	Davis, et al (1969),AMIC-5990
Phygon	Mercenaria mercenaria (larvae)	L	--	1.75 (T12)	--	same as above	Davis, et al (1969),AMIC-5990
Phygon	Crassostrea virginica (eggs)	L	--	0.014 (T2)	--	same as above	Davis, et al (1969),AMIC-5990
Phygon	Crassostrea virginica (larvae)	L	--	0.041 (T14)	--	same as above	Davis, et al (1969),AMIC-5990
Picloram (K salt)	Rasbora heteromorpha	BCFA and BSA	--	11 (T2)	a*,c,e,f, hard (HW) orsoft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water	Alabaster (1969), AMIC-5425

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
						and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	
PMA	Salmo gairdneri	L	--	2.0 (S830)	a,e,f (1 hr exposure daily for up to 11 days)	Single exposures of fish to organomercury compounds resulted in peak concentrations of mercury as follows; gills, 3 hr; blood, 32 hr; liver, 7 da; kidney 21 For repeated one hr (daily) exposures peak concentrations were; blood, 10 da; liver, 10 da; kidney, 61 da; muscle, 7 da. The concentration of mercury was always lowest in muscle tissue. Feeding experiments with PMA showed mercury could be passed from fingerlings to larger fish. The authors conclude that either legal size or fingerling hatchery fish treated with organomercurials could be a public health hazard.	Rucker, et al (1969), AMIC-5733
Polycell product	Crangon crangon	BSA	--	330-1000 (T4)	a*(continuous aeration, sea water, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701
Polyclens	Carcinus maenas	BSA	--	10-33 (T2)	a*(continuous, aeration, sea water, and daily solution renewal)	same as above	Portmann, et al (1971),AMIC-7701
Polyclens	Cardium edule	BSA	--	33-100 (T2)	a*(continuous aeration, sea-water, and daily solution	same as above	Portmann, et al (1971), AMIC-7701

					renewal)		
Polyclens	Crangon crangon	BSA	--	10-33 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Polyclens	Pandalus montagui	BSA	--	10 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971),AMIC-7701
Polycomplex A-11	Steelhead trout (fingerlings)	BSA	--	13.0 (T4)	--	Evaluation of 11 oil dispersants resulted in a ranking for each and a recommendation for use according to the ranking. Ranking was based on toxicity and oil dispersal effectiveness. Corexit 7764 appeared to have the least toxicity with fair to good oil dispersion capability.	Tracy, et al(1969), AMIC-3834
Polycomplex A-11	Coho salmon (fingerlings)	BSA in situ	Hood Canal, Hoodsport, Wash.	1.5 (K)	--	same as above	Tracy, et al (1969), AMIC-3834
Polycomplex A	Carcinus maenas	BSA	--	100-330 (T2)	a*(continuous, aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701
Polycomplex A	Cardium edule	BSA	--	33-100 (T2)	a*(continuous, aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
					renewal)		
Polycomplex A	Limanda limanda	BSA	--	33-100 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Polyotic	Roccus saxatilis (fingerlings)	BSA	--	greater than 1,818 (T4)	a*,c,d,e,f,p and iron	Striped bass fingerlings were apparently much more sensitive to therapeutic and herbicidal compounds than many freshwater fish.	Wellborn (1969), AMIC-5723
Potassium chloride	Lepomis macrochirus	BSA, L	--	2,010 (T4)	a*,e, and synthetic dilution water	This study was conducted to determine the relative toxicities of 20 common constituents of industrial wastes to a fish, an alga, and an invertebrate. The experiments were conducted over a 10-year period for varied purposes. The authors recommend bioassays with at least three components of the food web.	Patrick, et al (1968), AMIC-5720
Potassium chloride	Nitzschia linearis	BSA, L	--	1,337 (T5)	a*,e, and synthetic dilution water	same as above	Patrick, et al (1968), AMIC-5720
Potassium chloride	Physa heterostropha	BSA, L	--	940 (T4)	a*,e, and synthetic dilution water	same as above	Patrick, et al (1968), AMIC-5720
Potassium chromate (as Cr)	Lepomis macrochirus	BSA, L	--	168.8 (T4)	a*,e, and synthetic dilution water	same as above	Patrick, et al (1968), AMIC-5720
Potassium chromate (as Cr)	Nitzschia linearis	BSA, L	--	7.8(T5)	a*,e, and synthetic dilution water	same as above	Patrick, et al (1968), AMIC-5720

Potassium cyanide (as cyanide)	Carcinus maenas	BSA	--	greater than 5 (T2)	a*(continuous, aeration, sea-water, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701
Potassium Cyanide (as cyanide)	Crangon crangon	BSA	--	greaterthan 25 (T2)	a*(continuous, aeration, sea-water, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Potassium cyanide (as cyanide)	Pandalus montagui	BSA	--	0.25 (T2)	a*(continuous aeration, sea-water, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Potassium cyanide	Lebistes reticulatus (1 mo, 1.1 cm)	BCF	--	0.26 (T2)	a,c,d,e,f, n,q, phosphates, carbonates, bicarbonates, sulfates, and conductance	Toxicity thresholds and a dilution mixture threshold were calculated from fish bioassay data for zinc chloride and potassium cyanide. Threshold concentrations for zinc and cyanide were found to be 0.33 and 0.236 mg/l, respectively. A procedure for determining toxicity threshold concentrations for mixtures of chemicals was also presented. A zinc-cyanide dilution ratio for toxicity threshold (THDR) was found to be a linear function of the concentration of the two ions taken separately, and therefore; THDR equals 1.26-0.86CN-1.22Zn. Based on a multicomponent equation, mixtures of zinc and cyanide exhibit an antagonistic effect. This appears to be a significant advance in an approach to estimating safe concentrations for water pollutants.	Chen, et al (1969), AMIC-3831
Potassium cyanide	Lebistes reticulatus (1 mo, 1.1 cm)	BCF	--	0.42 (T1)	a,c,d,e,f, n,q, phosphates,	same as above	Chen, et al (1969), AMIC-3831

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
					carbonates, bicarbonates, sulfates, and conductance		
Potassium dichromate (as Cr)	Lepomis macrochirus	BSA, L	--	113 (T4)	a*,e, and synthetic dilution water	This study was conducted to determine the relative toxicities of 20 common constituents of industrial wastes to a fish, an alga, and an invertebrate. The experiments were conducted over a 10-year period for varied purposes. The authors recommend bioassays with at least three components of the food web.	Patrick, et al (1968), AMIC-5720
Potassium dichromate (as Cr)	Nitzschia linearis	BSA, L	--	0.21 (T5)	a*,e, and synthetic dilution water	same as above	Patrick, et al (1968), AMIC-5720
Potassium dichromate (as Cr)	Physa heterostropha	BSA, L	--	17.3 (T4)	a*,e, and synthetic dilution water	same as above	Patrick, et al (1968),AMIC-5720
Potassium dichromate (as Cr)	Phormidium ambiguum	L	--	0.5-10.0 (16 percent growth inhibited 14)	--	Of 74 chemicals evaluated as algicides, only 9 were more toxic than $CuSO_4$. None inhibited growth of mat-forming algae for more than 2 weeks. $CuSO_4$ formulated with certain wetting agents was more toxic than $CuSO_4$ alone. Copper chloramine was also found to be more toxic than $CuSO_4$. No wetting agents were found to be inhibitory at the concentrations investigated (0.05 and 0.005 ppm). Also reported are factors affecting growth of algae in canals to determine whether there were leads to controlling algae by environmental management. No practical environmental means were found.	Otto (1970), AMIC-892
Potassium dichromate	Brachydanio	BSA	--	56-75 (SB4)	a,e, and	Feeding behavior was affected by	Cairns, et

	rerio				synthetic dilution water	zinc, chromium, and ABS in that more time was required for consuming measured amounts of food. Feeding response was also affected by aeration, feeding schedule, light intensity, and outside disturbances. The authors note that much more work is needed to establish the reliability of this procedure.	al (1967), AMIC-5707
Potassium pentachlorophenate	Oncorhynchus kisutch (CSE 119 embryo cells)	L	--	40-120 (SB10)	a*	Growth of cultured coho salmon embryo cells on Eagle"s MEM was partially inhibited at 40 ppm, strongly inhibited at 80 ppm, and totally inhibited at 210 ppm. The 50 percent inhibitory dose was estimated to be 66 ppm. A linear relationship between dose and effect was noted. Data on cell counts, population volume, dry weight, ash, nitrogen, organic acids, and organic matter are reported.	Hanes, et al (1970), AMIC-3753
Potassium permanganate	Trachinotus carolinus (juvenile)	BSA	--	1.6-2.9 (T4)	a,c,e,f,i, and sulfate, sodium, calcium, potassium, magnesium, carbonate, bicarbonate, salinity	In this study of pompano salinity was controlled at 10, 20, and 30 ppt and investigated as a variable. Acriflavin, formalin, and potassium permanganate were slightly more toxic at the highest salinity, while copper sulfate was slightly less toxic. These compounds are used as prophylactic bacterial treatments. All appeared to be reasonably safe to use excepte possibly potassium permanganate.	Birdsong, et al (1971), AMIC-5570
Potassium permanganate	Roccus saxatilis (fingerlings)	BSA	--	2.5 (T4)	a*,c,d,e,f,p and iron	Striped bass fingerlings were apparently much more sensitive to therapeutic and herbicidal compounds than many freshwater fish.	Wellborn (1969), AMIC-5723
Potassium permanganate	Phormidium ambiguum	L	--	0.5-10.0 (16 percent growth inhibited14)	--	Of 74 chemicals evaluated as algicides, only 9 were more toxic than CuSO4. None inhibited growth of mat-forming algae for more than 2 weeks. CuSO4 formulated with certain wetting agents was more toxic than CuSO4 alone. Copper chloramine was also found to be more toxic than CuSO4. No wetting agents were found to be inhibitory at the concentrations investigated (0.05 and 0.005 ppm). Also reported are factors affecting growth of algae in canals to determine whether there were leads to controlling algae by environmental	Otto (1970), AMIC-892

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
						management. No practical environmental means were found.	
Potassium salt of 2(4-chlorototyl) oxy-N-methoxy-acetamide	Phormidium ambiguum	L	--	0.5-10.0 (16 percent growth inhibited 14)	--	same as above	Otto (1970), AMIC-892
Potassium salt of 2,3,5-trichloro-4-pyridinol	Phormidium ambiguum	L	--	0.5-10.0(NTE)	--	same as above	Otto (1970), AMIC-892
Procaine hydrochloride	Negaprion brevirostris (1-3 kg)	BSA	--	10 (NTE 1 hr)	a,c,e	Data from study of drug effects on young lemon sharks were treated mathematically to demonstrate applicability of classical rate theory to the study of chemical shark deterrents. Incapacitation (narcosis) was the primary parameter timed for effectiveness. This was usually quite rapid for the more effective drugs.	Baldridge (1969), AMIC-3832
Propanil	Gamarus fasciatus	BSA	--	16.0 (T4)	a*	Of the aquatic weed herbicides evaluated, Diclone was the most toxic, Daphnia was generally the most sensitive organism. All of the crustacea were affected by much lower concentration levels of herbicides than indicated by the TL sub 50 values. All of the animals represent important food chain links.	Sanders (1970), AMIC-453
Propham	Fish (not specified)	--	--	greater than 10-100 (K)	--	Approximate toxicities of numerous pesticides commonly used in Britain were summarized. An excellent brief, general discussion of toxicity testing is also present.	Mawdesley-Thomas (1971),AMIC-1056
Protim	Rasbora heteromorpha	BCFA and BSA	--	10.0 (T2, hardwater)	a*,c,e,f, hard(HW) or soft (SW) synthetic dilution water, or seawater for some	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes	Alabaster (1969), AMIC-5425

					species	pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	
Protim	Rasbora heteromorpha	BCFA and BSA	--	1.8 (T2, softwater)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	same as above	Alabaster (1969), AMIC-5425
Pro-Noxfish	Oncorhynchus tshawytscha (fry)	BSA	--	1.0 (SB)	--	Salmonid egg embryos may be able to survive rotenone treatment that kills fish. Toxicity to the coho embryos was greater at 53 F than at 39 and 46 F. Eggs buried in gravel survived better than those at the gravel surface. Further field evaluations were recommended.	Garrison (1968), AMIC-5714
Pro-Noxfish	Oncorhynchus kisutch (fry)	BSA	--	0.125 (T1)	--	same as above	Garrison (1968),AMIC-5714
Pro-Noxfish	Oncorhynchus kisutch (eggs)	BSA	--	1.7 (T1)	--	same as above	Garrison (1968),AMIC-5714
PVP-Iodine	Mercenaria mercenaria (eggs)	L	--	17.1 (T2)	--	The effect of 52 pesticides on embryonic development of clams and oysters was reported. Synergistic effects with solvents were also reported. Most of the compounds affected development more than survival. Some, however, drastically reduced larval growth. The authors point out the necessity of evaluating the effects of pesticides on all life stages of an organism and note the possibility of selecting chemicals for pest control that would not have serious effect on shellfish.	Davis, et al (1969),AMIC-5990
PVP-Iodine	Mercenaria mercenaria (larvae)	L	--	34.9 (T12)	--	same as above	Davis, et al (1969),AMIC-5990

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
Pyramin	Rasbora heteromorpha	BCFA and BSA	--	28 (T2)	a*,c,e,f, hard (HW)or soft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425
Pyrazon	Fish (not specified)	--	--	greater than 10-100 (K)	--	Approximate toxicities of numerous pesticides commonly used in Britain were summarized. An excellent brief, general discussion of toxicity testing is also present.	Mawdesley-Thomas(1971) AMIC-1056
Pyrimithate	Rasbora heteromorpha	BCFA and BSA	--	4.1 (T2)	a*,c,e,f, hard (HW) or SOFT(SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425
Quinaldine	Negaprion brevirostris (1-3 kg)	BSA	--	8.2 (SB 10 MIN)	a,c,e	Data from study of drug effects on young lemon sharks were treated mathematically to demonstrate applicability of classical rate theory to the study of chemical shark deterrents. Incapacitation (narcosis) was the primary parameter timed for effectiveness. This was usually quite rapid for the more effective drugs.	Baldridge (1969), AMIC-3832
Raynap Sol B	Crangon	BSA	--	3.3-10 (T2)	a*(contin-	One hundred-forty surface active	Portmann, et

	crangon				uous aeration, seawater, and daily solution renewal)	agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	al (1971), AMIC-7701
RD 14639	Rasbora heteromorpha	BCFA and BSA	--	0.58 (T2)	a*,c,e,f, hard (HW)or soft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster, (1969),AMIC-5425
Reglone	Rasbora heteromorpha	BCFA and BSA	--	37 (T2, softwater)	a*,c,e,f, hard (HW)or soft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425
Reglone	Salmo gairdneri	BCFA and BSA	--	70 (T2, hardwater)	a*,c,e,f, hard (HW) or soft (SW)synthetic dilution water, or seawater for some species	same as above	Alabaster (1969), AMIC-5425
Reglone	Salmo gairdneri	BCFA and BSA	--	27 (T2, softwater)	a*,c,e,f, hard (HW) or SOFT(SW)	same as above	Alabaster (1969), AMIC-5425

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
					synthetic dilution water, or seawater for some species		
Rhodamine B	Salmo gairdneri	BSA	--	217 (T4)	a*	The dyes Rhodamine B and Fluorescein sodium were found to be relatively non-toxic in ppm concentrations while antimycin was toxic at ppb levels. The author states that neither dye at field use concentrations should significantly influence the activity of Antimycin A against fish.	Marking (1969), AMIC-5729
Rhodamine B	Ictalurus punctatus	BSA	--	526 (T4)	a*	same as above	Marking (1969), AMIC-5729
Rhodamine B	Lepomis macrochirus	BSA	--	379 (T4)	a*	same as above	Marking (1969), AMIC-5729
Ridzlik	Crangon crangon	BSA	--	330-1000 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701
Roccal	Mercenaria mercenaria (eggs)	L	--	0.19 (T2)	--	The effect of 52 pesticides on embryonic development of clams and oysters was reported. Synergistic effects with solvents were also reported. Most of the compounds affected development more than survival. Some, however, drastically reduced larval growth. The authors point out the necessity of evaluating the effects of pesticides on all life stages of an organism and note the possibility of selecting chemicals for pest control that	Davis, et al (1969), AMIC-5990

						would not have serious effect on shellfish.	
Roccal	Mercenaria mercenaria (larvae)	L	--	0.14 (T12)	--	same as above	Davis, et al (1969),AMIC-5990
Rola OSD	Crangon crangon	BSA	--	3.3-10 (T4)	a*(continuous aeration, sea-water, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971),AMIC-7701
Rosin amine diacetate	Phormidium ambiguum	L	--	0.5-10.0 (NTE)	--	Of 74 chemicals evaluated as algicides, only 9 were more toxic than CuSO4. None inhibited growth of mat-forming algae for more than 2 weeks. CuSO4 formulated with certain wetting agents was more toxic than CuSO4 alone. Copper chloramine was also found to be more toxic than CuSO4. No wetting agents were found to be inhibitory at the concentrations investigated (0.05 and 0.005 ppm). Also reported are factors affecting growth of algae in canals to determine whether there were leads to controlling algae by environmental management. No practical environmental means were found.	Otto (1970), AMIC-892
Rosin Amine D	Crassostrea virginica (eggs)	L	--	less than 0.25 (T2)	--	The effect of 52 pesticides on embryonic development of clams and oysters was reported. Synergistic effects with solvents were also reported. Most of the compounds affected development more than survival. Some, however, drastically reduced larval growth. The authors point out the necessity of evaluating the effects of pesticides on all life stages of an organism and note the possibility of selecting chemicals for pest control that would not have serious effect on shellfish.	Davis, etal (1969), AMIC-5990
Rosin Amine D	Crassostrea virginica	L	--	less than0.025 (T14)	--	same as above	Davis,et al (1969),

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
	(larvae)						AMIC-5990
Rotenone	Salmo gairdneri	L	--	0.057 (T4)	a*	The piscicides Antimycin A and Rotenone were found to be compatible when mixed and furthermore appeared to have an additive effect in cmbination. That is both compounds were more toxic in the presence of the other than alone.	Howland (1969), AMIC-5725
Rotenone	Lepomis macrochirus	L	--	0.114 (T4)	a*	same as above	Howland (1969), AMIC-5725
Ro-neet	Gammarus fasciatus	BSA	--	2.6 (T4)	a*	Of the aquatic weed herbicides evaluated, Diclone was the most toxic, Daphnia was generally the most sensitive organism. All of the crustacea were affected by much lower concentration levels of herbicides than indicated by the TL sub 50 values. All of the animals reoresent important food chain links.	Sanders (1970), AMIC-453
R-1910	Gammarus fasciatus	BSA	--	15.0 (T4)	a*	Of the aquatic weed herbicides evaluated, Diclone was the most toxic, Daphnia was generally the most sensitive organism. All of the crustacea were affected by much lower concentration levels of herbicides than indicated by the TL sub 50 values. All of the animals represent important food chain links.	Sanders (1970), AMIC-453
Salicylic acid (2-hydroxybenzoic acid)	Phormidium ambiguum	L	--	0.5-10.0 (NTE)	--	Of 74 chemicals evaluated as algicides, only 9 were more toxic than CuSO4. None inhibited growth of mat-forming algae for more than 2 weeks. CuSO4 formulated with certain wetting agents was more toxic than CuSO4 alone. Copper chloramine was also found to be more toxic than CuSO4. No wetting agents were found to be inhibitory at the concentrations investigated (0.05 and 0.005 ppm). Also reported are factors affecting growth of algae in canals to determine whether there were leads to controlling algae by environmental management. No practical environmental	Otto (1970), AMIC-892

						means were found.	
Seasweep	Steelhead trout (fingerlings)	BSA	--	20.2 (T4)	--	Evaluation of 11 oil dispersants resulted in a ranking for each and a recommendation for use according to the ranking. Ranking was based on toxicity and oil dispersal effectiveness. Corexit 7764 appeared to have the least toxicity with fair to good oil dispersion capability.	Tracy, et al (1969), AMIC-3834
Seasweep	Coho salmon (fingerlings)	BSA in situ	Hood Canal, Hoodsport, Wash.	1.5 (K)	--	same as above	Tracy, et al (1969), AMIC-3834
Sefoil	Agonus cataphractus	BSA	--	1000-3300 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701
Sefoil	Crangon crangon	BSA	--	1000-3300 (T2)	a*(continuous, aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Selenium dioxide	Carassius auratus	L	--	12 (T7)	a,c	In addition to toxicity data, conditioned avoidance response was studied at sublethal concentrations. The lowest concentration of metal resulting in significant impairment was: arsenic, 0.10; lead, 0.07; mercury, 0.003; and selenium, 0.25. Deleterious effects occurred at metal concentrations approximately similar to potable water standards.	Weir, et al (1970), AMIC-739
Selenium	Coregonus clupeaformis	FL	Moose Lake, Can.	0.2 (residue)	--	Concentrations of 13 toxic elements in dressed fish from heavily industrialized and non-industrialized areas were determined. Only mercury exceeded regulatory limits, and concentrations of most elements were essentially the same in fish from both	Uthe, et al (1971), AMIC-3819

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
						areas.	
Selenium	Coregonus clupeaformis	FL	Lake Ontario, Can.	0.4 (residue)	--	same as above	Uthe, etal (1971), AMIC-3819
Selenium	Esox lucius	FL	Moose Lake, Can.	0.2 (residue)	--	same as above	Uthe, et al (1971),AMIC-3819
Selenium	Esox lucius	FL	Lake St. Pierre, Can.	0.4 (residue)	--	same as above	Uthe, et al (1971),AMIC-3819
Selenium	Esox lucius	FL	Lake Erie, Can.	0.2 (residue)	--	same as above	Uthe, et al (1971),AMIC-3819
Selenium	Osmerus mordax	FL	Lake Erie, Can.	0.2 (residue)	--	same as above	Uthe, et al (1971),AMIC-3819
Selenium	Perca flavescens	FL	Lake Erie, Can.	0.3 (residue)	--	same as above	Uthe, et al (1971),AMIC-3819
Sesamex	Notemigonus chrysoleucas	L	--	2 (NTE 1)	--	Fish brain AChE activity was not affected by Sesamex alone but was significantly inhibited by parathion. Pretreatment with Sesamex at 2 ppm resulted in decreased inhibition of AChe activity by parathion.	Gibson, et al (1971),AMI 3799
Sesamex	Lepomis cyanellus	L	--	2 (NTE 1)	--	same as above	Gibson, et al (1971), AMIC-3799
Sesamex	Lepomis macrochirus	L	--	2 (NTE 1)	--	same as above	Gibson, et al(1971), AMIC-3799
Sevin	Puntius ticto	--	--	3.7 (T4)	a,c,d,e,f	Of the pesticides investigated, the most toxic was Klofos followed in decreasing order by Sumithion, Malathion, Formithion, Dimecron, Sevin, and BHC. The author cites the need for more selective	Bhatia (1971), AMIC-5423

						pesticides nontoxic to fish or antagonistic agents for reducing fish toxicity.	
Sevin	Rasbora heteromorpha	BCFA and BSA	--	2.4 (T2)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425
Sevin	Palaemonetes kadiakensis (resistant)	BSA	--	0.064-0.272 (T1)	a*	Bioassays were conducted with shrimp from three areas of intensive pesticide use and from an unexposed area. Previously exposed shrimp were from 1 to 25 times more resistant than unexposed shrimp. Both types of shrimp were also exposed in cages to waters of the contaminated areas. Susceptible shrimp suffered 66 percent more mortality than did resistant shrimp. The toxicity of the insecticides ranked in descending order was as follows: most toxic, Endrin, DDT, Methyl parathion, Parathion; medium toxicity, Guthion, Lindane, Toxaphene, Strobane; lease toxic Chlordane, Sevin, and Heptachlor.	Naqvi, et al (1970), AMIC-5519
Sevin	Palaemonetes kadiakensis (non-resistant)	BSA	--	0.0425 (T1)	a*	same as above	Naqvi, et al (1970), AMIC-5519
Sevin	Tubifex tubifex	FL and BSA	Belzoni, Miss.	1.50 (NTE)	--	The response of pesticide-resistant aquatic organisms to various pesticides was compared to the response of non-resistant species. Pesticide-resistant species were collected at Belzoni and non-resistant species at State College. Copepods, clams, snails, and sludge worms from Belzoni were considerably more tolerant to pesticides than the non-resistant organisms. The authors note that the effect of increased tolerance in the organisms is an increase in the amount of pesticide residues available to animals of higher trophic levels.	Naqvi, et al (1969), AMIC-5979

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
Sevin	Mercenaria mercenaria (eggs)	L	--	3.82 (T2)	--	The effect of 52 pesticides on embryonic development of clams and oysters was reported. Synergistic effects with solvents were also reported. Most of the compounds affected development more than survival. Some, however, drastically reduced larval growth. The authors point out the necessity of evaluating the effects of pesticides on all life stages of an organism and note the possibility of selecting chemicals for pest control that would not have serious effect on shellfish.	Davis, et al (1969), AMIC-5990
Sevin	Mercenaria mercenaria (larvae)	L	--	greater than 2.5 (T14)	--	same as above	Davis, et al (1969), AMIC-5990
Sevin	Crassostrea virginica (eggs)	L	--	3 (T2)	--	same as above	Davis, et al (1969), AMIC-5990
Sevin	Crassostrea virginica (larvae)	L	--	3 (T14)	--	same as above	Davis, et al (1969), AMIC-5990
Sevin	Wolffia papulifera	L	--	1000 (K)	Hunter's medium diluted 1:5	All compounds were harmful to duckweed to some degree. Decreased populations were noted at non-lethal concentrations and some compounds (Malathion and 2,4-D) caused teratogenic effects at concentrations as low as 1 ppm.	Worthley, et al (1971), AMIC-3233
Shamash R1885	Crangon crangon	BSA	--	3.3-10 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701
Shamash R1885	Pandalus montagui	BSA	--	1.0-3.3 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701

Shell D-50	Salmo gairdneri	BCFA and BSA	--	105 (T2)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425
Silver methane-arsonate	Phormidium ambiguum	L	--	0.5-10.0 (16 percent growth inhibited14)	--	Of 74 chemicals evaluated as algicides, only 9 were more toxic than CuSO4. None inhibited growth of mat-forming algae for more than 2 weeks. CuSO4 formulated with certain wetting agents was more toxic than CuSO4 alone. Copper chloramine was also found to be more toxic than CuSO4. No wetting agents were found to be inhibitory at the concentrations investigated (0.05 and 0.005 ppm). Also reported are factors affecting growth of algae in canals to determine whether there were leads to controlling algae by environmental management. No practical environmental means were found.	Otto (1970), AMIC-892
Silver	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	0 (ventral muscle residue)	--	Fish collected from an effluent pipe of a steam plant and from offshore waters of Catalina Island were analyzed for trace element content. Trace element content of the effluent water was at least 5 times greater than that of normal sea water for cadmium, copper, nickel, zinc, and chromium. Livers of fish from the effluent were nearly twice the size of those from the ocean. Greatest differences in concentration occurred with aluminum, cadmium, and nickel. Silver, barium, lithium, and lead showed the least differences. The author concluded that trace element analysis of tissues could be used to determine the effect of pollutants on marine organisms.	Stapleton (1968), AMIC-5980

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
Silver	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	0.06 (heart residue)	--	same as above	Stapleton (1968), AMIC-5980
Silver	Paralabrax clathratus	FM	Catalina Island, Cal.	0.16 (heart residue)	--	same as above	Stapleton (1968), AMIC-5980
Silver	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	0.01 (eyeball residue)	--	same as above	Stapleton (1968), AMIC-5980
Silver	Paralabrax clathratus	FM	Catalina Island, Cal.	0.02 (eyeball residue)	--	same as above	Stapleton (1968), AMIC-5980
Silver	Paralabrax clathratus	FM	Catalina Island, Cal.	0.09 (ventral muscle residue)	--	same as above	Stapleton (1968), AMIC-5980
Silver	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	0 (gonad residue)	--	same as above	Stapleton (1968), AMIC-5980
Silver	Paralabrax clathratus	FM	Catalina Island, Cal.	0.42 (gonad residue)	--	same as above	Stapleton (1968), AMIC-5980
Silver	Paralabrax clathratus (gravid females)	FM	Catalina Island, Cal.	0.12gonad residue)	--	same as above	Stapleton (1968), AMIC-5980
Silver	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	0 (liver residue)	--	same as above	Stapleton (1968), AMIC-5980
Silver	Paralabrax clathratus	FM	Catalina Island, Cal.	0.02 (liver residue)	--	same as above	Stapleton (1968), AMIC-5980

Silver	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	0.22 (integument residue)	--	same as above	Stapleton (1968), AMIC-5980
Silver	Paralabrax clathratus	FM	Catalina Island, Cal.	0.12 (integument residue)	--	same as above	Stapleton (1968), AMIC-5980
Silvex (BEE)	Gammarus fasciatus	BSA	--	0.74 (T2), 0.25 (T4)	a*	Of the aquatic weed herbicides evaluated, Dicione was the most toxic, Daphnia was generally the most sensitive organism. All of the crustacea were affected by much lower concentration levels of herbicides than indicated by the TL sub 50 values. All of the animals represent important food chain links.	Sanders (1970), AMIC-453
Silvex (BEE)	Paleomontes kadiakensis	BSA	--	8.0 (T2)	a*	same as above	Sanders (1970), AMIC-453
Silvex (BEE)	Asellus brevicaudus	BSA	--	40.0 (T2)	a*	same as above	Sanders (1970), AMIC-453
Silvex (BEE)	Orconectes nais	BSA	--	60.0 (T2)	a*	same as above	Sanders (1970), AMIC-453
Silvex (BEE)	Daphnia magna	BSA	--	2.1 (T2)	a*	same as above	Sanders (1970), AMIC-453
Silvex (BEE)	Cypridopsis vidua	BSA	---	4.9 (T2)	a*	same as above	Sanders (1970), AMIC-453
Silvex (BEE)	Lepomis macrochirus	BSA	--	70.0 (T2)	a*	same as above	Sanders (1970), AMIC-453
Silvex (PGBE)	Gammarus fasciatus	BSA	--	1.0 (T2), 0.84 (T4)	a*	same as above	Sanders (1970), AMIC-453
Silvex (PGBE)	Paleomontes kadiakensis	BSA	--	3.2 (T2)	a*	same as above	Sanders (1970), AMIC-453

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
Silvex (PGBE)	Asellus brevicaudus	BSA	--	0.5 (T2)	a*	same as above	Sanders (1970), AMIC-453
Silvex (PGBE)	Orconectes nais	BSA	--	greater than 100.0 (T2)	a*	same as above	Sanders (1970),AMIC-453
Silvex (PGBE)	Daphnia magna	BSA	--	0.18 (T2)	a*	same as above	Sanders(1970), AMIC-453
Silvex (PGBE)	Cypridopsis vidua	BSA	--	0.20 (T2)	a*	same as above	Sanders (1970), AMIC-453
Silvex (PGBE)	Lepomis macrochirus	BSA	--	16.6 (T2)	a*	same as above	Sanders (1970), AMIC-453
Silvex	Crassostrea virginica (eggs)	L	--	5.9 (T2)	--	The effect of 52 pesticides on embryonic development of clams and oysters was reported. Synergistic effects with solvents were also reported. Most of the compounds affected development more than survival. Some, however, drastically reduced larval growth. The authors point out the necessity of evaluating the effects of pesticides on all life stages of an organism and note the possibility of selecting chemicals for pest control that would not have serious effect on shellfish.	Davis, et al (1969), AMIC-5990
Silvex	Crassostrea virginica (larvae)	L	--	0.7 (T14)	--	same as above	Davis, et al (1969),AMIC-5990
Simazine	Fish (not specified)	--	--	greater than 10-100 (K)	--	Approximate toxicities of numerous pesticides commonly used in Britain were summarized. An excellent brief, general discussion of toxicity testing is also present.	Mawdesley-Thomas (1971),AMIC-1056
Simazine	Salmo	BCFA	--	43 (T2)	a*,c,e,f,	One hundred sixty-four	Alabaster

	gairdneri	and BSA			hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	(1969), AMIC-5425
Simazine	Salmo gairdneri	BCFA and BSA	--	44 (T1)	a*,c,e,f, hard(HW) or soft (SW) synthetic dilution water, or seawater for some species	same as above	Alabaster (1969), AMIC-5425
Simazine	Roccus saxatilis (fingerlings)	BSA	--	0.25 (T4)	a*,c,d,e,f,p and iron	Strioed bass fingerlings were apparently much more sensitive to therapeutic and herbicidal compounds than many freshwater fish.	Wellborn (1969), AMIC-5723
Simazine	Carcinus maenas	BSA	--	greater than 100 (T2)	a#(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701
Simazine	Cardium edule	BSA	--	greater than 100 (T2)	a#(continuous, aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Simazine	Crangon crangon	BSA	--	greater than 100 (T2)	a#(continuous, aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
Simazine	Gammarus fasciatus	BSA	--	greater than 100.0 (T2)	a*	Of the aquatic weed herbicides evaluated, Diclone was the most toxic. Daphnia was generally the most sensitive organism. All of the crustacea were affected by much lower concentration levels of herbicides than indicated by the TL sub 50 values. All of the animals represent important food chain links.	Sanders (1970), AMIC-453
Simazine	Paleomontes kadiakensis	BSA	--	greater than 100.0 (T2)	a*	same as above	Sanders (1970),AMIC-453
Simazine	Asellus brevicaudus	BSA	--	greater than 100.0 (T2)	a*	same as above	Sanders (1970),AMIC-453
Simazine	Orconectes nais	BSA	--	greater than 100.0 (T2)	a*	same as above	Sanders (1970),AMIC-453
Simazine	Daphnia magna	BSA	--	1.0 (T2)	a*	same as above	Sanders (1970), AMIC-453
Simazine	Cypridopsis vidua	BSA	--	3.2 (T2)	a*	same as above	Sanders (1970), AMIC-453
Simazine	Lepomis macrochirus	BSA	--	greater than 100.0 (T2)	a*	same as above	Sanders (1970),AMIC-453
Slickgone 1	Carcinus maenas	BSA	--	33-100 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701
Slickgone 1	Cardium edule	BSA	--	33 (T2)	a*(contin-	same as above	Portmann, et

					uous, aeration, sea water, and daily solution renewal)		al (1971), AMIC-7701
Slickgone 1	Crangon crangon	BSA	--	3.3-10 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Slickgone 1	Pandalus montagui	BSA	--	3.3-10 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Slickgone 2	Carcinus maenas	BSA	--	10-33 (T2)	a*(continuous, aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Slickgone 2	Cardium edule	BSA	--	3.3 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Slickgone 2	Crangon crangon	BSA	--	3.3-10 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
					renewal)		
Slickgone 2	Pandalus montagui	BSA	--	3.3-10 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Silx	Rasbora heteromorpha	BCFA and BSA	--	8.3 (T2)	a*,c,e,f, hard (HW)or soft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425
Silx	Carcinus maenas	BSA	--	15 (T4)	a*(continuous aeration, seawater, and daily solution renewal) ion renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701
Silx	Cardium edule	BSA	--	33 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Silx	Crangon crangon	BSA	--	100-330 (T2)	a*(continuous, aeration, seawater, and daily	same as above	Portmann, et al (1971), AMIC-7701

					solution renewal)		
Silx	Ostrea edulis	BSA	--	100 (T2)	a*(continuous, aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Silx	Pandalus montagui	BSA	--	10-33 (T2)	a*(continuous, aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Snowdrift SC98	Crangon crangon	BSA	--	330-1000 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701
Sodium arsenate	Carassius auratus	L	--	32 (T7)	a,c	In addition to toxicity data, conditioned avoidance response was studied at sublethal concentrations. The lowest concentration of metal resulting in significant impairment was: arsenic, 0.10; lead, 0.07; mercury, 0.003; and selenium, 0.25. Deleterious effects occurred at metal concentrations approximately similar to potable water standards.	Weir, et al (1970),AMIC-739
Sodium bicarbonate	Lepomis macrochirus	BSA, L	--	8,600 (T4)	a*,e, and synthetic dilution water	This study was conducted to determine the relative toxicities of 20 common constituents of industrial wastes to a fish, an alga, and an invertebrate. The experiments were conducted over a 10-year period for varied purposes. The authors recommend bioassays with at least	Patrick, et al (1968), AMIC-5720

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
						three components of the food web.	
Sodium bicarbonate	Nitzschia linearis	BSA, L	--	650 (T5)	a*,e, and synthetic dilution water	same as above	Patrick, et al (1968), AMIC-5720
Sodium carbonate	Lepomis macrochirus	BSA, L	--	320 (T4)	a*,e, and synthetic dilution water	same as above	Patrick, et al (1968), AMIC-5720
Sodium carbonate	Nitzschia linearis	BSA, L	--	242 (T5)	a*,e, and synthetic dilution water	same as above	Patrick, et al (1968), AMIC-5720
Sodium chlorate	Rasbora heteromorpha	BCFA and BSA	--	8600 (T1)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425
Sodium chloride	Lepomis macrochirus	BSA, L	--	12,946 (T4)	a*,e, and synthetic dilution water	This study was conducted to determine the relative toxicities of 20 common constituents of industrial wastes to a fish, an alga, and an invertebrate. The experiments were conducted over a 10-year period for varied purposes. The authors recommend bioassays with at least three components of the food web.	Patrick, et al (1968), AMIC-5720
Sodium chloride	Nitzschia linearis	BSA, L	--	2,430 (T5)	a*,e, and synthetic dilution water	same as above	Patrick, et al (1968), AMIC-5720
Sodium chloride	Agonus	BSA	--	22,000-33,000	a*(contin-	One hundred-forty surface active	Portmann,et

	cataphractus			(T2)	uous aeration, seawater, and daily solution renewal)	agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	al (1971), AMIC-7701
Sodium chloride	Carcinus maenas	BSA	--	11,000-16,500 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Sodium chloride	Cardium edule	BSA	--	66,000 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Sodium chloride	Crangon crangon	BSA	--	16,500-33,000 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al(1971), AMIC-7701
Sodium cyanide	Negaprion brevirostris (1-3 kg)	BSA	--	6.6 (S810 min)	a,c,e	Data from study of drug effects on young lemon sharks were treated mathematically to demonstrate applicability of classical rate theory to the study of chemical shark deterrents. Incapacitation (narcosis) was the primary parameter timed for effectiveness. This was usually quite rapid for the more effective drugs.	Baldridge (1969), AMIC-3832
Sodium fluoracetate	Salmo gairdneri	BCFA and BSA	--	580 (T2)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy	Alabaster (1969),AMIC-5425

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
					seawater for some species	predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	
Sodium fluoride	Crangon crangon	BSA	--	greater than 300 (T2)	a*(continuous, aoration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, etal (1971), AMIC-7701
Sodium hydroxide	Agonus cataphractus	BSA	--	33-100 (T2)	a*(continuous, aoration, seawater, and daily solution renewal)	same as above	Portmann, et al(1971), AMIC-7701
Sodium hydroxide	Cardium edule	BSA	--	330-1000 (T2)	a*(continuous, aoration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Sodium hydroxide	Crangon crangon	BSA	--	33-100 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Sodium molybdate	Salmo gairdneri	FL	Castle Lake, Cal.	3.5 lb per A (NTE)	--	Molybdenum fertilization resulted in greater standing crops of zooplankton	Cordone, et al (1970),

						and bottom fauna and apparently in increased yields of rainbow and eastern brook trout. Mitigating factors may have influenced the results. A second experimental fertilization was initiated.	AMIC-5750
Sodium molybdate	Salvelinus fontinalis	FL	Castle Lake, Cal.	3.5 lb per A (NTE)	--	same as above	Cordone, et al (1970), AMIC-5750
Sodium nitrite	Rasbora heteromorpha	BCFA and BSA	--	210 (T2)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater forsome species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425
Sodium N-methyldithio carbamate	Phormidium ambiguum	L	--	0.5-10.0(NTE)	--	Of 74 chemicals evaluated as algicides, only 9 were more toxic than $CuSO_4$. None inhibited growth of mat-forming algae for more than 2 weeks. $CuSO_4$ formulated with certain wetting agents was more toxic than $CuSO_4$ alone. Copper chloramine was also found to be more toxic than $CuSO_4$. No wetting agents were found to be inhibitory at the concentrations investigated (0.05 and 0.005 ppm). Also reported are factors affecting growth of algae in canals to determine whether there were leads to controlling algae by environmental management. No practical environmental means were found.	Otto (1970), AMIC-892
Sodium pentachlorophenate	Salmo gairdneri	BCFA and BSA	--	0.15 (T2)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true.	Alabaster (1969), AMIC-5425

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
						Testing the actual material as sold was found to be essential.	
Sodium pentachlorophenate	Phormidium ambiguum	L	--	0.5-10.0 (NTE)	--	Of 74 chemicals evaluated as algicides, only 9 were more toxic than $CuSO_4$. None inhibited growth of mat-forming algae for more than 2 weeks. $CuSO_4$ formulated with certain wetting agents was more toxic than $CuSO_4$ alone. Copper chloramine was also found to be more toxic than $CuSO_4$. No wetting agents were found to be inhibitory at the concentrations investigated (0.05 and 0.005 ppm). Also reported are factors affecting growth of algae in canals to determine whether there were leads to controlling algae by environmental management. No practical environmental means were found.	Otto (1970), AMIC-892
Sodium pyridine-N-oxide	Phormidium ambiguum	L	--	0.5-10.0 (NTE)	--	same as above	Otto (1970), AMIC-892
Sodium sulfate	Lepomis macrochirus	BSA, L	--	13,500 (T4)	a*,e, and synthetic dilution water	This study was conducted to determine the relative toxicities of 20 common constituents of industrial wastes to a fish, an alga, and an invertebrate. The experiments were conducted over a 10-year period for varied purposes. The authors recommend bioassays with at least three components of the food web.	Patrick, et al (1968), AMIC-5720
Sodium sulfate	Nitzschia linearis	BSA, L	--	1,900 (T5)	a*,e, and synthetic dilution water	same as above	Patrick, et al (1968), AMIC-5720
Sodium thiocyanate	Carcinus maenas	BSA	--	greater than 500 (T2)	a*(continuous, aeration, sea-water, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701

Sodium thiocyanate	Cardium edule	BSA	--	greater than 500 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Sodium thiocyanate	Crangon crangon	BSA	--	greater than 500 (T2)	a*(continuous, aeration, sea water, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Sodium thiocyanate	Pandalus montagui	BSA	--	greater than 6.2 (T2)	a*(continuous, aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Spill-X	Steelhead trout (fingerlings)	BSA	--	35.5 (T4)	--	Evaluation of 11 oil dispersants resulted in a ranking for each and a recommendation for use according to the ranking. Ranking was based on toxicity and oil dispersal effectiveness. Corexit 7764 appeared to have the least toxicity with fair to good oil dispersion capability.	Tracy, et al (1969), AMIC-3834
Spill-X	Coho salmon (fingerlings)	BSA in situ	Hood Canal, Hoodsport, Wash.	1.5 (K)	--	same as above	Tracy, et al (1969), AMIC-3834
Spill remover	Pimephales promelas	BSA	--	5.6 (T4)	c,d,e,f	Toxicity of six oil spill dispersants was determined along with BOD values. Pond water was used as diluent and oil was included in the experiment. Oil markedly reduced toxicity of all dispersants. Data are given as "most probable" 96-hr TL sub m.	Zillich (1969), AMIC-2909
Spill remover	Pimephales promelas	BSA	--	1.4 (MSC)	c,d,e,f	same as above	Zillich (1969), AMIC-2909
Spill remover	Biochemical oxygen demand	L	--	630,000	c,d,e,f	same as above	Zillich (1969), AMIC-

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
							2909
Streptomycin sulfate	Limnodrilus sp	L	--	0.5 (T1)	a*	Tubificid worms were found to be approximately 300 times more sensitive than their own gut microflora. The authors recommend that streptomycin should not be indiscriminately applied in aquatic ecosystems.	Coler,et al (1968), AMIC-5460
Streptomycin sulfate	Tubifex sp	L	--	0.5 (T1)	a*	same as above	Coler, et al (1968),AMIC-5460
Streptomycin sulfate	Peloscolex sp	L	--	0.5 (T1)	a*	same as above	Coler, et al (1968),AMIC-5460
Streptomycin sulfate	Phormidium ambiguum	L	--	0.5-10.0 (NTE)	--	Of 74 chemicals evaluated as algicides, only 9 were more toxic than $CuSO_4$. None inhibited growth of mat-forming algae for more than 2 weeks. $CuSO_4$ formulated with certain wetting agents was more toxic than $CuSO_4$ alone. Copper chloramine was also found to be more toxic than $CuSO_4$. No wetting agents were found to be inhibitory at the concentrations investigated (0.05 and 0.005 ppm). Also reported are factors affecting growth of algae in canals to determine whether there were leads to controlling algae by environmental management. No practical environmental means were found.	Otto(1970), AMIC-892
Strobane	Lepomis cyanellus (Resistant)	BSA	--	0.88 (T2)	a*	Green sunfish from Belzoni, Miss. were resistant to Chlordane, Heptachlor, Lindane, and Strobane, but not to Parathion. Golden shiners from the same location were resistant to Lindane and Strobane, tolerant to Chlordane and Heptachlor, and susceptible to Parathion. Lack of resistance to Parathion indicated lack of agricultural usage of organophosphates in that area. Resistant	Minchew, et al (1970), AMIC-5471

						fish were compared to susceptible ones collected at Starkville.	
Strobane	Lepomis cyanellus (Susceptible)	BSA	--	0.05 (T2)	a*	same as above	Minchew, etal (1970), AMIC-5471
Strobane	Notemigonus crysoleucas (Resistant)	BSA	--	2.22 (T2)	a*	same as above	Minchew, etal (1970), AMIC-5471
Strobane	Notemigonus crysoleucas (Susceptible)	BSA	--	0.06 (T2)	a*	same as above	Minchew, etal (1970), AMIC-5471
Strobane	Palaemonetes kadiakensis (resistant)	BSA	--	0.0854-0.207 (T1)	a*	Bioassays were conducted with shrimp from three areas of intensive pesticide use and from an unexposed area. Previously exposed shrimp were from 1 to 25 times more resistant than unexposed shrimp. Both types of shrimp were also exposed in cages to waters of the contaminated areas. Susceptible shrimp suffered 66 percent more mortality than did resistant shrimp. The toxicity of the insecticides ranked in descending order was as follows: most toxic, Endrin, DDT, Methyl parathion, Parathion; medium toxicity, Guthion, Lindane, Toxaphene, Strobane; lease toxic Chlordane, Sevin, and Heptachlor.	Naqvi, et al (1970), AMIC-5519
Strobane	Palaemonetes kadiakensis (non-resistant)	BSA	--	0.0393(T1)	a*	same as above	Naqvi, et al (1970), AMIC-5519
Strobane	Copepods (Cyclops bicuspidus, Cyclops varicans, Cyclops vernalis, Eucyclops agilis, Macrocyclops albidus, Orthocyclops modestus)	FL and BSA	State College, Miss.	0.10 (K2)	--	The response of pesticide-resistant aquatic organisms to various pesticides was compared to the response of non-resistant species. Pesticide-resistant species were collected at Belzoni and non-resistant species at State College. Copepods, clams, snails, and sludge worms from Belzoni were considerably more tolerant to pesticides than the non-resistant organisms. The authors note that the effect of increased tolerance in the organisms is an increase in the amount of	Naqvi, et al (1969), AMIC-5979

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
						pesticide residues available to animals of higher trophic levels.	
Strobane	Copepods (Cyclops bicuspidus, Cyclops varicans, Cyclops vernalis, Eucyclops agilis,Macroc Macrocyclops albidus, Orthocyclops modestus)	FL and BSA	Belzoni, Miss	0.10 (K2)	--	same as above	Naqvi, et al (1969),AMIC-5979
Strobane	Tubifex tubifex	FL and BSA	Belzoni, Miss.	1.50 (NTE)	--	same as above	Naqvi, et al(1969), AMIC-5979
Strontium	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	2.2 (dorsal muscle residue)	--	Fish collected from an effluent pipe of a steam plant and from offshore waters of Catalina Island were analyzed for trace element content. Trace element content of the effluent water was at least 5 times greater than that of normal sea water for cadmium, copper, nickel, zinc, and chromium. Livers of fish from the effluent were nearly twice the size of those from the ocean. Greatest differences in concentration occurred with aluminum, cadmium, and nickel. Silver, barium, lithium, and lead showed the least differences. The author concluded that trace element analysis of tissues could be used to determine the effect of pollutants on marine organisms.	Stapleton (1968), AMIC-5980
Strontium	Paralabrax clathratus	FM	Catalina Island, Cal.	1.7 (dorsal muscle residue)	--	same as above	Stapleton (1968), AMIC-5980
Strontium	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles,	3.3 (ventral muscle residue)	--	same as above	Stapleton (1968), AMIC-5980

			Cal.				
Strontium	Paralabrax clathratus	FM	Catalina Island, Cal.	1.8 (ventral muscle residue)	--	same as above	Stapleton (1968), AMIC-5980
Strontium	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	2 (gonads residue)	--	same as above	Stapleton (1968), AMIC-5980
Strontium	Paralabrax clathratus	FM	Catalina Island, Cal.	3.4 (gonads residue)	--	same as above	Stapleton (1968), AMIC-5980
Strontium	Paralabrax clathratus (gravid females)	FM	Catalina Island, Cal.	3.2 (gonads residue)	--	same as above	Stapleton (1968), AMIC-5980
Strontium	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	1.1 (liver residue)	--	same as above	Stapleton (1968), AMIC-5980
Strontium	Paralabrax clathratus	FM	Catalina Island, Cal.	2.1 (liver residue)	--	same as above	Stapleton (1968), AMIC-5980
Strontium	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	5.4 (integument residue)	--	same as above	Stapleton (1968), AMIC-5980
Strontium	Paralabrax clathratus	FM	Catalina Island, Cal.	10.1(integument residue)	--	same as above	Stapleton (1968), AMIC-5980
Strontium	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	2.3 (heart residue)	--	same as above	Stapleton (1968), AMIC-5980
Strontium	Paralabrax clathratus	FM	Catalina Island, Cal.	3.7 (heart residue)	--	same as above	Stapleton (1968), AMIC-5980
Strontium	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	92 (eyeball residue)	--	same as above	Stapleton (1968), AMIC-5980

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
Strontium	Paralabrax clathratus	FM	Catalina Island, Cal.	162 (eyeball residue)	--	same as above	Stapleton (1968), AMIC-5980
Strychnine nitrate	Negaprion brevirostris (1-3 kg)	BSA	--	1.7 (SB 10 MIN)	a,c,e	Data from study of drug effects on young lemon sharks were treated mathematically to demonstrate applicability of classical rate theory to the study of chemical shark deterrents. Incapacitation (narcosis) was the primary parameter timed for effectiveness. This was usually quite rapid for the more effective drugs.	Baldridge (1969), AMIC-3832
Sulfisoxazole (Gantrisin)	Fundulus heteroclitus (3 in.)	L	--	0.96 (SB30)	a*,q	The sulfa drug caused no significant difference in growth rate, testes weight, iodine uptake, or liver weight. Varying degrees of adrenal inactivity and adrenal degranulation occurred due to treatment. A significant increase in hematocrit was noted. As a result this chemical has become the sulfa drug of choice in the Bingham Laboratory for controlling skin infection of killifish.	Cowmeadow, et al (1969), AMIC-5736
Sulfuric acid	Agonus cataphractus	BSA	--	80-90 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701
Sulfuric acid	Carcinus maenas	BSA	--	70-80 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Sulfuric acid	Cardium edule	BSA	--	200-500 (T2)	a*(contin-	same as above	Portmann, et

					uous aer-ation, sea-water, and daily solution renewal)		al (1971), AMIC-7701
Sulfuric acid	Crangon crangon	BSA	--	70-80 (T2)	a*(contin-uous aer-ation, sea-water, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Sulfuric acid	Pandalus montagui	BSA	--	42.5 (T2)	a*(contin-uous aer-ation, sea-water, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Sulfuric acid	Platicthys flesus	BSA	--	100-330 (T2)	a*(contin-uous aer-ation, sea-water, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Sulfur	Fish (not specified)	--	--	greater than 1000 (K)	--	Approximate toxicities of numerous pesticides commonly used in Britain were summarized. An excellent brief, general discussion of toxicity testing is also present.	Mawdesley-Thomas (1971),AMIC-1056
Sulmet (tinted)	Mercenaria mercenaria (eggs)	L	--	greater than 100 (T2)	--	The effect of 52 pesticides on embryonic development of clams and oysters was reported. Synergistic effects with solvents were also reported. Most of the compounds affected development more than survival. Some, however, drastically reduced larval growth. The authors point out the necessity of evaluating the effects of pesticides on all life stages of an organism and note the possibility of	Davis, et al (1969), AMIC-5990

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
						selecting chemicals for pest control that would not have serious effect on shellfish.	
Sulmet (tinted)	Mercenaria mercenaria (larvae)	L	--	greaterthan 100 (T12)	--	same as above	Davis, et al (1969), AMIC-5990
Sulmet (untinted)	Mercenaria mercenaria (eggs)	L	--	greaterthan 1000 (T2)	--	same as above	Davis, et al (1969), AMIC-5990
Sulmet (untinted)	Mercenaria mercenaria (larvae)	L	--	greater than 1000 (T12)	--	same as above	Davis, et al (1969), AMIC-5990
Sulmet (untinted)	Crassostrea virginica (eggs)	L	--	greaterthan 600 (T2)	--	same as above	Davis, et al (1969), AMIC-5990
Sulmet (untinted)	Crassostrea virginica (larvae)	L	--	greater than 600 (T14)	--	same as above	Davis, et al (1969), AMIC-5990
Sumithion	Puntius ticto	--	--	0.0058 (T4)	a,c,d,e,f	Of the pesticides investigated, the most toxic was Kiotos followed in decreasing order by Sumithion, Malathion, Formithion, Dimecron, Sevin, and BHC. The author cites the need for more selective pesticides nontoxic to fish or antagonistic agents for reducing fish toxicity.	Bhatia (1971), AMIC-5423
Sutan	Gammarus fasciatus	BSA	--	10.0 (T4)	a*	Of the aquatic weed herbicides evaluated, Dicione was the most toxic, Daphnia was generally the most sensitive organism. All of the crustacea were affected by much lower concentration levels of herbicides than indicated by the TL sub 50 values. All of the animals represent important food chain links.	Sanders (1970), AMIC-453
S.D. 3562	Rasbora heteromorpha	BCFA and BSA	--	greater than 1,000 (T2)	a*,c,e,f, hard(HW) or soft (SW) synthetic dilution water, or seawater for some	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes	Alabaster (1969),AMIC-5425

					species	pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	
S.D. 8211	Rasbora heteromorpha	BCFA and BSA	--	3.5 (T2)	a*,c,e,f, hard (HW) or SOFT(SW) synthetic dilution water, or seawater for some species	same as above	Alabaster (1969), AMIC-5425
S.D. 8447	Rasbora heteromorpha	BCFA and BSA	--	4.3 (T2)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	same as above	Alabaster (1969), AMIC-5425
S.N. 5215	Rasbora heteromorpha	BCFA and BSA	--	23 (T2)	a*,c,e,f, hard (HW) or SOFT(SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425
TCC	Mercenaria mercenaria (eggs)	L	--	0.032 (T2)	--	The effect of 52 pesticides on embryonic development of clams and oysters was reported. Synergistic effects with solvents were also reported. Most of the compounds affected development more than survival. Some, however, drastically reduced larval growth. The authors point out the necessity of evaluating the effects of pesticides on all life stages of an organism and note the possibility of	Davis, et al (1969), AMIC-5990

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
						selecting chemicals for pest control that would not have serious effect on shellfish.	
TCC	Mercenaria mercenaria (larvae)	L	--	0.037 (T12)	--	same as above	Davis, et al (1969),AMIC-5990
TCP	Crassostrea virginica (eggs)	L	--	0.6 (T2)	--	The effect of 52 pesticides on embryonic development of clams and oysters was reported. Synergistic effects with solvents were also reported. Most of the compounds affected development more than survival. Some, however, drastically reduced larval growth. The authors point out the necessity of evaluating the effects of pesticides on all life stages of an organism and note the possibility of selecting chemicals for pest control that would not have serious effect on shellfish.	Davis, et al (1969), AMIC-5990
TCP	Crassostrea virginica (larvae)	L	--	greater than 1.0 (T14)	--	same as above	Davis, et al(1969), AMIC-5990
TDE	Fish (not specified)	--	--	greater than 0.01-0.1 (K)	--	Approximate toxicities of numerous pesticides commonly used in Britain were summarized. An excellent brief, general discussion of toxicity testing is also present.	Mawdesley-Thomas (1971),AMIC-1056
TDE	White sucker	FRL	Misc. states	0.05-3.81 residue (SB)	--	The Bureau of Sport Fisheries continued its fish monitoring program by collecting 147 composite fish samples from 50 nationwide monitoring stations during the fall of 1969. Fish were analyzed for residues of 11 organochlorine insecticides, lipids, and PCB"s.	Henderson, etal (1971), AMIC-1407
TDE	Yellow perch	FRL	Misc. states	0.03-1.47 residue (SB)	--	same as above	Henderson, etal (1971), AMIC-1407
TDE	Chain pickerel	FRL	Misc. states	0.09 residue (SB)	--	same as above	Henderson, et al(1971), AMIC-1407

TDE	White catfish	FRL	Misc. states	0.32-0.43 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1407
TDE	White perch	FRL	Misc. states	0.65-8.07 residue (SB)	--	same as above	Henderson, etal (1971), AMIC-1407
TDE	Goldfish	FRL	Misc. states	1.91 residue (SB)	--	same as above	Henderson, et al(1971), AMIC-1407
TDE	Pumpkinseed	FRL	Misc. states	0.39 residue (SB)	--	same as above	Henderson, et al(1971), AMIC-1407
TDE	Largemouth bass	FRL	Misc. states	0.04-2.73 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1407
TDE	Brown bullhead	FRL	Misc. states	0.07-1.76 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1407
TDE	Carp	FRL	Misc. states	0.02-1.86 residue (SB)	--	same as above	Henderson, et al(1971), AMIC-1407
TDE	Channel catfish	FRL	Misc. states	0.04-10.4 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1407
TDE	Redhorse sucker	FRL	Misc. states	0.03-0.44 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1407
TDE	Gizzard shad	FRL	Misc. states	0.37-0.73 residue (SB)	--	same as above	Henderson, etal (1971), AMIC-1407
TDE	Spotted sucker	FRL	Misc. states	0.19-0.32 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1407
TDE	Bluegills	FRL	Misc. states	0.03-0.45 residue (SB)	--	same as above	Henderson, et al(1971), AMIC-1407
TDE	Redbreast sunfish	FRL	Misc. states	0.02 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1407

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
TDE	Striped mullet	FRL	Misc. states	0.20-2.26 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1407
TDE	Blue catfish	FRL	Misc. states	0.08 residue (SB)	--	same as above	Henderson, et al(1971), AMIC-1407
TDE	Rock bass	FRL	Misc. states	0.05-0.59 residue (SB)	--	same as above	Henderson, et al(1971), AMIC-1407
TDE	Freshwater drum	FRL	Misc. states	0.28 residue (SB)	--	same as above	Henderson, et al(1971), AMIC-1407
TDE	Bloater	FRL	Misc. states	0.15-0.74 residue (SB)	--	same as above	Henderson, et al(1971), AMIC-1407
TDE	Lake whitefish	FRL	Misc. states	0.12 residue (SB)	--	same as above	Henderson, et al(1971), AMIC-1407
TDE	Lake trout	FRL	Misc. states	0.02-0.15 residue (SB)	--	same as above	Henderson, et al(1971), AMIC-1407
TDE	White crappie	FRL	Misc. states	0.22-0.27 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1407
TDE	Bigmouth buffalo	FRL	Misc. states	0.17-0.60 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1407
TDE	Smallmouth buffalo	FRL	Misc. states	0.46 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1407
TDE	Flathead catfish	FRL	Misc. states	0.80 residue (SB)	--	same as above	Henderson, etal (1971), AMIC-1407
TDE	Goldeye	FRL	Misc. states	0.02-0.28 residue (SB)	--	same as above	Henderson, et al(1971),

							AMIC-1407
TDE	Walleye	FRL	Misc. states	0.03-0.29 residue (SB)	--	same as above	Henderson, et al(1971), AMIC-1407
TDE	Sauger	FRL	Misc. states	0.10 residue (SB)	--	same as above	Henderson,et al (1971),AMIC-1407
TDE	Flannelmouth sucker	FRL	Misc. states	0.28 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1407
TDE	Black bullhead	FRL	Misc. states	0.02-0.05 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1407
TDE	White bass	FRL	Misc. states	0.09 residue (SB)	--	same as above	Henderson, et al(1971), AMIC-1407
TDE	Black crappie	FRL	Misc. states	0.22-0.49 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1407
TDE	Largescale sucker	FRL	Misc. states	0.06-0.29 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1407
TDE	Smallmouth bass	FRL	Misc. states	0.14-0.23 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1407
TDE	Northern squawfish	FRL	Misc. states	0.03-0.45 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1407
TDE	Chiselmouth	FRL	Misc. states	0.09-0.41 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1407
TDE	Klamath sucker	FRL	Misc. states	0.01 residue (SB)	--	same as above	Henderson, et al(1971), AMIC-1407
TDE	Rainbow trout	FRL	Misc. states	0.03-0.16 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1407
TDE	Bridgelip	FRL	Misc. states	0.38 residue	--	same as above	Henderson,

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
	sucker			(SB)			et al(1971), AMIC-1407
TDE	Arctic grayling	FRL	Misc. states	0.16 residue (SB)	--	same as above	Henderson, et al(1971), AMIC-1407
TDE	Round whitefish	FRL	Misc. states	0.32 residue (SB)	--	same as above	Henderson, et al(1971), AMIC-1407
TDE	Longnose sucker	FRL	Misc. states	0.01-0.52 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1407
TDE	Engraulis mordax	FM	Pacific Northwest Coast, Grays Harbor, Wash.	0.07-0.24 (residue)	--	Pesticides from the Columbia River into Puget Sound apparently contaminated fish constituting commercial catches in Pacific Northwest waters. Residues in these marine products were substantially lower than the FDA tolerance for beef (7 ppm). Fish from locations near the mouth of the Columbia River had higher pesticide content than ones caught farther away.	Stout (1968), AMIC-3784
TDE	Cancer magister	FM	Pacific Northwest Coast, Destruction Island, Wash.	0.01(residue)	--	same as above	Stout (1968), AMIC-3784
TDE	Cancer magister	FM	Pacific Northwest Coast, Ilwaco, Wash.	0.02 (residue)	--	same as above	Stout (1968), AMIC-3784
TDE	Parophrys vetulus	FM	Pacific Northwest Coast, Blaine, Wash.	0.01-0.07 (residue)	--	same as above	Stout (1968), AMIC-3784
TDE	Merluccius productus	FM	Pacific Northwest Coast, Sarasota Passage, Wash.	0.03-0.05 (residue)	--	same as above	Stout (1968), AMIC-3784

TDE	Merluccius productus	FM	Pacific Northwest Coast, Fort Susan, Wash.	0.03-0.09 (residue)	--	same as above	Stout (1968), AMIC-3784
TDE	Merluccius productus	FM	Pacific Northwest Coast, Cape Foulweather, Ore.	0.07(residue)	--	same as above	Stout (1968), AMIC-3784
TDE	Merluccius productus (fishmeal)	FM	Pacific Northwest Coast, Aberdeen, Wash.	0.03 (residue)	--	same as above	Stout (1968), AMIC-3784
TDE	Sebastodes alutus	FM	Pacific Northwest Coast, Hecate Strait, B.C.	Trace (residue)	--	same as above	Stout (1958), AMIC-3784
TDE	Platichthys stellatus	FM	Pacific Northwest Coast, Blaine, Wash.	0.03(residue)	--	same as above	Stout (1968), AMIC-3784
TDE	Gadus macrocephalus	FM	Pacific Northwest Coast, Blaine, Wash.	0.01 (residue)	--	same as above	Stout (1968), AMIC-3784
TDE	Sebastodes flavidus	FM	Pacific Northwest Coast, Hecate Strait, B.C.	0.01(residue)	--	same as above	Stout (1968), AMIC-3784
TDE	Sebastodes flavidus	FM	Pacific Northwest Coast, Ilwaco,Wash.	0.02-0.09 (residue)	--	same as above	Stout (1968), AMIC-3784
TEPA	Poecilia reticulata	BCH	--	1-10 (SB1)	a,c,d	Guppies were continuously exposed for 24 hr each week over a 33 wk experimental period to determine the effect of TEPA on reproduction and on the viabity, survival, and reproduction of	Stock, et al (1969),AMIC-5457

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
						the unexposed F1 generation. Male fertility was adversely affected at concentration levels that did not influence female reproductive capability. Inhibited brood production was associated with atrophied and normal testes. The effect varied with concentration and exposure frequency. Male potency appeared to recover when exposures were discontinued. No apparent effects were observed in the F1 generation. TEPA is a chemosterilant used to induce sterility in insect pests.	
TEPA	Poecilia reticulata	BCH	--	190 (T4)	a,c,d	same as above	Stock, et al(1969), AMIC-5457
TEPP	Tubifex tubifex	FL and BSA	Belzoni, Miss.	8.00 (NTE)	--	The response of pesticide-resistant aquatic organisms to various pesticides was compared to the response of non-resistant species. Pesticide-resistant species were collected at Belzoni and non-resistant species at State College. Copepods, clams, snails, and sludge worms from Belzoni were considerably more tolerant to pesticides than the non-resistant organisms. The authors note that the effect of increased tolerance in the organisms is an increase in the amount of pesticide residues available to animals of higher trophic levels.	Naqvi, et al(1969), AMIC-5979
TEPP	Crassostrea virginica (eggs)	L	--	greater than 10.0 (T2)	--	The effect of 52 pesticides on embryonic development of clams and oysters was reported. Synergistic effects with solvents were also reported. Most of the compounds affected development more than survival. Some, however, drastically reduced larval growth. The authors point out the necessity of evaluating the effects of pesticides on all life stages of an organism and note the possibility of selecting chemicals for pest control that	Davis, et al(1969), AMIC-5990

						would not have serious effect on shellfish.	
TEPP	Crassostrea virginica (larvae)	L	--	greater than 10.0 (T14)	--	same as above	Davis, et al(1969), AMIC-5990
Terramycin (concentrate)	Morone saxatilis (fingerlings)	BSA	--	165 (T4)	a,c,d,e,f, p	All compounds were investigated because of their probable usage in hatchery production of white bass. Compounds that can be used at recommended concentrations were Aquathol, Casaron, Lindane, and Terramycin concentrate. Those that should not be used were Acriflavine, Bayluscide, Malachite green oxalate, and Malathion.	Wellborn (1971), AMIC-5571
Tetradifon	Cardium edule	BSA	--	greater than 10 (T2)	a*(continuous, aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701
Tetradifon	Crangon crangon	BSA	--	greater than 10 (T2)	a*(continuous, aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Tetrahydrofurfuryl alcohol	Rasbora heteromorpha	BCFA and BSA	--	3,400 (T2)	a*,c,e,f, hard(HW) or soft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969),AMIC-5425
TFM	Petromyzon marinus	FLR	Marquette County,	3.8-9 (annual treatment,	a,f, conduc-	TFM, a selective lamprey larvicide, was applied annually over a	Manion (1969),

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
			Michigan., Garlic River and SauxHead Lake	89-96 percent population reduction)	tivity	3-year period to the Garlic River which flows into Saux Head Lake. The final TFN treatment contained 1 percent Bayluscide as a synergist and "bottom toxicant". The two compounds in combination were considerably more effective than TFN alone. The author believed total effectiveness was not achieved because lampreys avoid lethal doses by moving to untreated water.	AMIC-3761
Thallium	Crangon crangon	BSA	--	10 (T4)	a#(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701
Thimet	Rasbora heteromorpha	BCFA and BSA	--	less than 10 (T1)	a*,c,e,t, hard (HW) or SOFT(SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425
Thioglycolic acid	Pimephales promelas	BSA	--	30.0 (T4)	a*,d,e,o, and Fe	Malathion and its hydrolysis products were evaluated with the finding that one such product (diethyl fumarate) was more toxic than Malathion to fathead minnows. Synergism occurred between Malathion and two products of hydrolysis. Continuous exposure resulted in increased toxicity.	Bender(1969), AMIC-3787
Thiolutin	Phormidium ambiguum	L	--	0.5-10.0 (100 percent growth	--	Of 74 chemicals evaluated as algicides, only 9 were more toxic than	Otto (1970), AMIC-892

				inhibited 14)		CuSO4. None inhibited growth of mat-forming algae for more than 2 weeks. CuSO4 formulated with certain wetting agents was more toxic than CuSO4 alone. Copper chloramine was also found to be more toxic than CuSO4. No wetting agents were found to be inhibitory at the concentrations investigated (0.05 and 0.005 ppm). Also reported are factors affecting growth of algae in canals to determine whether there were leads to controlling algae by environmental management. No practical environmental means were found.	
Thiumet	Rasbora heteromorpha	BCFA and BSA	--	12 (T2)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425
Thorium	Alosa pseudo-harengus	FL	Great Lakes - Superior, Michigan, and Erie	0.006(residue)	--	Trace element content of fish from Lakes Superior, Michigan, and Erie was determined by activation analysis. Whole body and liver residues were determined. Concentrations varied with species and lake. Other elements found were: antimony - 5 to 100 ppb, barium - 0.2 ppm, cesium - 3 ppb, lanthanum - 1 to 20 ppb, mercury - 10 ppb, rhenium - 0.5 to 5 ppb, rubidium - 0.06 to 6 ppm, scandium - 2 ppb, selenium - 0.1 to 2 ppb, silver - 0.001 ppb.	Lucas, et al (1970), AMIC-3778
Thorium	Coregonus artedii	FL	Great Lakes - Superior, Michigan, and Erie	0.003(residue)	--	same as above	Lucas, et al (1970), AMIC-3778
Thorium	Coregonus clupeaformis	FL	Great Lakes - Superior, Michigan, and Erie	0.004(residue)	--	same as above	Lucas, et al (1970), AMIC-3778

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
Thorium	Coregonus hoyi	FL	Great Lakes - Superior, Michigan, and Erie	0.0021(residue)	--	same as above	Lucas, et al (1970), AMIC-3778
Thorium	Prosoolum cylindraceum	FL	Great Lakes - Superior, Michigan, and Erie	0.0005(residue)	--	same as above	Lucas, et al (1970), AMIC-3778
Thorium	Salvelinus namaycush	FL	Great Lakes - Superior, Michigan, and Erie	0.004(residue)	--	same as above	Lucas, et al (1970), AMIC-3778
Thorium	Osmerus mordax	FL	Great Lakes - Superior, Michigan, and Erie	2(residue)	--	same as above	Lucas, et al (1970), AMIC-3778
Thorium	Carassius auratus	FL	Great Lakes - Superior, Michigan, and Erie	53(residue)	--	same as above	Lucas, et al (1970), AMIC-3778
Thorium	Notropis hudsonius	FL	Great Lakes - Superior, Michigan, and Erie	.0.0085(residue)	--	same as above	Lucas, et al (1970), AMIC-3778
Thorium	Percopsis omiscomaycus	FL	Great Lakes - Superior, Michigan, and Erie	0.0024(residue)	--	same as above	Lucas, et al (1970), AMIC-3778
Thorium	Roccus chrysops	FL	Great Lakes - Superior, Michigan, and Erie	0.003(residue)	--	same as above	Lucas, et al (1970), AMIC-3778
Thorium	Perca flavescens	FL	Great Lakes - Superior, Michigan, and Erie	0.003(residue)	--	same as above	Lucas, et al (1970), AMIC-3778
Thorium	Stizostedion	FL	Great Lakes	0.002(residue)	--	same as above	Lucas, et al

	vitreum vitreum		- Superior, Michigan, and Erie				(1970), AMIC-3778
Thyroxine	Gadus morhua	L	--	0.000001 (SB6)	--	Line-caught juvenile cod held in small tanks of seawater responded to thyroxine injection by a 35 percent increase in swimming speed. Large replication resulted in highly significant (P less than 0.001) difference between treated fish and controls.	Woodhead (1970),AMIC-3825
Timsan (ethyl mercury phosphate)	Salmo gairdneri	L	--	2.0 (SB 1-2)	a,e,f (1 hr exposure daily for up to 11 days)	Single exposures of fish to organomercury compounds resulted in peak concentrations of mercury as follows: gills, 3 hr; blood, 32 hr; liver, 7 da; kidney 21 For repeated one hr (daily) exposures peak concentrations were: blood, 10 da; liver, 10 da; kidney, 61 da; muscle, 7 da. The concentration of mercury was always lowest in muscle tissue. Feeding experiments with PMA showed mercury could be passed from fingerlings to larger fish. The authors conclude that either legal size or fingerling hatchery fish treated with organomercurials could be a public health hazard.	Rucker, et al (1969), AMIC-5733
Tin	Coregonus clupeaformis	FL	Moose Lake, Can.	3.6 (residue)	--	Concentrations of 13 toxic elements in dressed fish from heavily industrialized and non-industrialized areas were determined. Only mercury exceeded regulatory limits, and concentrations of most elements were essentially the same in fish from both areas.	Uthe, et AL(1971), AMIC-3819
Tin	Coregonus clupeaformis	FL	Lake Ontario, Can.	0.8 (residue)	--	same as above	Uthe, et AL(1971), AMIC-3819
Tin	Esox lucius	FL	Moose Lake, Can.	5.4 (residue)	--	same as above	Uthe, et al (1971),AMIC-3819
Tin	Esox lucius	FL	Lake St. Pierre, Can.	0.7 (residue)	--	same as above	Uthe, et al (1971),AMIC-3819
Tin	Esox lucius	FL	Lake Erie,	0.5 (residue)	--	same as above	Uthe, et al

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
			Can.				(1971), AMIC-3819
Tin	Osmerus mordax	FL	Lake Erie, Can.	1.2 (residue)	--	same as above	Uthe, et al (1971),AMIC-3819
Tin	Perca flavescens	FL	Lake Erie, Can.	0.6 (residue)	--	same as above	Uthe, et al (1971),AMIC-3819
TN	Fundulus heteroclitus	BSA	--	0.000008-0.0001 9 (T4)	a*,c,e, and synthetic seawater	A laboratory procedure based on Standard Methods for 96-hr toxicity determinations of crude oil and oil-dispersant mixtures was described. The dispersants varied considerably in toxicity, ranging from 0.01 to 7.1 ml/l, TL50 for 96 hr. These did not differ significantly from 240 hr values. The dispersants were designated as CX, DO, CI, OD, AQ, PC, MM, TN, BP, and NA with no further description of their chemical nature or source. Only a few bioassays were conducted with shrimp. Mollusks and echinoderms were suggested as suitable test animals. The authors stated that the method could be used to test any product for toxicity in seawater.	LaRoche, et al (1970), AMIC-445
TN	Nereis virens	BSA	--	0.00006-0.00033 (T4)	a*,c,e, and synthetic seawater	same as above	LaRoche,et al (1970), AMIC-445
TOK	Gammarus fasciatus	BSA	--	8.30 (T4)	a*	Of the aquatic weed herbicides evaluated, Diclone was the most toxic, Daphnia was generally the most sensitive organism. All of the crustacea were affected by much lower concentration levels of herbicides than indicated by the TL sub 50 values. All of the animals represent important food chain links.	Sanders (1970), AMIC-453
Tordon C	Rasbora heteromorpha	BCFA and BSA	--	248 (T2)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water	Alabaster (1969), AMIC-5425

						and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	
Tordon M	Rasbora heteromorpha	BCFA and BSA	--	185 (T2)	a*,c,e,f, hard (HW) or SOFT(SW) synthetic dilution water, or seawater for some species	same as above	Alabaster (1969), AMIC-5425
Toxaphene	Ictalurus punctatus	BSA	--	0.013 (T4)	a, synthetic test water	Organochlorine insecticides were the most toxic compounds, organophosphates intermediate, carbamates the least toxic. Brown trout was the species most susceptible to organochlorines, coho salmon the most susceptible to carbamates, and goldfish were the least susceptible of all species. Safe concentrations established by bioassays with salmonids or centrarchids would likely be safe for cyprinids and ictalurids. Safe levels for ictalurids or cyprinids would probably be hazardous for centrarchids and salmonids. The use of goldfish in bioassays was discouraged.	Macek,et al (1970), AMIC-5510
Toxaphene	Ictalurus melas	BSA	--	0.005 (T4)	a, synthetic test water	same as above	Macek, etal (1970), AMIC-5510
Toxaphene	Carassius auratus	BSA	--	0.014 (T4)	a, synthetic test water	same as above	Macek,et al (1970), AMIC-5510
Toxaphene	Cyprinus carpio	BSA	--	0.004 (T4)	a, synthetic test water	same as above	Macek,et al (1970), AMIC-5510
Toxaphene	Pimephales promelas	BSA	--	0.014 (T4)	a, synthetic test water	same as above	Macek,et al (1970), AMIC-5510
Toxaphene	Lepomis macrochirus	BSA	--	0.018 (T4)	a, synthetic test water	same as above	Macek,et al (1970), AMIC-5510
Toxaphene	Lepomis microlophus	BSA	--	0.013 (T4)	a, synthetic test water	same as above	Macek,et al (1970), AMIC-5510
Toxaphene	Micropterus salmoides	BSA	--	0.002 (T4)	a, synthetic	same as above	Macek,et al (1970),

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
					test water		AMIC-5510
Toxaphene	Salmo gairdneri	BSA	--	0.011 (T4)	a, synthetic test water	same as above	Macek, etal (1970), AMIC-5510
Toxaphene	Salmo trutta	BSA	--	0.003 (T4)	a, synthetic test water	same as above	Macek, et al(1970), AMIC-5510
Toxaphene	Oncorhynchus kisutch	BSA	--	0.008 (T4)	a, synthetic test water	same as above	Macek,et al (1970), AMIC-5510
Toxaphene	Perca flavescens	BSA	--	0.012 (T4)	a, synthetic testwater	same as above	Macek,et al (1970), AMIC-5510
Toxaphene	Palaemonetes kadiakensis (resistant)	BSA	--	0.044-0.229 (T1)	a*	Bioassays were conducted with shrimp from three areas of intensive pesticide use and from an unexposed area. Previously exposed shrimp were from 1 to 25 times more resistant than unexposed shrimp. Both types of shrimp were also exposed in cages to waters of the contaminated areas. Susceptible shrimp suffered 66 percent more mortality than did resistant shrimp. The toxicity of the insecticides ranked in descending order was as follows: most toxic, Endrin, DDT, Methyl parathion, Parathion: medium toxicity, Guthion, Lindane, Toxaphene, Strobane: lease toxic Chlordane, Sevin, and Heptachlor.	Naqvi, et al (1970), AMIC-5519
Toxaphene	Palaemonetes kadiakensis (non-resistant)	BSA	--	0.0209 (T1)	a*	same as above	Naqvi, et al (1970), AMIC-5519
Toxaphene	Copepods (Cyclops bicuspidus, Cyclops varicans, Cyclops	FL and BSA	State College, Miss.	0.045 (84 percent K2)	--	The response of pesticide-resistant aquatic organisms to various pesticides was compared to the response of non-resistant species. Pesticide-resistant species were collected at Belzoni and non-resistant	Naqvi, et al (1969), AMIC-5979

A-432

	vernalis, Eucyclops agilis,Macroc Macrocyclops albidus, Orthocyclops modestus)					species at State College. Copepods, clams, snails, and sludge worms from Belzoni were considerably more tolerant to pesticides than the non-resistant organisms. The authors note that the effect of increased tolerance in the organisms is an increase in the amount of pesticide residues available to animals of higher trophic levels.	
Toxaphene	Copepods (Cyclops bicuspidus, Cyclops varicans, Cyclops vernalis, Eucyclops agilis,Macroc Macrocyclops albidus, Orthocyclops modestus)	FL and BSA	Belzoni, Miss	0.045 (28 percent K2)	--	same as above	Naqvi, et al (1969), AMIC-5979
Toxaphene	Tubifex tubifex	FL and BSA	Belzoni, Miss.	6.0 (NTE)	--	same as above	Naqvi, etal (1969), AMIC-5979
Toxaphene	Physa gyrina	FL and BSA	State College, Miss.	0.45(K3)	--	same as above	Naqvi, et al (1969), AMIC-5979
Toxaphene	Physa gyrina	FL and BSA	Belzoni, Miss.	0.45 (35 percent K3)	--	same as above	Naqvi, et al (1969), AMIC-5979
Toxaphene	Eupera singleyi	FL and BSA	State College, Miss.	0.70 (K3)	--	same as above	Naqvi, et al (1969), AMIC-5979
Toxaphene	Eupera singleyi	FL and BSA	Belzoni, Miss.	0.70 (40 percent K3)	--	same as above	Naqvi, et al (1969), AMIC-5979
Toxaphene	Mercenaria mercenaria (eggs)	L	--	1.12 (T2)	--	The effect of 52 pesticides on embryonic development of clams and oysters was reported. Synergistic effects with solvents were also reported. Most of the compounds affected development more than survival. Some, however, drastically reduced larval growth. The authors point out the	Davis, et al (1969),AMIC-5990

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
						necessity of evaluating the effects of pesticides on all life stages of an organism and note the possibility of selecting chemicals for pest control that would not have serious effect on shellfish.	
Toxaphene	Mercenaria mercenaria (larvae)	L	--	less than 0.25 (T12)	--	same as above	Davis, et al(1969), AMIC-5990
Toxion	Carcinus maenas	BSA	--	163 (T2)	a*(continuous, aeration, sea water, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Toxion	Cardium edule	BSA	--	27.4 (T2)	a*(continuous, aeration, sea-water, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701
Toxion	Crangon crangon	BSA	--	6.6 (T2)	a*(continuous, aeration, sea-water, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Toxion	Pandalus montagui	BSA	--	0.98 (T2)	a*(continuous, aeration, sea-water, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701

Trace organics (CCE)	Rainbow trout	BSA	--	36 (T1)	--	The organic micropollutants used in the study were recovered from spring and well water and Missouri River water. Chronic effects were studied by alternately placing the fish in the test solution for 5 days followed by a 5-day period in a recovery solution. Results of the tests are also given as total accumulated survival time. Studies were also conducted to determine the physiological effects of the pollutants, and equations were developed for accurately estimating the toxicity of trace organics. CCE and CAE from spring water were not generally toxic individually, but often showed strong synergistic behavior when combined at naturally occurring levels. CCE from river water proved to be most toxic of all organics.	Smith, et al (1970), AMIC-993
Trace organics (CCE)	Rainbow trout	BSCH	--	10 (T 5-10)	--	same as above	Smith, et al(1970), AMIC-993
Trace organics (CCE)	Rainbow trout	BSCH	--	1.0 (T more than 19)	--	same as above	Smith, etal (1970), AMIC-993
Trace organics (CCE)	Golden shiner	BSA	--	59 (T1)	--	same as above	Smith, et al (1970), AMIC-993
Trace organics (CCE)	Blue-green sunfish	BSA	--	56 (T1)	--	same as above	Smith, et al (1970), AMIC-993
Trace organics (CCE and CAE)	Rainbow trout	BSA	--	88-201 (T1)	--	same as above	Smith, et al (1970), AMIC-993
Trace organics (CCE and CAE)	Rainbow trout	BSCH	--	10 (T 20-30)	--	same as above	Smith,et al (1970), AMIC-993
Trace organics (CCE and CAE)	Rainbow trout	BSCH	--	1.0 (T more than 54)	--	same as above	Smith, et al (1970),

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
							AMIC-993
Trace organics (CCE and CAE)	Blue-green sunfish	BSA	--	137-166(T1)	--	same as above	Smith, et al (1970), AMIC-993
Trace organics (CCE and CAE)	Red shiner	BSA	--	195 (T1)	--	same as above	Smith, et al(1970), AMIC-993
Trace organics (CCE and CAE)	Red shiner	BSCH	--	24 (T 20-30)	--	same as above	Smith, et al(1970), AMIC-993
Trace organics (CCE and CAE)	Red shiner	BSCH	--	5.6 (T45 - more than 65)	--	same as above	Smith, et al (1970), AMIC-993
Trace organics (CCE and CAE)	Golden shiner	BSA	--	180 (T1)	--	same as above	Smith, et al(1970), AMIC-993
Trace organics (CCE and CAE)	Mosquitofish	BSA	--	170 (NTE5)	--	same as above	Smith, et al(1970), AMIC-993
Treflan E.C.	Rasbora heteromorpha	BCFA and BSA	--	0.28 (T2, softwater)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425
Treflan E.C.	Rasbora heteromorpha	BCFA and BSA	--	0.28 (T1,hardwater)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some	same as above	Alabaster (1969), AMIC-5425

					species		
Tributyl tin chloride	Phormidium ambiguum	L	--	0.5-10.0 (100 percent growth inhibited 14)	--	Of 74 chemicals evaluated as algicides, only 9 were more toxic than $CuSO_4$. None inhibited growth of mat-forming algae for more than 2 weeks. $CuSO_4$ formulated with certain wetting agents was more toxic than $CuSO_4$ alone. Copper chloramine was also found to be more toxic than $CuSO_4$. No wetting agents were found to be inhibitory at the concentrations investigated (0.05 and 0.005 ppm). Also reported are factors affecting growth of algae in canals to determine whether there were leads to controlling algae by environmental management. No practical environmental means were found.	Otto (1970), AMIC-892
Tributyl tin oxide	Salmo gairdneri	BCFA and BSA	--	0.027 (T1)	a*,c,e,f, hard (HW) or SOFT(SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425
Tributyl tin oxide	Salmo gairdneri	BCFA and BSA	--	0.020 (T2)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	same as above	Alabaster (1969), AMIC-5425
Tricaine methanesulfonate (finguel)	Salvelinus fontinalis	L	--	100 (NTE)	a*	Anesthetization of brook trout resulted in alterations of hemoglobin, tissue and plasma water content, electrolytes, aortic pressure, and ventilatory rate and amplitude. Finguel apparently exerted depressive influence on central autonomic functions. Handling alone resulted in changes in plasma	Houston, et al (1971), AMIC-3823

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
						glucose and lactate content, and in a number of electrolytes.	
Tricaine methanesulfonate	Salvelinus fontinalis	L	--	100(NTE)	a*	Study of the effects of anesthesia, handling, and experimental preparation of brook trout resulted in alterations in hematological characteristics, hyperglycemia, changes in plasms, tissue, cellular ion concentrations, and equilibrium conditions. Short-term (2-6 hr) effects correlated with clearances of the anesthetic while persistent effects were believed to be associated with generalized endocrine response to trauma.	Houston, et al (1971), AMIC-3822
Trichlorobenzene	Mercenaria mercenaria (eggs)	L	--	greater than10.0 (T2)	--	The effect of 52 pesticides on embryonic development of clams and oysters was reported. Synergistic effects with solvents were also reported. Most of the compounds affected development more than survival. Some, however, drastically reduced larval growth. The authors point out the necessity of evaluating the effects of pesticides on all life stages of an organism and note the possibility of selecting chemicals for pest control that would not have serious effect on shellfish.	Davis, et al (1969), AMIC-5990
Trichlorobenzene	Mercenaria mercenaria (larvae)	L	--	greater than 10.0 (T12)	--	same as above	Davis, et al (1969), AMIC-5990
Trichlorobenzene	Crassostrea virginica (eggs)	L	--	3.13 (T2)	--	same as above	Davis, et al(1969), AMIC-5990
Trifluralin	Asellus brevicaudus	BSA	--	2.0 (T2)	a*	Of the aquatic weed herbicides evaluated, Dicione was the most toxic, Daphnia was generally the most sensitive organism. All of the crustacea were affected by much lower concentration levels of herbicides than indicated by the TL sub 50 values. All of the animals represent important food chain links.	Sanders (1970), AMIC-453
Trifluralin	Orconectes nais	BSA	--	50.0 (T2)	a*	same as above	Sanders (1970), AMIC-453

Trifluralin	Daphnia magna	BSA	--	0.56 (T2)	a*	same as above	Sanders (1970), AMIC-453
Trifluralin	Cypridopsis vidua	BSA	--	0.25 (T2)	a*	same as above	Sanders(1970), AMIC-453
Trifluralin	Lepomis macrochirus	BSA	--	0.019 (T2)	a*	same as above	Sanders (1970), AMIC-453
Trifluralin	Gammarus fasciatus	BSA	--	1.8 (T2)	a*	same as above	Sanders(1970), AMIC-453
Trifluralin	Paleomontes kadiakensis	BSA	--	1.0 (T4)	a*	same as above	Sanders (1970), AMIC-453
Trioxone	Salmo gairdneri	BCFA and BSA	--	10 (T2)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425
Trixabon	Rasbora heteromorpha	BCFA and BSA	--	0.34 (T2)	a*,c,e,f, hard (HW) or SOFT(SW) synthetic dilution water, or seawater for some species	same as above	Alabaster (1969), AMIC-5425
Tubotox	Rasbora	BCFA	--	0.27 (T2)	a*,c,e,f,	One hundred sixty-four	Alabaster

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
	heteromorpha	and BSA			hard (HW) or SOFT(SW) synthetic dilution water, or seawater for some species	pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	(1969), AMIC-5425
Uranium	Alosa pseudo-harengus	FL	Great Lakes - Superior, Michigan, and Erie	0.0026 (residue)	--	Trace element content of fish from Lakes Superior, Michigan, and Erie was determined by activation analysis. Whole body and liver residues were determined. Concentrations varied with species and lake. Other elements found were: antimony - 5 to 100 ppb, barium - 0.2 ppm, cesium - 3 ppb, lanthanum - 1 to 20 ppb, mercury - 10 ppb, rhenium - 0.5 to 5 ppb, rubidium - 0.06 to 6 ppm, scandium - 2 ppb, selenium - 0.1 to 2 ppb, silver - 0.001 ppb.	Lucas, et al (1970), AMIC-3778
Uranium	Percopsis omiscomaycus	FL	Great Lakes - Superior, Michigan, and Erie	0.0008(residue)	--	same as above	Lucas, et al (1970), AMIC-3778
Uranium	Roccus chrysops	FL	Great Lakes - Superior, Michigan,and Erie	0.002(residue)	--	same as above	Lucas, et al (1970), AMIC-3778
Uranium	Perca flavescens	FL	Great Lakes - Superior, Michigan, and Erie	0.0009(residue)	--	same as above	Lucas, et al (1970), AMIC-3778
Uranium	Stizostedion vitreum vitreum	FL	Great Lakes - Superior, Michigan, and Erie	0.001 (residue)	--	same as above	Lucas, et al (1970), AMIC-3778

Uranium	Coregonus artedii	FL	Great Lakes - Superior, Michigan, and Erie	0.002(residue)	--	same as above	Lucas, et al (1970), AMIC-3778
Uranium	Coregonus clupeaformis	FL	Great Lakes - Superior, Michigan, and Erie	0.0006(residue)	--	same as above	Lucas, et al (1970), AMIC-3778
Uranium	Coregonus hoyi	FL	Great Lakes - Superior, Michigan, and Erie	0.0035(residue)	--	same as above	Lucas, et al (1970), AMIC-3778
Uranium	Prosopium cylindraceum	FL	Great Lakes - Superior, Michigan, and Erie	0.0048(residue)	--	same as above	Lucas, et al (1970), AMIC-3778
Uranium	Salvelinus namaycush	FL	Great Lakes - Superior, Michigan, and Erie	0.002(residue)	--	same as above	Lucas, et al (1970), AMIC-3778
Uranium	Osmerus mordax	FL	Great Lakes - Superior, Michigan, and Erie	0.002(residue)	--	same as above	Lucas, et al (1970), AMIC-3778
Uranium	Carassius auratus	FL	Great Lakes - Superior, Michigan, and Erie	0.0005(residue)	--	same as above	Lucas, et al (1970), AMIC-3778
Uranium	Notropis hudsonius	FL	Great Lakes - Superior, Michigan, and Erie	0.0058(residue)	--	same as above	Lucas, et al (1970), AMIC-3778
Uranium	Coregonus clupeaformis	FL	Moose Lake, Can.	3 (residue)	--	Concentrations of 13 toxic elements in dressed fish from heavily industrialized and non-industrialized areas were determined. Only mercury exceeded regulatory limits, and concentrations of most elements were essentially the same in fish from both areas.	Uthe, et AL(1971), AMIC-3819
Uranium	Coregonus clupeaformis	FL	Lake Ontario, Can.	2 (residue)	--	same as above	Uthe, et AL(1971), AMIC-3819

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
Uranium	Esox lucius	FL	Moose Lake, Can.	3 (residue)	--	same as above	Uthe, et al (1971), AMIC-3819
Uranium	Esox lucius	FL	Lake St. Pierre, Can.	2 (residue)	--	same as above	Uthe, et al (1971), AMIC-3819
Uranium	Esox lucius	FL	Lake Erie, Can.	1 (residue)	--	same as above	Uthe, et al (1971), AMIC-3819
Uranium	Osmerus mordax	FL	Lake Erie, Can.	2 (residue)	--	same as above	Uthe, et al (1971), AMIC-3819
Uranium	Perca flavescens	FL	Lake Erie, Can.	1 (residue)	--	same as above	Uthe, et al (1971), AMIC-3819
Ureabor	Salmo gairdneri	BCFA and BSA	--	925 (T2)	a*,c,e,f, hard (HW) or SOFT(SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425
Vamidothion	Rasbora heteromorpha	BCFA and BSA	--	460 (T2)	a*,c,e,f, hard (HW) or SOFT(SW) synthetic dilution water, or seawater for some species	same as above	Alabaster (1969), AMIC-5425

Vanadium	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	3.3 (dorsal muscle residue)	--	Fish collected from an effluent pipe of a steam plant and from offshore waters of Catalina Island were analyzed for trace element content. Trace element content of the effluent water was at least 5 times greater than that of normal sea water for cadmium, copper, nickel, zinc, and chromium. Livers of fish from the effluent were nearly twice the size of those from the ocean. Greatest differences in concentration occurred with aluminum, cadmium, and nickel. Silver, barium, lithium, and lead showed the least differences. The author concluded that trace element analysis of tissues could be used to determine the effect of pollutants on marine organisms.	Stapleton (1968), AMIC-5980
Vanadium	Paralabrax clathratus	FM	Catalina Island, Cal.	1.9 (dorsal muscle residue)	--	same as above	Stapleton (1968), AMIC-5980
Vanadium	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	3.2 (ventral muscle residue)	--	same as above	Stapleton (1968), AMIC-5980
Vanadium	Paralabrax clathratus	FM	Catalina Island, Cal.	1.7 (ventral muscle residue)	--	same as above	Stapleton (1968), AMIC-5980
Vanadium	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	5.7 (gonads residue)	--	same as above	Stapleton (1968), AMIC-5980
Vanadium	Paralabrax clathratus	FM	Catalina Island, Cal.	4.2 (gonads residue)	--	same as above	Stapleton (1968), AMIC-5980
Vanadium	Paralabrax clathratus (gravid females)	FM	Catalina Island, Cal.	3.4 (gonads residue)	--	same as above	Stapleton (1968), AMIC-5980
Vanadium	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	2.8 (liver residue)	--	same as above	Stapleton (1968), AMIC-5980
Vanadium	Paralabrax clathratus	FM	Catalina Island, Cal.	3.3 (liver residue)	--	same as above	Stapleton (1968),

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
							AMIC-5980
Vanadium	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	2.9 (integument residue)	--	same as above	Stapleton (1968), AMIC-5980
Vanadium	Paralabrax clathratus	FM	Catalina Island, Cal.	2.9 (integument residue)	--	same as above	Stapleton (1968), AMIC-5980
Vanadium	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	3.2 (heart residue)	--	same as above	Stapleton (1968), AMIC-5980
Vanadium	Paralabrax clathratus	FM	Catalina Island, Cal.	3.2 (heart residue)	--	same as above	Stapleton (1968), AMIC-5980
Vanadium	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	9 (eyeball residue)	--	same as above	Stapleton (1968), AMIC-5980
Vanadium	Paralabrax clathratus	FM	Catalina Island, Cal.	7.6 (eyeball residue)	--	same as above	Stapleton (1958), AMIC-5980
Vapam	Rasbora heteromorpha	BCFA and BSA	--	0.13 (T2)	a*,c,e,f, hard(HW) or soft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425
Velsicol AR 50G (87.2 percent plus 9 percent Emcol H-146,	Rasbora heteromorpha	BCFA and BSA	--	7.2 (T2)	a*,c,e,f, hard (HW)or	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a	Alabaster (1969),AMIC-5425

2 percentEmcol H-500X, 1.2percent Epichlorhydrin)					soft (SW) synthetic, dilution water, or seawater forsome species	wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	
Velsicol AR 50G (89 percent plus 9 percent Emcol H-146, 2 percent Emcol H-500X)	Rasbora heteromorpha	BCFA and BSA	--	9.2 (T2)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	same as above	Alabaster (1969), AMIC-5425
Venzar	Rasbora heteromorpha	BCFA and BSA	--	50 (T2)	a*,c,e,f, hard (HW)or soft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425
Vergemaster (lailne vergicide weedkiller B)	Salmo gairdneri	BCFA and BSA	--	2.2 (T2)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	same as above	Alabaster (1969), AMIC-5425
Vernolate	Gammarus fasciatus	BSA	--	20.0 (T2), 13.0 (T4)	a*	Of the aquatic weed herbicides evaluated, Diclone was the most toxic, Daphnia was generally the most sensitive organism. All of the crustacea were affected by much lower concentration	Sanders (1970),AMIC-453

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
						levels of herbicides than indicated by the TL sub 50 values. All of the animals represent important food chain links.	
Vernolate	Paleomontes kadiakensis	BSA	--	1.9 (T2)	a*	same as above	Sanders (1970), AMIC-453
Vernolate	Asellus brevicaudus	BSA	--	5.6 (T2)	a*	same as above	Sanders (1970), AMIC-453
Vernolate	Orconectes nais	BSA	--	24.0 (T2)	a*	same as above	Sanders (1970), AMIC-453
Vernolate	Daphnia magna	BSA	--	1.1 (T2)	a*	same as above	Sanders (1970), AMIC-453
Vernolate	Cypridopsis vidua	BSA	--	0.24 (T2)	a*	same as above	Sanders(1970), AMIC-453
Vernolate	Lepomis macrochirus	BSA	--	9.2 (T2)	a*	same as above	Sanders (1970), AMIC-453
Vinyl acetate	Asterias rubens	BSA	--	330-1000 (T2)	a*(continuous aeration, sea-water, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701
Vinyl acetate	Crangon crangon	BSA	--	10-100 (T2)	a*(continuous aeration, sea-water, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701

Vinyl acetate	Platicthys flesus	BSA	--	greater than 100 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Weedazol T-L	Crangon crangon	BSA	--	1000-3000 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Weedazol	Rasbora heteromorpha	BCFA and BSA	--	540 (T2)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425
WL 4205	Rasbora heteromorpha	BCFA and BSA	--	0.50 (T2)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	same as above	Alabaster (1969), AMIC-5425
Yellow phosphorus	Clupea harengus (10-15 cm)	BCFA	--	0.016 (T 12 HR)	a*,c,f	The lethal effect of yellow phosphorus was apparently irreversible and possibly cumulative. This form of phosphorus was surprisingly stable in bottom muds where oxygen content was low. The most probable cause of death was asphyxiation brought on by massive hemolysis.	Zitko, et al (1970), AMIC-3817
Yellow phosphorus	Salmo salar (7-13 cm)	BCFA	--	0.018 (incipient lethal level)	a*,c,f	same as above	Zitko, et al (1970), AMIC-3817
Yellow phosphorus	Homarus americanus	BCFA	--	0.040 (T10)	a*,c,f	same as above	Zitko, et al (1970), AMIC-3817

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
Yellow phosphorus	Gammarus oceanicus	BCFA	--	3-4 (K1)	a*,c,f	same as above	Zitko, et al (1970),AMIC-3817
Yellow phosphorus	Salvelinus fontinalis	BCFA	--	0.0005 (T 200 hr)	a	The data were presented at LT sub 50 (time to 50 percent lethality). The approximate TL sub m data cited were interpolated from plotted TL sub 50 values. Redness, hemolysis, and reduced hematocrits correlated directly with toxicity to brook trout. No redness or hemolysis occurred in smelt although reduced hematocrits occurred. Herring also turned red with hemolysis and redness around head and fins. In time phosphorus was toxic at concentrations as low as 0.5 micron/l.	Fletcher, et al (1970), AMIC-839
Yellow phosphorus	Salvelinus fontinalis	BCFA	--	1.2 (T 2.7 hr)	a	same as above	Fletcher, et al(1970), AMIC-839
Yellow phosphorus	Osmerus mordax	BCFA	--	0.0005 (T 190 hr)	a	same as above	Fletcher, et al(1970), AMIC-839
Yellow phosphorus	Osmerus mordax	BCFA	--	1.0 (T 12 hr)	a	same as above	Fletcher, et al(1970), AMIC-839
Yellow phosphorus	Clupea harengus	BCFA	--	0.1 (T 3.6 hr)	a	same as above	Fletcher, et al(1970), AMIC-839
Young"s Defly	Rasbora heteromorpha	BCFA and BSA	--	2.3 (T2)	a*,c,e,f, hard (HW)or soft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster, (1969),AMIC-5425
Zectran	Ictalurus punctatus	BSA	--	11.40 (T4)	a, synthetic test water	Organochlorine insecticides were the most toxic compounds, organophosphates intermediate, carbamates the least toxic. Brown trout was the	Macek,et al (1970), AMIC-5510

						species most susceptible to organochlorines, coho salmon the most susceptible to carbamates, and goldfish were the least susceptible of all species. Safe concentrations established by bioassays with salmonids or centrarchids would likely be safe for cyprinids and ictalurids. Safe levels for ictalurids or cyprinids would probably be hazardous for centrarchids and salmonids. The use of goldfish in bioassays was discouraged.	
Zectran	Ictalurus melas	BSA	--	16.70 (T4)	a, synthetic test water	same as above	Macek, et al(1970), AMIC-5510
Zectran	Carassius auratus	BSA	--	19.14 (T4)	a, synthetic test water	same as above	Macek, etal (1970), AMIC-5510
Zectran	Cyprinus carpio	BSA	--	13.40 (T4)	a, synthetic test water	same as above	Macek, et al(1970), AMIC-5510
Zectran	Pimephales promelas	BSA	--	17.00 (T4)	a, synthetic test water	same as above	Macek,et al (1970), AMIC-5510
Zectran	Lepomis macrochirus	BSA	--	11.20 (T4)	a, synthetic test water	same as above	Macek, etal (1970), AMIC-5510
Zectran	Lepomis microlophus	BSA	--	16.70 (T4)	a, synthetic test water	same as above	Macek, etal (1970), AMIC-5510
Zectran	Micropterus salmoides	BSA	--	14.70 (T4)	a, synthetic test water	same as above	Macek, etal (1970), AMIC-5510
Zectran	Salmo gairdneri	BSA	--	10.20 (T4)	a, synthetic test water	same as above	Macek, et al(1970), AMIC-5510
Zectran	Salmo trutta	BSA	--	8.10 (T4)	a, synthetic test water	same as above	Macek, et al(1970), AMIC-5510
Zectran	Oncorhynchus kisutch	BSA	--	1.73 (T4)	a, synthetic test water	same as above	Macek, etal (1970), AMIC-5510
Zectran	Perca flavescens	BSA	--	2.48 (T4)	a, synthetic test water	same as above	Macek, et al(1970), AMIC-5510
Zinc chloride (as zinc)	Brachydanio rerio	BSA	--	3.7-6.7 (SB4)	a,e, and synthetic dilution water	Feeding behavior was affected by zinc, chromium, and ABS in that more time was required for consuming measured amounts of food. Feeding response was	Cairns, et al (1967),AMIC-5707

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
						also affected by aeration, feeding schedule, light intensity, and outside disturbances. The authors note that much more work is needed to establish the reliability of this procedure.	
Zinc chloride (as Zn)	Lepomis macrochirus	BSA, L	--	3.3 (T4)	a*, e, and synthetic dilution water	This study was conducted to determine the relative toxicities of 20 common constituents of industrial wastes to a fish, an alga, and an invertebrate. The experiments were conducted over a 10-year period for varied purposes. The authors recommend bioassays with at least three components of the food web.	Patrick, et al (1958), AMIC-5720
Zinc chloride (as Zn)	Nitzschia linearis	BSA, L	--	4.3 (T5)	a*, e, and synthetic dilution water	same as above	Patrick, et al (1968), AMIC-5720
Zinc chloride (as Zn)	Physa heterostropha	BSA, L	--	0.98 (T4)	a*, e, and synthetic dilution water	same as above	Patrick, et al (1968), AMIC-5720
Zinc chloride	Lebistes reticulatus (1 mo, 1.1 cm)	BCF	--	0.56 (T4)	a, c, d, e, f, n, q, phosphates, carbonates, bicarbonates, sulfates, and conductance	Toxicity thresholds and a dilution mixture threshold were calculated from fish bioassay data for zinc chloride and potassium cyanide. Threshold concentrations for zinc and cyanide were found to be 0.33 and 0.236 mg/l, respectively. A procedure for determining toxicity threshold concentrations for mixtures of chemicals was also presented. A zinc-cyanide dilution ratio for toxicity threshold (THDR) was found to be a linear function of the concentration of the two ions taken separately, and therefore; THDR equals 1.26-0.86CN-1.22Zn. Based on a multicomponent equation, mixtures of zinc and cyanide exhibit an antagonistic effect. This appears to be a significant advance in an approach to estimating safe concentrations for water pollutants.	Chen, et al (1969), AMIC-3831
Zinc chloride	Lebistes reticulatus (1 mo, 1.1 cm)	BCF	--	1.0 (T 1.5)	a, c, d, e, f, n, q, phosphates, carbonates, bi-	same as above	Chen, et al (1969), AMIC-3831

					carbonates, sulfates, and conductance		
Zinc dimethyldithiocarbamate	Phormidium ambiguum	L	--	0.5-10.0 (NTE)	--	Of 74 chemicals evaluated as algicides, only 9 were more toxic than CuSO4. None inhibited growth of mat-forming algae for more than 2 weeks. CuSO4 formulated with certain wetting agents was more toxic than CuSO4 alone. Copper chloramine was also found to be more toxic than CuSO4. No wetting agents were found to be inhibitory at the concentrations investigated (0.05 and 0.005 ppm). Also reported are factors affecting growth of algae in canals to determine whether there were leads to controlling algae by environmental management. No practical environmental means were found.	Otto (1970), AMIC-892
Zinc hydroxyquinone	Rasbora heteromorpha	BCFA and BSA	--	0.10 (T2)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425
Zinc sodium citrate (as Zn)	Watersipora cucullata (larvae)	L	--	33 (T 2 hr)	a,c,i, and salinity	This study was conducted to determine species of marine larvae suitable for use in test screening antifouling chemicals. A. salina (brine shrimp) appeared to have the best potential for this purpose. A. salina larvae sensitivity was greatest starting at age 20-80 hr, and tolerated relatively low pH (5.0).	Wisely, et al (1967), AMIC-5708
Zinc sodium citrate (as Zn)	Spirorbis lamellosa (larvae)	L	--	4.9 (T 2 hr)	a,c,i, and salinity	same as above	Wisely, et al (1967), AMIC-5708

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
Zinc sodium citrate (as Zn)	Bugula neritina (larvae)	L	--	5.1 (T 2 hr)	a,c,l, and salinity	same as above	Wisely, et al (1967), AMIC-5708
Zinc sulfate(as Zn)	Acroneuria	BSA	--	32 (T14)	a*,c,d,e,f	Ephemerella (mayfly) was the most sensitive aquatic insect of those studied, and copper the most broadly toxic metal. The authors suggest that aquatic insects may not be as sensitive to heavy metals as fish.	Warnick, et al(1969), AMIC-3767
Zinc sulfate (as Zn)	Ephemerella	BSA	--	16 (T10)	a*,c,d,e,f	same as above	Warnick, et al (1969),AMIC-3767
Zinc sulfate (as Zn)	Hydropsyche	BSA	--	32 (T11)	a*,c,d,e,f	same as above	Warnick, et al(1969), AMIC-3767
Zinc sulfate	Lepomis macrochirus	BSCF	--	2.55 (S8)	a,c,d,e,f, r*,t*	Results of monitoring fish breathing frequency were primarily reported. The indicated Zn concentration was the lowest detectable. Reproduction and growth of bluegills were apparently not affected by 0.025 and 0.075 mg/l. At a concentration of 0.25 mg/l spawning was inhibited and newly-hatched fry were killed. The authors suggest ways of improving this technique and suggest simultaneous use with fish movement change (See Cairns and Waller, 1971).	Cairns, et al (1971), AMIC-3232
Zinc sulfate	Salmo gairdneri	BCF	--	0.0056 (avoidance)	a*,c,f	The threshold avoidance limit was essentially the same at 9.5 and 17.0 C. The value noted is 0.01 of the lethal threshold concentration, according to the author. Improvements in the test procedure are described.	Sprague (1968), AMIC-3760
Zinc sulfate	Salmo gairdneri	BCF	--	0.56 (threshold toxicity)	a*,c,f	same as above	Sprague (1968), AMIC-3760
Zinc sulfate	Pimephales	BCFCH	--	0.18 (S8)	a,c,d,e,f,	Hatching was unaffected at the	Brungs

	promelas (0.3-0.4 g)				l,n,q, Ca, Mg, Na, K, and SO4	Indicated concentration of zinc, but egg production was significantly reduced. Growth inhibition occurred at 2.8 ppm. Egg production was the most sensitive parameter studied. The author notes that an application factor of 0.005 would exist if a 20 percent reduction of egg production is biologically insignificant.	(1969), AMIC-5458
Zinc sulfate	Xiphophorus maculatus (45 mm)	BSA	--	12.0 (T4)	a,b,c,f, m, Fe, Mn, Cu, and Mg	Fathead minnows were more susceptible to zinc than inbred platyfish. Male platyfish were more succeptible than female. The authors suggest the inbred platyfish as a candidate for bioassay evaluations due to its known (31 generations) genetic background.	Rachlin, et al (1968), AMIC-5722
Zinc sulfate	Pimephales promelas (45 mm)	BSA	--	7.6 (T4)	a*,b,c,f,m , Fe,Mn, Cu, and Mg	same as above	Rachlin, et al (1968), AMIC-5722
Zinc sulfate	Rainbow trout (RTG-2 gonad cell line)	L	--	18.0 (SB4)		Tissue culture study using the Eagles MEM medium resulted in 70 percent reduction in mitotic index and cytotoxic changes in cell morphology. Concentrations at 0 to 10.0 ppm zinc had no significant effect. The trout cells were less sensitive than cultured cells of fathead minnow.	Rachlin, et al (1968), AMIC-5722
Zinc (plus ammonia and phenol)	Salmo gairdneri	BSA	--	0.5-2.54(T2)	a,c*,d,e*, f,m	Rainbow trout were exposed to concentrations of fluctuating levels of ammonia, phenol, and zinc and to constant mixtures of the three. Tests with fluctuating levels of toxicants showed that LC50 values were similar to those for constant concentrations as long as the periodicity of the fluctuation did not exceed the resistance time for the poison. Except when zinc predominated in the mixtures, the fractional toxicities could be summed to give the toxicity of the mixture.	Brown, et al (1969), AMIC-5993
Zinc (plus copper, nickel)	Salmo gairdneri	BSA	--	0.5-1.8 (T2)	a,c,e	Rainbow trout were exposed to copper, phenol, zinc, or nickel solutions to determine 48-hour LC50 values for mixtures of copper and phenol: copper, zinc, and phenol: and copper, zinc, and nickel. It was concluded that acute lethal toxicities of the mixtures could	Brown,et al (1970), AMIC-5994

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
						be adequately described by summations of the fractional toxicities.	
Zinc (plus copper, phenol)	Salmo gairdneri	BSA	--	0.6-2.40 (T2)	a,c,e	same as above	Brown,et al (1970), AMIC-5994
Zinc	Coregonus artedii	FL	Great Lakes - Superior, Michigan, and Erie	38(residue)	--	Trace element content of fish from Lakes Superior, Michigan, and Erie was determined by activation analysis. Whole body and liver residues were determined. Concentrations varied with species and lake. Other elements found were: antimony - 5 to 100 ppb, barium - 0.2 ppm, cesium - 3 ppb, lanthanum - 1 to 20 ppb, mercury - 10 ppb, rhenium - 0.5 to 5 ppb, rubidium - 0.06 to 6 ppm, scandium - 2 ppb, selenium - 0.1 to 2 ppb, silver - 0.001 ppb.	Lucas, et al (1970), AMIC-3778
Zinc	Coregonus clupeaformis	FL	Great Lakes - Superior, Michigan, and Erie	23(residue)	--	same as above	Lucas, et al (1970), AMIC-3778
Zinc	Coregonus hoyi	FL	Great Lakes - Superior, Michigan, and Erie	44(residue)	--	same as above	Lucas, et al (1970), AMIC-3778
Zinc	Prosopium cylindraceum	FL	Great Lakes - Superior, Michigan, and Erie	11(residue)	--	same as above	Lucas, et al (1970), AMIC-3778
Zinc	Salvelinus namaycush	FL	Great Lakes - Superior, Michigan, and Erie	48(residue)	--	same as above	Lucas, et al (1970), AMIC-3778
Zinc	Carassius auratus	FL	Great Lakes - Superior, Michigan, and Erie	36(residue)	--	same as above	Lucas, et al (1970), AMIC-3778
Zinc	Roccus	FL	Great Lakes	28(residue)	--	same as above	Lucas, et al

	chrysops		- Superior, Michigan, and Erie				(1970), AMIC-3778
Zinc	Coregonus clupeaformis	FL	Moose Lake, Can.	14 (residue)	--	Concentrations of 13 toxic elements in dressed fish from heavily industrialized and non-industrialized areas were determined. Only mercury exceeded regulatory limits, and concentrations of most elements were essentially the same in fish from both areas.	Uthe, et AL(1971), AMIC-3819
Zinc	Coregonus clupeaformis	FL	Lake Ontario, Can.	12 (residue)	--	same as above	Uthe, et AL(1971), AMIC-3819
Zinc	Esox lucius	FL	Moose Lake, Can.	19 (residue)	--	same as above	Uthe, et al (1971),AMIC-3819
Zinc	Esox lucius	FL	Lake St. Pierre, Can.	19 (residue)	--	same as above	Uthe, et al (1971),AMIC-3819
Zinc	Esox lucius	FL	Lake Erie, Can.	11 (residue)	--	same as above	Uthe, et al (1971),AMIC-3819
Zinc	Osmerus mordax	FL	Lake Erie, Can.	20 (residue)	--	same as above	Uthe, et al (1971),AMIC-3819
Zinc	Perca flavescens	FL	Lake Erie, Can.	12 (residue)	--	same as above	Uthe, et al (1971),AMIC-3819
Zinc	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	26 (dorsal muscle residue)	--	Fish collected from an effluent pipe of a steam plant and from offshore waters of Catalina Island were analyzed for trace element content. Trace element content of the effluent water was at least 5 times greater than that of normal sea water for cadmium, copper, nickel, zinc, and chromium. Livers of fish from the effluent were nearly twice the size of those from the ocean. Greatest differences in concentration occurred with aluminum, cadmium, and nickel. Silver, barium, lithium, and lead showed the least differences. The author concluded that trace element analysis of	Stapleton (1968), AMIC-5980

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
						tissues could be used to determine the effect of pollutants on marine organisms.	
Zinc	Paralabrax clathratus	FM	Catalina Island, Cal.	10 (dorsal muscle residue)	--	same as above	Stapleton (1968), AMIC-5980
Zinc	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	15 (ventral muscle residue)	--	same as above	Stapleton (1968), AMIC-5980
Zinc	Paralabrax clathratus	FM	Catalina Island, Cal.	9 (ventral muscle residue)	--	same as above	Stapleton (1968), AMIC-5980
Zinc	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	172 (gonads residue)	--	same as above	Stapleton (1968), AMIC-5980
Zinc	Paralabrax clathratus	FM	Catalina Island, Cal.	119 (gonads residue)	--	same as above	Stapleton (1968), AMIC-5980
Zinc	Paralabrax clathratus (gravid females)	FM	Catalina Island, Cal.	245 (gonads residue)	--	same as above	Stapleton (1968), AMIC-5980
Zinc	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	61 (liver residue)	--	same as above	Stapleton (1968), AMIC-5980
Zinc	Paralabrax clathratus	FM	Catalina Island, Cal.	100 (liver residue)	--	same as above	Stapleton (1968), AMIC-5980
Zinc	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	223 (integument residue)	--	same as above	Stapleton (1968), AMIC-5980
Zinc	Paralabrax clathratus	FM	Catalina Island, Cal.	190 (integument residue)	--	same as above	Stapleton (1968),

							AMIC-5980
Zinc	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	82 (heart residue)	--	same as above	Stapleton (1968), AMIC-5980
Zinc	Paralabrax clathratus	FM	Catalina Island, Cal.	90 (heart residue)	--	same as above	Stapleton (1968), AMIC-5980
Zinc	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	700 (eyeball residue)	--	same as above	Stapleton (1958), AMIC-5980
Zinc	Paralabrax clathratus	FM	Catalina Island, Cal.	600 (eyeball residue)	--	same as above	Stapleton (1968), AMIC-5980
Zinc	Salmo gairdneri	BSA	--	1.95-5.85 (fluctuating conc, T 2340-2960 min)	a,c*,d,e*, f,m	Rainbow trout were exposed to concentrations of fluctuating levels of ammonia, phenol, and zinc and to constant mixtures of the three. Tests with fluctuating levels of toxicants showed that LC50 values were similar to those for constant concentrations as long as the periodicity of the fluctuation did not exceed the resistance time for the poison. Except when zinc predominated in the mixtures, the fractional toxicities could be summed to give the toxicity of the mixture.	Brown, et al (1969), AMIC-5993
Zinc	Salmo gairdneri	BSA	--	3.9 (T 2400 min)	a,c*,d,e*, f,m	same as above	Brown, et al(1969), AMIC-5993
Zinc	Salmo gairdneri	BSA	--	4.0 (T2)	a,c,e	Rainbow trout were exposed to copper, phenol, zinc, or nickel solutions to determine 48-hour LC50 values for mixtures of copper and phenol: copper, zinc, and phenol: and copper, zinc, and nickel. It was concluded that acute lethal toxicities of the mixtures could be adequately described by summations of the fractional toxicities.	Brown, et al (1970), AMIC-5994
ZnSO4 . 7H20 (as Zn 2 plus)	Lepomis macrochirus	BSA and CF	--	2.94-3.64(S84)	a,c,d,e,f, r,t	Results of monitoring fish movement by means of light beam interruption were primarily reported. The values given for bluegills were the	Cairns, et al (1971),AMIC-3231

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
						lowest detectable concentration causing significant movement changes. Values for golden shiners and goldfish were obtained in preliminary studies. At 1/10 the indicated concentration, growth and reproduction of bluegills were significantly affected but not at 1/100 dilution. Considerable discussion and additional data are presented.	
ZnSO4 . 7H20 (as Zn 2 plus)	Notemigonus crysoleucas	BSA	--	7.5 (SB)	a,c,d,e,f, r,t	same as above	Cairns, et al (1971), AMIC-3231
ZnSO4 . 7H20 (as Zn 2 plus)	Carassius auratus	BSA	--	7.5 (K)	a,c,d,e,f, r,t	same as above	Cairns, et al (1971), AMIC-3231
Zn, Ni, Cr, CN, Cu, and Zn	Catostomus commersoni	BSACF (ML)	Grand River at Wyoming, Michigan	between 1.25-3.75 percent (T3)	a,c,e, conductivity, Ni,Cu,Cr, CN, and Zn	A mobile bioassay unit was utilized to conduct this study of municipal wastewater containing the indicated toxicants. River water was used as diluent. The conclusion was reached that synergistic or additive toxic effects occurred since toxicity was greater than that of any of the ions singly.	Zillich (1969), AMIC-2906
Zn, Ni, Cr, CN, Cu, and Zn	Pimephales promelas	BSACF (ML)	Grand River at Wyoming, Michigan	between 1.25-3.75 percent (T3)	a,c,e, conductivity, Ni,Cu,Cr, CN, and Zn	same as above	Zillich (1969), AMIC-2906
1,1"-methylenedi-2-naphthol	Ptychocheilus oregonensis (71 mm)	BSA	--	0.006-0.015 (K 6-31 hr)	a,c,d,f, and conductivity	The chemical studied was found to be selectively lethal to squawfish at concentrations 3 to 100 times more toxic to these species than to salmonids. Potency varied positively with concentration and temperature. Concentrations cited are for 10-18 C. A sheep and ducks showed no ill effects over a 7-day period when forced to drink water containing 10 ppm of the naphthol. A field application in a small lagoon containing several species of fish resulted only in kill of P. oregonensis. This chemical appears to be an effective piscicide that is selective for squawfish.	MacPhee, et al (1969), AMIC-5450

1,1"-methylenedi-2-naphthol	Ptychocheilus umpquae (58 mm)	BSA	--	0.01-0.03(K 6-20 hr)	a*,c,d,f, and conductivity	same as above	MacPhee, et al (1969), AMIC-5450
1,1"-methylenedi-2-naphthol	Salvelinus fontinalis (91 mm)	BSA	--	0.3 (SB4)	a*,c,d,f, and conductivity	same as above	MacPhee, et al (1969), AMIC-5450
1,1"-methylenedi-2-naphthol	Oncorhynchus tshawytscha (84 mm)	BSA	--	0.1 (SB4)	a*,c,d,f, and conductivity	same as above	MacPhee, et al (1969), AMIC-5450
1,1"-methylenedi-2-naphthol	Oncorhynchus kisutch (102 mm)	BSA	--	0.6-1.3(SB4)	a*,c,d,f, and conductivity	same as above	MacPhee, et al (1969),AMIC-5450
1,1"-methylenedi-2-naphthol	Salmo gairdneri (66 mm)	BSA	--	0.6-1.3 (SB4)	a*,c,d,f, and conductivity	same as above	MacPhee, et al (1969), AMIC-5450
1,2 dichloropropane	Crangon crangon	BSA	--	greater than 100 (T2)	a*(continuous aeration, sea. water, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701
1,2,3,4,9,9-hexachloro-1,4-methane 1,4,4a,8a-tetrahydro-5,8-naphthoquinone	Phormidium ambiguum	L	--	0.5-10.0 (NTE)	--	Of 74 chemicals evaluated as algicides, only 9 were more toxic than CuSO4. None inhibited growth of mat-forming algae for more than 2 weeks. CuSO4 formulated with certain wetting agents was more toxic than CuSO4 alone. Copper chloramine was also found to be more toxic than CuSO4. No wetting agents were found to be inhibitory at the concentrations investigated (0.05 and 0.005 ppm). Also reported are factors affecting growth of algae in canals to determine whether there were leads to controlling algae by environmental management. No practical environmental means were found.	Otto (1970), AMIC-892

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
2-amino-3-chloro-1,4-naphthoquinone	Phormidium ambiguum	L	--	0.5-10.0(16per cent growth inhibited 14)	--	Of 74 chemicals evaluated as algicides, only 9 were more toxic than $CuSO_4$. None inhibited growth of mat-forming algae for more than 2 weeks. $CuSO_4$ formulated with certain wetting agents was more toxic than $CuSO_4$ alone. Copper chloramine was also found to be more toxic than $CuSO_4$. No wetting agents were found to be inhibitory at the concentrations investigated (0.05 and 0.005 ppm). Also reported are factors affecting growth of algae in canals to determine whether there were leads to controlling algae by environmental management. No practical environmental means were found.	Otto (1970), AMIC-892
2-chloro-4,6-bis (ethylamino) S-triazine	Phormidium ambiguum	L	--	0.5-10.0 (NTE)	--	Of 74 chemicals evaluated as algicides, only 9 were more toxic than $CuSO_4$. None inhibited growth of mat-forming algae for more than 2 weeks. $CuSO_4$ formulated with certain wetting agents was more toxic than $CuSO_4$ alone. Copper chloramine was also found to be more toxic than $CuSO_4$. No wetting agents were found to be inhibitory at the concentrations investigated (0.05 and 0.005 ppm). Also reported are factors affecting growth of algae in canals to determine whether there were leads to controlling algae by environmental management. No practical environmental means were found.	Otto (1970), AMIC-892
2-dimethyl-amino-1,4-naphthoquinone	Phormidium ambiguum	L	--	0.5-10.0(16per cent growth inhibited 14)	--	Of 74 chemicals evaluated as algicides, only 9 were more toxic than $CuSO_4$. None inhibited growth of mat-forming algae for more than 2 weeks. $CuSO_4$ formulated with certain wetting agents was more toxic than $CuSO_4$ alone. Copper chloramine was also found to be more toxic than $CuSO_4$. No wetting agents were found to be inhibitory at the concentrations investigated (0.05 and 0.005 ppm). Also reported are factors	Otto (1970), AMIC-892

						affecting growth of algae in canals to determine whether there were leads to controlling algae by environmental management. No practical environmental means were found.	
2-Mercaptodiethyl succinate	Pimephales promelas	BSA	--	35.0 (T4)	a*,d,e,o, andFe	Malathion and its hydrolysis products were evaluated with the finding that one such product (diethyl fumarate) was more toxic than Malathion to fathead minnows. Synergism occurred between Malathion and two products of hydrolysis. Continuous exposure resulted in increased toxicity.	Bender (1969), AMIC-3787
2-propenal (acrolein)	Phormidium ambiguum	L	--	0.5-10.0 (66 percent growth inhibited 14)	--	Of 74 chemicals evaluated as algicides, only 9 were more toxic than CuSO4. None inhibited growth of mat-forming algae for more than 2 weeks. CuSO4 formulated with certain wetting agents was more toxic than CuSO4 alone. Copper chloramine was also found to be more toxic than CuSO4. No wetting agents were found to be inhibitory at the concentrations investigated (0.05 and 0.005 ppm). Also reported are factors affecting growth of algae in canals to determine whether there were leads to controlling algae by environmental management. No practical environmental means were found.	Otto (1970), AMIC-892
2-propene-1-ol (allyl alcohol)	Phormidium ambiguum	L	--	0.5-10.0 (16 percent growth inhibited 14)	--	same as above	Otto (1970), AMIC-892
2-tert-butylamino 4-ethyl-amino 6-methyl S-triazine	Phormidium ambiguum	L	--	0.5-10.0 (66 percent growth inhibited 14)	--	Of 74 chemicals evaluated as algicides, only 9 were more toxic than CuSO4. None inhibited growth of mat-forming algae for more than 2 weeks. CuSO4 formulated with certain wetting agents was more toxic than CuSO4 alone. Copper chloramine was also found to be more toxic than CuSO4. No wetting agents were found to be inhibitory at the concentrations investigated (0.05 and 0.005 ppm). Also reported are factors affecting growth of algae in canals to determine whether there were leads to controlling algae by environmental management. No practical environmental	Otto (1970), AMIC-892

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
						means were found.	
2,3-dichloro-1,4-naphthoquinone	Phormidium ambiguum	L	--	0.5-10.0 (NTE)	--	Of 74 chemicals evaluated as algicides, only 9 were more toxic than $CuSO_4$. None inhibited growth of mat-forming algae for more than 2 weeks. $CuSO_4$ formulated with certain wetting agents was more toxic than $CuSO_4$ alone. Copper chloramine was also found to be more toxic than $CuSO_4$. No wetting agents were found to be inhibitory at the concentrations investigated (0.05 and 0.005 ppm). Also reported are factors affecting growth of algae in canals to determine whether there were leads to controlling algae by environmental management. No practical environmental means were found.	Otto (1970), AMIC-892
2,4-D (acid)	Gammarus fasciatus	BSA	--	3.2 (T2)	a*	Of the aquatic weed herbicides evaluated, Dicione was the most toxic, Daphnia was generally the most sensitive organism. All of the crustacea were affected by much lower concentration levels of herbicides than indicated by the TL sub 50 values. All of the animals represent important food chain links.	Sanders (1970), AMIC-453
2,4-D (acid)	Daphnia magna	BSA	--	greater than 100.0 (T2)	a*	same as above	Sanders (1970),AMIC-453
2,4-D (acid)	Lepomis macrochirus	BSA	--	--	a*	same as above	Sanders (1970), AMIC-453
2,4-D (BEE)	Gammarus fasciatus	BSA	--	5.9 (T2), 5.9 (T4)	a*	same as above	Sanders (1970),AMIC-453
2,4-D (BEE)	Paleomontes kadiakensis	BSA	--	1.4 (T2)	a*	same as above	Sanders (1970), AMIC-453
2,4-D (BEE)	Asellus brevicaudus	BSA	--	3.2 (T2)	a*	same as above	Sanders (1970),

							AMIC-453
2,4-D (BEE)	Orconectes nais	BSA	--	greater than 100.0 (T2)	a*	same as above	Sanders (1970),AMIC-453
2,4-D (BEE)	Daphnia magna	BSA	--	5.6 (T2)	a*	same as above	Sanders (1970), AMIC-453
2,4-D (BEE)	Cypridopsis vidua	BSA	--	1.8 (T2)	a*	same as above	Sanders (1970), AMIC-453
2,4-D (BEE)	Lepomis macrochirus	BSA	--	1.1 (T2)	a*	same as above	Sanders (1970), AMIC-453
2,4-D (butoxyethylester)	Rasbora heteromorpha	BCFA and BSA	--	1.0 (T2)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425
2,4-D (clay based)	Rasbora heteromorpha	BCFA and BSA	--	420 (T1)	a*,c,e,f, hard(HW) or soft (SW) synthetic dilution water, or seawater for some species	same as above	Alabaster (1969),AMIC-5425
2,4-D (dimethylamine salt)	Crassostrea virginica (eggs)	L	--	20.4 (T2)	--	The effect of 52 pesticides on embryonic development of clams and oysters was reported. Synergistic effects with solvents were also reported. Most of the compounds affected development more than survival. Some, however, drastically reduced larval growth. The authors point out the necessity of evaluating the effects of	Davis, etal (1969), AMIC-5990

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
						pesticides on all life stages of an organism and note the possibility of selecting chemicals for pest control that would not have serious effect on shellfish.	
2,4-D (dimethylamine salt)	Crassostrea virginica (larvae)	L	--	64.3 (T14)	--	same as above	Davis, et al (1969), AMIC-5990
2,4-D (dimethylamine salt)	Gammarus fasciatus	BSA	--	greater than100.0 (T2)	a*	Of the aquatic weed herbicides evaluated, Diclone was the most toxic. Daphnia was generally the most sensitive organism. All of the crustacea were affected by much lower concentration levels of herbicides than indicated by the TL sub 50 values. All of the animals represent important food chain links.	Sanders (1970), AMIC-453
2,4-D (dimethylamine salt)	Paleomontes kadiakensis	BSA	--	greaterthan 100.0 (T2)	a*	same as above	Sanders (1970), AMIC-453
2,4-D (dimethylamine salt)	Asellus brevicaudus	BSA	--	greater than 100.0 (T2)	a*	same as above	Sanders (1970), AMIC-453
2,4-D (dimethylamine salt)	Orconectes nais	BSA	--	greater than 100.0 (T2)	*	same as above	Sanders (1970), AMIC-453
2,4-D (dimethylamine salt)	Daphnia magna	BSA	--	4.0 (T2)	a*	same as above	Sanders (1970), AMIC-453
2,4-D (dimethylamine salt)	Cypridopsis vidua	BSA	--	8.0 (T2)	a*	same as above	Sanders (1970),AMIC-453
2,4-D (dimethylamine salt)	Lepomis macrochirus	BSA	--	greater than 100.0 (T2)	a*	same as above	Sanders (1970), AMIC-453
2,4-D (ester)	Crassostrea virginica (eggs)	L	--	8.0 (T2)	--	same as above	Davis, et al (1969),AMIC-

							5990
2,4-D (ester)	Crassostrea virginica (larvae)	L	--	0.74 (T14)	--	same as above	Davis, et al (1969), AMIC-5990
2,4-D (Na salt)	Rasbora heteromorpha	BCFA and BSA	--	1,160 (T1)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425
2,4-D (PGBE)	Gammarus fasciatus	BSA	--	2.6 (T2), 2.5 (T4)	a*	Of the aquatic weed herbicides evaluated, Dicione was the most toxic. Daphnia was generally the most sensitive organism. All of the crustacea were affected by much lower concentration levels of herbicides than indicated by the TL sub 50 values. All of the animals represent important food chain links.	Sanders (1970), AMIC-453
2,4-D (PGBE)	Paleomontes kadiakensis	BSA	--	2.7 (T2)	a*	same as above	Sanders (1970), AMIC-453
2,4-D (PGBE)	Asellus brevicaudus	BSA	--	2.2 (T2)	a*	same as above	Sanders (1970), AMIC-453
2,4-D (PGBE)	Orconectes nais	BSA	--	greater than 100.0 (T2)	a*	same as above	Sanders (1970), AMIC-453
2,4-D (PGBE)	Daphnia magna	BSA	--	0.1 (T2)	a*	same as above	Sanders (1970), AMIC-453
2,4-D (PGBE)	Cypridopsis vidua	BSA	--	0.32 (T2)	a*	same as above	Sanders (1970), AMIC-453
2,4-D (PGBE)	Lepomis macrochirus	BSA	--	0.90 (T2)	a*	same as above	Sanders (1970),

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
							AMIC-453
2,4-D (resin based)	Rasbora heteromorpha	BCFA and BSA	--	2,480 (T2)	a*,c,e,f, hard(HW) or soft (SW) synthetic dilution water, or seawater for same species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969),AMIC-5425
2,4-D (resin based)	Salmo gairdneri	BCFA and BSA	--	1,920 (T2)	a*,c,e,f, hard (HW)or soft (SW) synthetic dilution water, or seawater for some species	same as above	Alabaster (1969), AMIC-5425
2,4-D	Fish (not specified)	--	--	greater than 0.1-1.0 (K)	--	Approximate toxicities of numerous pesticides commonly used in Britain were summarized. An excellent brief, general discussion of toxicity testing is also present.	Mawdesley-Thomas (1971),AMIC-1056
2,4-D	Wolffia papulifera	L	--	1000 (K)	Hunter's medium diluted 1:5	All compounds were harmful to duckweed to some degree. Decreased populations were noted at non-lethal concentrations and some compounds (Malathion and 2,4-D) caused teratogenic effects at concentrations as low as 1 ppm.	Worthley, et al (1971), AMIC-3233
2,4 dinitrophenol	Negaprion brevirostris (1-3 kg)	BSA	--	10 (NTE 3 hr)	a,c,e	Data from study of drug effects on young lemon sharks were treated mathematically to demonstrate applicability of classical rate theory to the study of chemical shark deterrents. Incapacitation (narcosis) was the primary parameter timed for effectiveness. This was usually quite rapid for the more effective drugs.	Baldridge (1969), AMIC-3832
2,4,5-T (butoxyethylester)	Rasbora heteromorpha	BCFA and BSA	--	1.0 (T2)	a*,c,e,f, hard (HW) or soft	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a	Alabaster (1969), AMIC-5425

					(SW) synthetic dilution water, or seawater for some species	wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	
2,4,5-T	Fish (not specified)	--	--	greater than 0.1-1.0 (K)	--	Approximate toxicities of numerous pesticides commonly used in Britain were summarized. An excellent brief, general discussion of toxicity testing is also present.	Mawdesley-Thomas (1971),AMIC-1056
2"-bromo-3-nitrosalicylanilide	Salmo gairdneri	BSA	--	1.0 (K 3 hr)	a*	Twenty-nine nitrosalicylanilides and related compounds were evaluated for their relative toxic effect to selected fish. Potency varied with type and position of substitutions. Several compounds were selectively toxic to yellow perch. Goldfish were the most resistant to the salicylanilides.	Marking,et al (1970), AMIC-6391
2"-bromo-3-nitrosalicylanilide	Carassius auratus	BSA	--	10 (K1)	a*	same as above	Marking, etal (1970), AMIC-6391
2"-bromo-3-nitrosalicylanilide	Cyprinus carpio	BSA	--	1.0 (K1)	a*	same as above	Marking,et al (1970), AMIC-6391
2"-bromo-3-nitrosalicylanilide	Pimephales promelas	BSA	--	1.0 (K 3 hr)	a*	same as above	Marking,et al (1970), AMIC-6391
2"-bromo-3-nitrosalicylanilide	Ictalurus melas	BSA	--	1.0 (K1)	a*	same as above	Marking, etal (1970), AMIC-6391
2"-bromo-3-nitrosalicylanilide	Lepomis cyanellus	BSA	--	10 (K 3 hr)	a*	same as above	Marking,et al (1970), AMIC-6391
2"-bromo-3-nitrosalicylanilide	Lepomis macrochirus	BSA	--	10 (K 3hr)	a*	same as above	Marking,et al (1970), AMIC-6391
2"-bromo-3-nitrosalicylanilide	Perca flavescens	BSA	--	1.0 (K1)	a*	same as above	Marking, etal (1970), AMIC-6391
2"-chloro-4"-methyl-3-nitrosalicylanilide	Salmo gairdneri	BSA	--	1.0 (K 3 hr)	a*	same as above	Marking, et al (1970), AMIC-6391

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
2"-chloro-4"-methyl-3-nitrosalicylanilide	Carassius auratus	BSA	--	1.0 (K 3 hr)	a*	same as above	Marking, et al (1970), AMIC-6391
2"-chloro-4"-methyl-3-nitrosalicylanilide	Cyprinus carpio	BSA	--	1.0 (K1)	a*	same as above	Marking, et al (1970), AMIC-6391
2"-chloro-4"-methyl-3-nitrosalicylanilide	Pimephales promelas	BSA	--	1.0 (K1)	a*	same as above	Marking, et al (1970), AMIC-6391
2"-chloro-4"-methyl-3-nitrosalicylanilide	Ictalurus melas	BSA	--	1.0 (K1)	a*	same as above	Marking, et al (1970), AMIC-6391
2"-chloro-4"-methyl-3-nitrosalicylanilide	Lepomis cyanellus	BSA	--	1.0 (K1)	a*	same as above	Marking, et al (1970), AMIC-6391
2"-chloro-4"-methyl-3-nitrosalicylanilide	Lepomis macrochirus	BSA	--	1.0 (K1)	a*	same as above	Marking, et al (1970), AMIC-6391
2"-chloro-4"-methyl-3-nitrosalicylanilide	Perca flavescens	BSA	--	1.0 (K1)	a*	same as above	Marking, et al (1970), AMIC-6391
2"-chloro-4"-nitro-3-nitrosalicylanilide	Salmo gairdneri	BSA	--	1.0 (K 3 hr)	a*	same as above	Marking, et al (1970), AMIC-6391
2"-chloro-4"-nitro-3-nitrosalicylanilide	Carassius auratus	BSA	--	1.0 (K1)	a*	same as above	Marking, et al (1970), AMIC-6391
2"-chloro-4"-nitro-3-nitrosalicylanilide	Cyprinus carpio	BSA	--	1.0 (K1)	a*	same as above	Marking, et al (1970), AMIC-6391
2"-chloro-4"-nitro-3-nitrosalicylanilide	Pimephales promelas	BSA	--	1.0 (K1)	a*	same as above	Marking, et al (1970), AMIC-6391
2"-chloro-4"-nitro-3	Ictalurus	BSA	--	1.0 (K 3 hr)	a*	same as above	Marking, et

-nitrosalicylanilide	melas						al (1970), AMIC-6391
2"-chloro-4"-nitro-3 -nitrosalicylanilide	Lepomis cyanellus	BSA	--	1.0 (K2)	a*	same as above	Marking, et al (1970), AMIC-6391
2"-chloro-4"-nitro-3 -nitrosalicylanilide	Lepomis macrochirus	BSA	--	1.0 (K1)	a*	same as above	Marking, et al (1970), AMIC-6391
2"-chloro-4"-nitro-3 -nitrosalicylanilide	Perca flavescens	BSA	--	1.0 (K1)	a*	same as above	Marking, et al (1970), AMIC-6391
2"-chloro-5-nitro salicylanilide	Salmo gairdneri	BSA	--	1.0 (K 3 hr)	a*	same as above	Marking, et al (1970), AMIC-6391
2"-chloro-5-nitro salicylanilide	Carassius auratus	BSA	--	10 (K1)	a*	same as above	Marking, et al (1970), AMIC-6391
2"-chloro-5-nitro salicylanilide	Cyprinus carpio	BSA	--	10 (K 3 hr)	a*	same as above	Marking, et al (1970), AMIC-6391
2"-chloro-5-nitro salicylanilide	Pimephales promelas	BSA	--	10 (K 3 hr)	a*	same as above	Marking, et al (1970), AMIC-6391
2"-chloro-5-nitro salicylanilide	Ictalurus melas	BSA	--	1.0 (K2)	a*	same as above	Marking, et al (1970), AMIC-6391
2"-chloro-5-nitro salicylanilide	Lepomis cyanellus	BSA	--	10 (K 3 hr)	a*	same as above	Marking, et al (1970), AMIC-6391
2"-chloro-5-nitro salicylanilide	Lepomis macrochirus	BSA	--	10 (K 3 hr)	a*	same as above	Marking, et al (1970), AMIC-6391
2"-chloro-5-nitro salicylanilide	Perca flavescens	BSA	--	10 (K 3 hr)	a*	same as above	Marking, et al (1970), AMIC-6391
2"-iodo-3-nitro salicylanilide	Salmo gairdneri	BSA	--	1.0(K 3 hr)	a*	same as above	Marking, et al (1970), AMIC-6391
2"-iodo-3-nitro	Carassius	BSA	--	10 (K1)	a*	same as above	Marking,

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
salicylanilide	auratus						etal (1970), AMIC-6391
2"-iodo-3-nitrosalicylanilide	Cyprinus carpio	BSA	--	1.0 (K1)	a*	same as above	Marking, et al(1970), AMIC-6391
2"-iodo-3-nitrosalicylanilide	Pimephales promelas	BSA	--	1.0 (K1)	a*	same as above	Marking,et al (1970), AMIC-6391
2"-iodo-3-nitrosalicylanilide	Ictalurus melas	BSA	--	10 (K1)	a*	same as above	Marking, etal (1970), AMIC-6391
2"-iodo-3-nitrosalicylanilide	Lepomis cyanellus	BSA	--	10 (K 3 hr)	a*	same as above	Marking,et al (1970), AMIC-6391
2"-iodo-3-nitrosalicylanilide	Lepomis macrochirus	BSA	--	10 (K 3 hr)	a*	same as above	Marking, et al (1970), AMIC-6391
2"-iodo-3-nitrosalicylanilide	Perca flavescens	BSA	--	1.0 (K1)	a*	same as above	Marking,et al (1970), AMIC-6391
2"-methoxy-4"-nitro-3-nitrosalicylanilide	Salmo gairdneri	BSA	--	10 (K 3 hr)	a*	same as above	Marking, et al (1970), AMIC-6391
2"-methoxy-4"-nitro-3-nitrosalicylanilide	Carassius auratus	BSA	--	10 (K1)	a*	same as above	Marking, et al (1970), AMIC-6391
2"-methoxy-4"-nitro-3-nitrosalicylanilide	Cyprinus carpio	BSA	--	10 (K1)	a*	same as above	Marking, et al (1970), AMIC-6391
2"-methoxy-4"-nitro-3-nitrosalicylanilide	Pimephales promelas	BSA	--	10 (K1)	a*	same as above	Marking, et al (1970), AMIC-6391
2"-methoxy-4"-nitro-3-nitrosalicylanilide	Ictalurus melas	BSA	--	10 (K1)	a*	same as above	Marking, et al (1970), AMIC-6391

2"-methoxy-4"-nitro-3-nitrosalicyl-anilide	Lepomis cyanellus	BSA	--	10 (K1)	a*	same as above	Marking, et al (1970), AMIC-6391
2"-methoxy-4"-nitro-3-nitrosalicyl-anilide	Lepomis macrochirus	BSA	--	10 (K1)	a*	same as above	Marking, et al (1970), AMIC-6391
2"-methoxy-4"-nitro-3-nitrosalicyl-anilide	Perca flavescens	BSA	--	10 (K 3 hr)	a*	same as above	Marking, et al (1970), AMIC-6391
2",4"-dimethyl-3-nitrosalicylanilide	Salmo gairdneri	BSA	--	1.0 (K 3 hr)	a*	same as above	Marking, et al (1970), AMIC-6391
2",4"-dimethyl-3-nitrosalicylanilide	Carassius auratus	BSA	--	10 (K 3 hr)	a*	same as above	Marking, et al (1970), AMIC-6391
2",4"-dimethyl-3-nitrosalicylanilide	Cyprinus carpio	BSA	--	1.0 (K2)	a*	same as above	Marking, et al (1970), AMIC-6391
2",4"-dimethyl-3-nitrosalicylanilide	Pimephales promelas	BSA	--	1.0 (K4)	a*	same as above	Marking, et al (1970), AMIC-6391
2",4"-dimethyl-3-nitrosalicylanilide	Ictalurus melas	BSA	--	1.0 (K1)	a*	same as above	Marking, et al (1970), AMIC-6391
2",4"-dimethyl-3-nitrosalicylanilide	Lepomis cyanellus	BSA	--	10 (K 3 hr)	a*	same as above	Marking, et al (1970), AMIC-6391
2",4"-dimethyl-3-nitrosalicylanilide	Lepomis macrochirus	BSA	--	10 (K 3 hr)	a*	same as above	Marking, et al (1970), AMIC-6391
2",4"-dimethyl-3-nitrosalicylanilide	Perca flavescens	BSA	--	1.0 (K1)	a*	same as above	Marking, et al (1970), AMIC-6391
2",5"-dibromo-3-nitrosalicylanilide	Salmo gairdneri	BSA	--	1.0 (K 3 hr)	a*	same as above	Marking,et al (1970), AMIC-6391
2",5"-dibromo-3-nitrosalicylanilide	Carassius auratus	BSA	--	10 (K1)	a*	same as above	Marking,et al (1970), AMIC-6391

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
2",5"-dibromo-3-nitrosalicylanilide	Cyprinus carpio	BSA	--	1.0 (K2)	a*	same as above	Marking,et al (1970), AMIC-6391
2",5"-dibromo-3-nitrosalicylanilide	Pimephales promelas	BSA	--	1.0 (K1)	a*	same as above	Marking, et al (1970), AMIC-6391
2",5"-dibromo-3-nitrosalicylanilide	Ictalurus melas	BSA	--	1.0 (K1)	a*	same as above	Marking, et al (1970), AMIC-6391
2",5"-dibromo-3-nitrosalicylanilide	Lepomis cyanellus	BSA	--	1.0 (K1)	a*	same as above	Marking, et al (1970), AMIC-6391
2",5"-dibromo-3-nitrosalicylanilide	Lepomis macrochirus	BSA	--	10(K 3 hr)	a*	same as above	Marking, et al (1970), AMIC-6391
2",5"-dibromo-3-nitrosalicylanilide	Perca flavescens	BSA	--	1.0 (K 3 hr)	a*	same as above	Marking, et al (1970), AMIC-6391
2",5"-dimethoxy-4"-chloro-3-nitrosalicylanilide	Salmo gairdneri	BSA	--	1.0 (K 3 hr)	a*	same as above	Marking, et al (1970), AMIC-6391
2",5"-dimethoxy-4"-chloro-3-nitrosalicylanilide	Carassius auratus	BSA	--	1.0 (K4)	a*	same as above	Marking, et al (1970), AMIC-6391
2",5"-dimethoxy-4"-chloro-3-nitrosalicylanilide	Cyprinus carpio	BSA	--	1.0 (K2)	a*	same as above	Marking, et al (1970), AMIC-6391
2",5"-dimethoxy-4"-chloro-3-nitrosalicylanilide	Pimephales promelas	BSA	--	1.0 (K1)	a*	same as above	Marking, et al (1970), AMIC-6391
2",5"-dimethoxy-4"-chloro-3-nitrosalicylanilide	Ictalurus melas	BSA	--	1.0 (K1)	a*	same as above	Marking, et al (1970), AMIC-6391
2",5"-dimethoxy-4"-	Lepomis	BSA	--	1.0 (K2)	a*	same as above	Marking, et

chloro-3-nitrosa-licylanilide	cyanellus						al (1970), AMIC-6391
2",5"-dimethoxy-4"-chloro-3-nitrosa-licylanilide	Lepomis macrochirus	BSA	--	1.0 (K1)	a*	same as above	Marking, et al (1970), AMIC-6391
2",5"-dimethoxy-4"-chloro-3-nitrosa-licylanilide	Perca flavescens	BSA	--	1.0 (K1)	a*	same as above	Marking, et al (1970), AMIC-6391
2",6"-diethyl-3,5-dinitrobenzanilide	Salmo gairdneri	BSA	--	10 (NTE)	a*	same as above	Marking, et al (1970), AMIC-6391
2",6"-diethyl-3,5-dinitrobenzanilide	Carassius auratus	BSA	--	10 (NTE)	a*	same as above	Marking, et al (1970), AMIC-6391
2",6"-diethyl-3,5-dinitrobenzanilide	Cyprinus carpio	BSA	--	10 (NTE)	a*	same as above	Marking, et al (1970), AMIC-6391
2",6"-diethyl-3,5-dinitrobenzanilide	Pimephales promelas	BSA	--	10 (NTE)	a*	same as above	Marking, et al (1970), AMIC-6391
2",6"-diethyl-3,5-dinitrobenzanilide	Ictalurus melas	BSA	--	10 (NTE)	a*	same as above	Marking, et al (1970), AMIC-6391
2",6"-diethyl-3,5-dinitrobenzanilide	Lepomis cyanellus	BSA	--	10 (NTE)	a*	same as above	Marking, et al (1970), AMIC-6391
2",6"-diethyl-3,5-dinitrobenzanilide	Lepomis macrochirus	BSA	--	10 (NTE)	a*	same as above	Marking, et al (1970), AMIC-6391
2",6"-diethyl-3,5-dinitrobenzanilide	Perca flavescens	BSA	--	10 (NTE)	a*	same as above	Marking, et al (1970), AMIC-6391
3-chloropropane-1,2 diol	Rasbora heteromorpha	BCFA and BSA	--	2,100(T2)	a*,c,e,f, hard(HW) or soft (SW) synthetic dilution water, or seawater for some	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true.	Alabaster (1969),AMIC-5425

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
					species		
3(p-chlorophenyl) 1,1-dimethylurea	Phormidium ambiguum	L	--	0.5-10.0 (NTE)	--	Of 74 chemicals evaluated as algicides, only 9 were more toxic than $CuSO_4$. None inhibited growth of mat-forming algae for more than 2 weeks. $CuSO_4$ formulated with certain wetting agents was more toxic than $CuSO_4$ alone. Copper chloramine was also found to be more toxic than $CuSO_4$. No wetting agents were found to be inhibitory at the concentrations investigated (0.05 and 0.005 ppm). Also reported are factors affecting growth of algae in canals to determine whether there were leads to controlling algae by environmental management. No practical environmental means were found.	Otto (1970), AMIC-892
3,4-dichlorobenzyl methyl carbamate	Phormidium ambiguum	L	--	0.5-10.0(16 percent growth inhibited 14)	--	same as above	Otto (1970), AMIC-892
3,4-dihydroxybenzoic acid (protocatechuic acid)	Phormidium ambiguum	L	--	0.5-10.0(50 percent growth inhibited 14)	--	same as above	Otto (1970), AMIC-892
3,4,5-trihydroxy benzoic acid (gallic acid)	Phormidium ambiguum	L	--	0.5-10.0 (NTE)	--	Of 74 chemicals evaluated as algicides, only 9 were more toxic than $CuSO_4$. None inhibited growth of mat-forming algae for more than 2 weeks. $CuSO_4$ formulated with certain wetting agents was more toxic than $CuSO_4$ alone. Copper chloramine was also found to be more toxic than $CuSO_4$. No wetting agents were found to be inhibitory at the concentrations investigated (0.05 and 0.005 ppm). Also reported are factors affecting growth of algae in canals to determine whether there were leads to controlling algae by environmental management. No practical environmental means were found.	Otto (1970), AMIC-892
3,5-dibromo-4-hy droxybenzonitrile	Phormidium ambiguum	L	--	0.5-10.0 (NTE)	--	Of 74 chemicals evaluated as algicides, only 9 were more toxic than	Otto (1970), AMIC-892

						CuSO4. None inhibited growth of mat-forming algae for more than 2 weeks. CuSO4 formulated with certain wetting agents was more toxic than CuSO4 alone. Copper chloramine was also found to be more toxic than CuSO4. No wetting agents were found to be inhibitory at the concentrations investigated (0.05 and 0.005 ppm). Also reported are factors affecting growth of algae in canals to determine whether there were leads to controlling algae by environmental management. No practical environmental means were found.	
3,5-diiodo-4-hydroxy droxybenzonitrile	Phormidium ambiguum	L	--	0.5-10.0 (NTE)	--	same as above	Otto (1970), AMIC-892
3,5-dimethyltetrahyd hydro 1,3,5,2-thiodizine	Phormidium ambiguum	L	--	0.5-10.0 (16percent growth inhibited 14)	--	same as above	Otto (1970), AMIC-892
3,5,7-triaza-1-azoni azonia adamontane	Phormidium ambiguum	L	--	0.5-10.0 (NTE)	--	same as above	Otto (1970), AMIC-892
3"-bromo-3-nitrosali cylanilide	Salmo gairdneri	BSA	--	1.0 (K 3 hr)	a*	Twenty-nine nitrosalicylanilides and related compounds were evaluated for their relative toxic effect to selected fish. Potency varied with type and position of substitutions. Several compounds were selectively toxic to yellow perch. Goldfish were the most resistant to the salicylanilides.	Marking,et al (1970), AMIC-6391
3"-bromo-3-nitrosali cylanilide	Carassius auratus	BSA	--	10 (K 3 hr)	a*	same as above	Marking,et al (1970), AMIC-6391
3"-bromo-3-nitrosali cylanilide	Cyprinus carpio	BSA	--	1.0 (K1)	a*	same as above	Marking, etal (1970), AMIC-6391
3"-bromo-3-nitrosali cylanilide	Pimephales promelas	BSA	--	1.0 (K 3 hr)	a*	same as above	Marking,et al (1970), AMIC-6391
3"-bromo-3-nitrosali cylanilide	Ictalurus melas	BSA	--	1.0 (K 3 hr)	a*	same as above	Marking,et al (1970), AMIC-6391
3"-bromo-3-nitrosali cylanilide	Lepomis cyanellus	BSA	--	10 (K 3 hr)	a*	same as above	Marking,et al (1970), AMIC-6391
3"-bromo-3-nitrosali cylanilide	Lepomis macrochirus	BSA	--	1.0 (K1)	a*	same as above	Marking,et al (1970),

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Exoerimental Variables, Controlled or Noted	Comments	Reference
							AMIC-6391
3"-bromo-3-nitrosali cylanilide	Perca flavescens	BSA	--	1.0 (K 3 hr)	a*	same as above	Marking,et al (1970), AMIC-6391
3"-chloro-3-nitroben zanilide	Carassius auratus	BSA	--	10 (K 3 hr)	a*	same as above	Marking, et al (1970), AMIC-6391
3"-chloro-3-nitroben zanilide	Cyprinus carpio	BSA	--	10 (K 3 hr)	a*	same as above	Marking, et al (1970), AMIC-6391
3"-chloro-3-nitroben zanilide	Pimephales promelas	BSA	--	10 (K 3 hr-)	a*	same as above	Marking, et al (1970), AMIC-6391
3"-chloro-3-nitroben zanilide	Ictalurus melas	BSA	--	10 (K1)	a*	same as above	Marking, et al (1970), AMIC-6391
3"-chloro-3-nitroben zanilide	Lepomis cyanellus	BSA	--	10 (K 3 hr)	a*	same as above	Marking, et al (1970), AMIC-6391
3"-chloro-3-nitroben zanilide	Lepomis macrochirus	BSA	--	10 (K1)	a*	same as above	Marking, et al (1970), AMIC-6391
3"-chloro-3-nitroben zanilide	Perca flavescens	BSA	--	10 (K 3 hr)	a*	same as above	Marking, et al (1970), AMIC-6391
3"-chloro-5-nitro salicylanilide	Salmo gairdneri	BSA	--	1.0 (K4)	a*	same as above	Marking, et al (1970), AMIC-6391
3"-chloro-5-nitro salicylanilide	Carassius auratus	BSA	--	10 (K1)	a*	same as above	Marking, et al (1970), AMIC-6391
3"-chloro-5-nitro salicylanilide	Cyprinus carpio	BSA	--	10 (K 3 hr)	a*	same as above	Marking, et al (1970), AMIC-6391

3"-chloro-5-nitro salicylanilide	Ictalurus melas	BSA	--	10 (K 3 hr)	a*	same as above	Marking, et al (1970), AMIC-6391
3"-chloro-5-nitro salicylanilide	Lepomis cyanellus	BSA	--	10 (K 3 hr)	a*	same as above	Marking, et al (1970), AMIC-6391
3"-chloro-5-nitro salicylanilide	Lepomis macrochirus	BSA	--	10 (K 3 hr)	a*	same as above	Marking, et al (1970), AMIC-6391
3"-chloro-5-nitro salicylanilide	Perca flavescens	BSA	--	1.0 (K2)	a*	same as above	Marking, et al (1970), AMIC-6391
3"-iodo-3-nitrosalic ylanilide	Carassius auratus	BSA	--	10 (K1)	a*	same as above	Marking, etal (1970), AMIC-6391
3"-iodo-3-nitrosalic ylanilide	Cyprinus carpio	BSA	--	10 (K 3 hr)	a*	same as above	Marking, et al(1970), AMIC-6391
3"-iodo-3-nitrosalic ylanilide	Pimephales promelas	BSA	--	1.0 (K1)	a*	same as above	Marking,et al (1970), AMIC-6391
3"-iodo-3-nitrosalic ylanilide	Ictalurus melas	BSA	--	10 (K 3 hr)	a*	same as above	Marking, etal (1970), AMIC-6391
3"-iodo-3-nitrosalic ylanilide	Lepomis cyanellus	BSA	--	1.0 (K1)	a*	same as above	Marking,et al (1970), AMIC-6391
3"-iodo-3-nitrosalic ylanilide	Lepomis macrochirus	BSA	--	1.0 (K1)	a*	same as above	Marking, et al (1970), AMIC-6391
3"-iodo-3-nitrosalic ylanilide	Perca flavescens	BSA	--	1.0 (K 3 hr)	a*	same as above	Marking,et al (1970), AMIC-6391
3"-iodo-3-nitrosalic ylanilide	Salmo gairdneri	BSA	--	10 (K 3 hr)	a*	same as above	Marking, et al (1970), AMIC-6391
3",4"-dichloro-3-nitrosalicylanilide	Salmo gairdneri	BSA	--	1.0 (K 3 hr)	a*	Twenty-nine nitrosalicylanilides and related compounds were evaluated for their relative toxic effect to selected fish. Potency varied with type and	Marking, et al (1970), AMIC-6391

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
						position of substitutions. Several compounds were selectively toxic to yellow perch. Goldfish were the most resistant to the salicylanilides.	
3",4"-dichloro-3-nitrosalicylanilide	Carassius auratus	BSA	--	1.0(K1)	a*	same as above	Marking, et al (1970), AMIC-6391
3",4"-dichloro-3-nitrosalicylanilide	Cyprinus carpio	BSA	--	1.0 (K1)	a*	same as above	Marking, et al (1970), AMIC-6391
3",4"-dichloro-3-nitrosalicylanilide	Pimephales promelas	BSA	--	0.1 (K2)	a*	same as above	Marking, et al (1970), AMIC-6391
3",4"-dichloro-3-nitrosalicylanilide	Ictalurus melas	BSA	--	0.1 (K1)	a*	same as above	Marking, et al (1970), AMIC-6391
3",4"-dichloro-3-nitrosalicylanilide	Lepomis cyanellus	BSA	--	1.0(K1)	a*	same as above	Marking, et al (1970), AMIC-6391
3",4"-dichloro-3-nitrosalicylanilide	Lepomis macrochirus	BSA	--	0.1 (K4)	a*	same as above	Marking, et al (1970), AMIC-6391
3",4"-dichloro-3-nitrosalicylanilide	Perca flavescens	BSA	--	0.1 (K4)	a*	same as above	Marking, et al (1970), AMIC-6391
4-cyano-2, 6-diiodophenyl-N-methyl carbamate	Phormidium ambiguum	L	--	0.5-10.0 (NTE)	--	Of 74 chemicals evaluated as algicides, only 9 were more toxic than $CuSO_4$. None inhibited growth of mat-forming algae for more than 2 weeks. $CuSO_4$ formulated with certain wetting agents was more toxic than $CuSO_4$ alone. Copper chloramine was also found to be more toxic than $CuSO_4$. No wetting agents were found to be inhibitory at the concentrations investigated (0.05 and 0.005 ppm). Also reported are factors affecting growth of algae in canals to determine whether there were leads to	Otto (1970), AMIC-892

						controlling algae by environmental management. No practical environmental means were found.	
4"-azophenyl-3-nitro salicylanilide	Salmo gairdneri	BSA	--	0.1 (K1)	a*	Twenty-nine nitrosalicylanilides and related compounds were evaluated for their relative toxic effect to selected fish. Potency varied with type and position of substitutions. Several compounds were selectively toxic to yellow perch. Goldfish were the most resistant to the salicylanilides.	Marking, et al (1970), AMIC-6391
4"-azophenyl-3-nitro salicylanilide	Carassius auratus	BSA	--	1.0 (K 3 hr)	a*	same as above	Marking, et al (1970), AMIC-6391
4"-azophenyl-3-nitro salicylanilide	Cyprinus carpio	BSA	--	0.1 (K4)	a*	same as above	Marking, et al (1970), AMIC-6391
4"-azophenyl-3-nitro salicylanilide	Pimephales promelas	BSA	--	0.1 (K1)	a*	same as above	Marking, et al (1970), AMIC-6391
4"-azophenyl-3-nitro salicylanilide	Ictalurus melas	BSA	--	0.1 (K2)	a*	same as above	Marking, et al (1970), AMIC-6391
4"-azophenyl-3-nitro salicylanilide	Lepomis cyanellus	BSA	--	0.1 (K4)	a*	same as above	Marking, et al (1970), AMIC-6391
4"-azophenyl-3-nitro salicylanilide	Lepomis macrochirus	BSA	--	0.1 (K1)	a*	same as above	Marking, et al (1970), AMIC-6391
4"-azophenyl-3-nitro salicylanilide	Perca flavescens	BSA	--	0.1 (K1)	a*	same as above	Marking, et al (1970), AMIC-6391
4"-bromo-2-methyl-3-nitrosalicylanilide	Salmo gairdneri	BSA	--	1.0 (K 3 hr)	a*	same as above	Marking,et al (1970), AMIC-6391
4"-bromo-2-methyl-3-nitrosalicylanilide	Carassius auratus	BSA	--	1.0 (K1)	a*	same as above	Marking,et al (1970), AMIC-6391
4"-bromo-2-methyl-3-nitrosalicylanilide	Cyprinus carpio	BSA	--	0.1 (K4)	a*	same as above	Marking, etal (1970), AMIC-6391

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
4"-bromo-2-methyl-3-nitrosalicylanilide	Pimephales promelas	BSA	--	1.0 (K1)	a*	same as above	Marking,et al (1970), AMIC-6391
4"-bromo-2-methyl-3-nitrosalicylanilide	Ictalurus melas	BSA	--	1.0 (K 3 hr)	a*	same as above	Marking,et al (1970), AMIC-6391
4"-bromo-2-methyl-3-nitrosalicylanilide	Lepomis cyanellus	BSA	--	1.0 (K 3 hr)	a*	same as above	Marking, et al (1970), AMIC-6391
4"-bromo-2-methyl-3-nitrosalicylanilide	Lepomis macrochirus	BSA	--	1.0 (K1)	a*	same as above	Marking, et al (1970), AMIC-6391
4"-bromo-2-methyl-3-nitrosalicylanilide	Perca flavescens	BSA	--	0.1(K2)	a*	same as above	Marking,et al (1970), AMIC-6391
4"-bromo-3-nitrosalicylanilide	Salmo gairdneri	BSA	--	1.0 (K 3 hr)	a*	same as above	Marking,et al (1970), AMIC-6391
4"-bromo-3-nitrosalicylanilide	Carassius auratus	BSA	--	1.0 (K1)	a*	same as above	Marking,et al (1970), AMIC-6391
4"-bromo-3-nitrosalicylanilide	Cyprinus carpio	BSA	--	0.1 (K 3 hr)	a*	same as above	Marking, etal (1970), AMIC-6391
4"-bromo-3-nitrosalicylanilide	Pimephales promelas	BSA	--	1.0 (K 3 hr)	a*	same as above	Marking,et al (1970), AMIC-6391
4"-bromo-3-nitrosalicylanilide	Ictalurus melas	BSA	--	1.0 (K1)	a*	same as above	Marking,et al (1970), AMIC-6391
4"-bromo-3-nitrosalicylanilide	Lepomis cyanellus	BSA	--	1.0 (K 3 hr)	a*	same as above	Marking,et al (1970), AMIC-6391
4"-bromo-3-nitrosali	Lepomis	BSA	--	1.0 (K1)	a*	same as above	Marking,et

cylanilide	macrochirus						al (1970), AMIC-6391
4"-bromo-3-nitrosali cylanilide	Perca flavescens	BSA	--	0.1 (K1)	a*	same as above	Marking,et al (1970), AMIC-6391
4"-bromo-5-bromo-3-nitrosalicylanilide	Salmo gairdneri	BSA	--	0.1 (K1)	a*	same as above	Marking,et al (1970), AMIC-6391
4"-bromo-5-bromo-3-nitrosalicylanilide	Carassius auratus	BSA	--	1.0(K1)	a*	same as above	Marking,et al (1970), AMIC-6391
4"-bromo-5-bromo-3-nitrosalicylanilide	Cyprinus carpio	BSA	--	0.1 (K4)	a*	same as above	Marking, etal (1970), AMIC-6391
4"-bromo-5-bromo-3-nitrosalicylanilide	Pimephales promelas	BSA	--	0.1 (K2)	a*	same as above	Marking,et al (1970), AMIC-6391
4"-bromo-5-bromo-3-nitrosalicylanilide	Ictalurus melas	BSA	--	0.1 (K4)	a*	same as above	Marking,et al (1970), AMIC-6391
4"-bromo-5-bromo-3-nitrosalicylanilide	Lepomis cyanellus	BSA	--	0.1(K4)	a*	same as above	Marking,et al (1970), AMIC-6391
4"-bromo-5-bromo-3-nitrosalicylanilide	Lepomis macrochirus	BSA	--	0.1 (K2)	a*	same as above	Marking,et al (1970), AMIC-6391
4"-bromo-5-bromo-3-nitrosalicylanilide	Perca flavescens	BSA	--	0.1 (K1)	a*	same as above	Marking,et al (1970), AMIC-6391
4"-chloro-2"-methyl-nitrosalicylanilide	Pimephales promelas	BSA	--	1.0 (K1)	a*	same as above	Marking, et al (1970), AMIC-6391
4"-chloro-2"-methyl-nitrosalicylanilide	Ictalurus melas	BSA	--	1.0 (K 3 hr)	a*	same as above	Marking, et al (1970), AMIC-6391
4"-chloro-2"-methyl-nitrosalicylanilide	Lepomis cyanellus	BSA	--	1.0 (K1)	a*	same as above	Marking, et al (1970), AMIC-6391
4"-chloro-2"-methyl-	Lepomis	BSA	--	1.0 (K1)	a*	same as above	Marking, et

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
nitrosalicylanilide	macrochirus						al (1970), AMIC-6391
4"-chloro-2"-methyl-nitrosalicylanilide	Perca flavescens	BSA	--	1.0 (K 3 hr)	a*	same as above	Marking, et al (1970), AMIC-6391
4"-chloro-2"-methyl-nitrosalicylanilide	Salmo gairdneri	BSA	--	1.0 (K 3 hr)	a*	same as above	Marking, et al (1970), AMIC-6391
4"-chloro-2"-methyl-nitrosalicylanilide	Carassius auratus	BSA	--	1.0 (K1)	a*	same as above	Marking, et al (1970), AMIC-6391
4"-chloro-2"-methyl-nitrosalicylanilide	Cyprinus carpio	BSA	--	1.0 (K1)	a*	same as above	Marking, et al (1970), AMIC-6391
4"-chloro-3-nitrosalicylanilide	Salmo gairdneri	BSA	--	1.0 (K1)	a*	same as above	Marking,et al (1970), AMIC-6391
4"-chloro-3-nitrosalicylanilide	Carassius auratus	BSA	--	1.0 (K1)	a*	same as above	Marking,et al (1970), AMIC-6391
4"-chloro-3-nitrosalicylanilide	Cyprinus carpio	BSA	--	1.0 (K1)	a*	same as above	Marking,et al (1970), AMIC-6391
4"-chloro-3-nitrosalicylanilide	Pimephales promelas	BSA	--	1.0 (K3 hr)	a*	same as above	Marking, et al (1970), AMIC-6391
4"-chloro-3-nitrosalicylanilide	Ictalurus melas	BSA	--	1.0 (K 3 hr)	a*	same as above	Marking,et al (1970), AMIC-6391
4"-chloro-3-nitrosalicylanilide	Lepomis cyanellus	BSA	--	1.0 (K1)	a*	same as above	Marking,et al (1970), AMIC-6391
4"-chloro-3-nitrosalicylanilide	Lepomis macrochirus	BSA	--	1.0 (K1)	a*	same as above	Marking,et al (1970), AMIC-6391

4"-chloro-3-nitrosalicylanilide	Perca flavescens	BSA	--	1.0 (K1)	a*	same as above	Marking, et al (1970), AMIC-6391
4"-chloro-5-bromo-nitrosalicylanilide	Salmo gairdneri	BSA	--	0.1 (K1)	a*	same as above	Marking, et al (1970), AMIC-6391
4"-chloro-5-bromo-nitrosalicylanilide	Carassius auratus	BSA	--	1.0 (K1)	a*	same as above	Marking, et al (1970), AMIC-6391
4"-chloro-5-bromo-nitrosalicylanilide	Cyprinus carpio	BSA	--	0.1 (K2)	a*	same as above	Marking, et al (1970), AMIC-6391
4"-chloro-5-bromo-nitrosalicylanilide	Pimephales promelas	BSA	--	0.1 (K2)	a*	same as above	Marking, et al (1970), AMIC-6391
4"-chloro-5-bromo-nitrosalicylanilide	Ictalurus melas	BSA	--	1.0 (K 3 hr)	a*	same as above	Marking, et al (1970), AMIC-6391
4"-chloro-5-bromo-nitrosalicylanilide	Lepomis cyanellus	BSA	--	0.1 (K4)	a*	same as above	Marking, et al (1970), AMIC-6391
4"-chloro-5-bromo-nitrosalicylanilide	Lepomis macrochirus	BSA	--	0.1 (K2)	a*	same as above	Marking, et al (1970), AMIC-6391
4"-chloro-5-bromo-nitrosalicylanilide	Perca flavescens	BSA	--	0.1 (K1)	a*	same as above	Marking, et al (1970), AMIC-6391
4"-chloro-5-nitrosalicylanilide	Salmo gairdneri	BSA	--	1.0 (K1)	a*	same as above	Marking, et al (1970), AMIC-6391
4"-chloro-5-nitrosalicylanilide	Carassius auratus	BSA	--	10 (K2)	a*	same as above	Marking, et al (1970), AMIC-6391
4"-chloro-5-nitrosalicylanilide	Cyprinus carpio	BSA	--	10 (K4)	a*	same as above	Marking, et al (1970), AMIC-6391
4"-chloro-5-nitrosalicylanilide	Pimephales promelas	BSA	--	1.0(K1)	a*	same as above	Marking, et al (1970), AMIC-6391

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
4"-chloro-5-nitro salicylanilide	Ictalurus melas	BSA	--	1.0 (K1)	a*	same as above	Marking, et al (1970), AMIC-6391
4"-chloro-5-nitro salicylanilide	Lepomis cyanellus	BSA	--	1.0 (K1)	a*	same as above	Marking, et al (1970), AMIC-6391
4"-chloro-5-nitro salicylanilide	Lepomis macrochirus	BSA	--	1.0 (K1)	a*	same as above	Marking, et al (1970), AMIC-6391
4"-chloro-5-nitro salicylanilide	Perca flavescens	BSA	--	1.0 (K1)	a*	same as above	Marking, et al (1970), AMIC-6391
4"-iodo-3-nitro salicylanilide	Ictalurus nebulosus (2.5-6.0in.)	L	--	5.0 (K)	a,c,g	Brown bullheads were subjected to solutions of 4"-iodo-nitrosalicylanilide in laboratory jars some of which contained bottom sediments of different depths up to 2 inches. Upon exposure to the toxicant, some of the bullheads buried themselves in the sediments thereby surviving the chemical treatment 8 to 16 days. The phenomenon of burying appeared to be temperature dependent.	Loeb, et al (1966), AMIC-6199
4"-iodo-3-nitro salicylanilide	Ictalurus nebulosus (2.5-6.0 IN.)	L	--	2.5 (partial K)	a,c,g	same as above	Loeb, et al (1966), AMIC-6199
4"-iodo-3-nitro salicylanilide	Salmo gairdneri	BSA	--	0.1 (K2)	a*	Twenty-nine nitrosalicylanilides and related compounds were evaluated for their relative toxic effect to selected fish. Potency varied with type and position of substitutions. Several compounds were selectively toxic to yellow perch. Goldfish were the most resistant to the salicylanilides.	Marking, et al (1970), AMIC-6391
4"-iodo-3-nitro salicylanilide	Carassius auratus	BSA	--	1.0 (K 3 hr)	a*	same as above	Marking,et al (1970), AMIC-6391
4"-iodo-3-nitro salicylanilide	Cyprinus carpio	BSA	--	0.1 (K1)	a*	same as above	Marking, etal (1970), AMIC-6391
4"-iodo-3-nitro	Pimephales	BSA	--	0.1 (K1)	a*	same as above	Marking,et

salicylanilide	promelas						al (1970), AMIC-6391
4"-iodo-3-nitrosalicylanilide	Ictalurus melas	BSA	--	0.1 (K1)	a*	same as above	Marking, etal (1970), AMIC-6391
4"-iodo-3-nitrosalicylanilide	Lepomis cyanellus	BSA	--	1.0 (K 3 hr)	a*	same as above	Marking,et al (1970), AMIC-6391
4"-iodo-3-nitrosalicylanilide	Lepomis macrochirus	BSA	--	0.1 (K2)	a*	same as above	Marking, et al (1970), AMIC-6391
4"-iodo-3-nitrosalicylanilide	Perca flavescens	BSA	--	0.1(K1)	a*	same as above	Marking,et al (1970), AMIC-6391
4"-iodo-5-nitrosalicylanilide	Salmo gairdneri	BSA	--	1.0 (K1)	a*	same as above	Marking, et al (1970), AMIC-6391
4"-iodo-5-nitrosalicylanilide	Carassius auratus	BSA	--	1.0 (K2)	a*	same as above	Marking, etal (1970), AMIC-6391
4"-iodo-5-nitrosalicylanilide	Cyprinus carpio	BSA	--	1.0 (K2)	a*	same as above	Marking, et al(1970), AMIC-6391
4"-iodo-5-nitrosalicylanilide	Pimephales promelas	BSA	--	1.0 (K1)	a*	same as above	Marking,et al (1970), AMIC-6391
4"-iodo-5-nitrosalicylanilide	Ictalurus melas	BSA	--	1.0 (K1)	a*	same as above	Marking, et al(1970, AMIC-6391
4"-iodo-5-nitrosalicylanilide	Lepomis cyanellus	BSA	--	1.0 (K2)	a*	same as above	Marking, et al(1970), AMIC-6391
4"-iodo-5-nitrosalicylanilide	Lepomis macrochirus	BSA	--	1.0 (K1)	a*	same as above	Marking, et al(1970), AMIC-6391

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
4"-iodo-5-nitrosalicylanilide	Perca flavescens	BSA	--	1.0 (K1)	a*	same as above	Marking,et al (1970), AMIC-6391
4"-methoxy-2"-nitro-3-nitrosalicylanilide	Salmo gairdneri	BSA	--	1.0 (K1)	a*	Twenty-nine nitrosalicylanilides and related compounds were evaluated for their relative toxic effect to selected fish. Potency varied with type and position of substitutions. Several compounds were selectively toxic to yellow perch. Goldfish were the most resistant to the salicylanilides.	Marking, et al (1970), AMIC-6391
4"-methoxy-2"-nitro-3-nitrosalicylanilide	Carassius auratus	BSA	--	10 (K 3 hr)	a*	same as above	Marking, et al (1970), AMIC-6391
4"-methoxy-2"-nitro-3-nitrosalicylanilide	Cyprinus carpio	BSA	--	10 (K 3 hr)	a*	same as above	Marking, et al (1970), AMIC-6391
4"-methoxy-2"-nitro-3-nitrosalicylanilide	Pimephales promelas	BSA	--	10 (K 3 hr)	a*	same as above	Marking, et al (1970), AMIC-6391
4"-methoxy-2"-nitro-3-nitrosalicylanilide	Ictalurus melas	BSA	--	1.0 (K1)	a*	same as above	Marking, et al (1970), AMIC-6391
4"-methoxy-2"-nitro-3-nitrosalicylanilide	Lepomis cyanellus	BSA	--	10 (K1)	a*	same as above	Marking, et al (1970), AMIC-6391
4"-methoxy-2"-nitro-3-nitrosalicylanilide	Lepomis macrochirus	BSA	--	1.0 (K1)	a*	same as above	Marking, et al (1970), AMIC-6391
4"-methoxy-2"-nitro-3-nitrosalicylanilide	Perca flavescens	BSA	--	1.0 (K1)	a*	same as above	Marking, et al (1970), AMIC-6391
5-bromo-3-nitrosalicylic acid	Salmo gairdneri	BSA	--	1.0 (K 3 hr)	a*	Twenty-nine nitrosalicylanilides and related compounds were evaluated for their relative toxic effect to selected fish. Potency varied with type and position of substitutions. Several	Marking, et al (1970), AMIC-6391

						compounds were selectively toxic to yellow perch. Goldfish were the most resistant to the salicylanilides.	
5-bromo-3-nitrosalic ylic acid	Carassius auratus	BSA	--	1.0 (K1)	a*	same as above	Marking, et al (1970), AMIC-6391
5-bromo-3-nitrosalic ylic acid	Cyprinus carpio	BSA	--	1.0 (K1)	a*	same as above	Marking, et al (1970), AMIC-6391
5-bromo-3-nitrosalic ylic acid	Pimephales promelas	BSA	--	1.0 (K1)	a*	same as above	Marking, et al (1970), AMIC-6391
5-bromo-3-nitrosalic ylic acid	Ictalurus melas	BSA	--	1.0 (K1)	a*	same as above	Marking, et al (1970), AMIC-6391
5-bromo-3-nitrosalic ylic acid	Lepomis cyanellus	BSA	--	1.0 (K1)	a*	same as above	Marking, et al (1970), AMIC-6391
5-bromo-3-nitrosalic ylic acid	Lepomis macrochirus	BSA	--	1.0 (K1)	a*	same as above	Marking, et al (1970), AMIC-6391
5-bromo-3-nitrosalic ylic acid	Perca flavescens	BSA	--	0.1 (K1)	a*	same as above	Marking, et al (1970), AMIC-6391
5-bromo-3-sec-butyl-6-methyluracil	Phormidium ambiguum	L	--	0.5-10.0 (NTE)	--	Of 74 chemicals evaluated as algicides, only 9 were more toxic than $CuSO_4$. None inhibited growth of mat-forming algae for more than 2 weeks. $CuSO_4$ formulated with certain wetting agents was more toxic than $CuSO_4$ alone. Copper chloramine was also found to be more toxic than $CuSO_4$. No wetting agents were found to be inhibitory at the concentrations investigated (0.05 and 0.005 ppm). Also reported are factors affecting growth of algae in canals to determine whether there were leads to controlling algae by environmental management. No practical environmental means were found.	Otto (1970), AMIC-892
5-methyl 2-(1-methyl-n-heptyl) -4,6-dinitrophenyl-	Rasbora heteromorpha	BCFA and BSA	--	0.52 (T2)	a*,c,e,f, hard (HW) or soft	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a	Alabaster (1969), AMIC-5425

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
thiol carbonate					(SW) synthetic dilution water, or seawater for some species	wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	
5,8-dihydroxyl-1,2,3,4,9,9-hexachloro-1,4-methano-1,4-dihydronaphthalene	Phormidium ambiguum	L	--	0.5-10.0 (33 percent growth inhibited 14)	--	Of 74 chemicals evaluated as algicides, only 9 were more toxic than $CuSO_4$. None inhibited growth of mat-forming algae for more than 2 weeks. $CuSO_4$ formulated with certain wetting agents was more toxic than $CuSO_4$ alone. Copper chloramine was also found to be more toxic than $CuSO_4$. No wetting agents were found to be inhibitory at the concentrations investigated (0.05 and 0.005 ppm). Also reported are factors affecting growth of algae in canals to determine whether there were leads to controlling algae by environmental management. No practical environmental means were found.	Otto (1970), AMIC-892
5"-chloro-2"-methoxy-3-nitrosalicylanilide	Salmo gairdneri	BSA	--	1.0 (K 3 hr)	a*	Twenty-nine nitrosalicylanilides and related compounds were evaluated for their relative toxic effect to selected fish. Potency varied with type and position of substitutions. Several compounds were selectively toxic to yellow perch. Goldfish were the most resistant to the salicylanilides.	Marking, et al (1970), AMIC-6391
5"-chloro-2"-methoxy-3-nitrosalicylanilide	Carassius auratus	BSA	--	10 (K1)	a*	same as above	Marking, et al (1970), AMIC-6391
5"-chloro-2"-methoxy-3-nitrosalicylanilide	Cyprinus carpio	BSA	--	1.0 (K1)	a*	same as above	Marking, et al (1970), AMIC-6391
5"-chloro-2"-methoxy-3-nitrosalicylanilide	Pimephales promelas	BSA	--	1.0 (K1)	a*	same as above	Marking, et al (1970), AMIC-6391

5"-chloro-2"-methoxy -3-nitrosalicyl anilide	Ictalurus melas	BSA	--	1.0 (K1)	a*	same as above	Marking, et al (1970), AMIC-6391
5"-chloro-2"-methoxy -3-nitrosalicyl anilide	Lepomis cyanellus	BSA	--	1.0 (K1)	a*	same as above	Marking, et al (1970), AMIC-6391
5"-chloro-2"-methoxy -3-nitrosalicyl anilide	Lepomis macrochirus	BSA	--	1.0 (K1)	a*	same as above	Marking, et al (1970), AMIC-6391
5"-chloro-2"-methoxy -3-nitrosalicyl anilide	Perca flavescens	BSA	--	1.0 (K1)	a*	same as above	Marking, et al (1970), AMIC-6391
6,7-Dihydrodipyrido (1,2-a:2'1'-c) pyrazidiinium salt (Diquat)	Phormidium ambiguum	L	--	0.5-10.0 (66 percent growth inhibited 14)	--	Of 74 chemicals evaluated as algicides, only 9 were more toxic than $CuSO_4$. None inhibited growth of mat-forming algae for more than 2 weeks. $CuSO_4$ formulated with certain wetting agents was more toxic than $CuSO_4$. Copper chloramine was also found to be more toxic than $CuSO_4$. No wetting agents were found to be inhibitory at the concentrations investigated (0.05 and 0.005 ppm). Also reported are factors affecting growth of algae in canals to determine whether there were leads to controlling algae by environmental management. No partial environmental means were found.	Otto (1970), AMIC-892

APPENDIX B

SPECIES INDEX

Accipiter cooperii - A-159, 360
Acroneuria - A-54, 76, 82, 92, 247, 280, 306, 330, 452
Acroneuria lycorias - A-269
Aechmophorus occidentalis - A-115, 130, 157
Agmenellum quadruplicatum - A-7, 199, 234, 278, 376, 377
Agonus cataphractus - A-23, 24, 26, 28, 49, 50, 53, 75, 80, 81, 103, 206, 221, 232, 301, 311, 334, 393, 404, 406, 414
Alewife - A-174, 206
Algae - A-149
Alosa pseudoharengus - A-29, 55, 76, 82, 96, 117, 131, 166, 427, 440
Ambassis safgha - A-308, 369
Ambloplites rupestris - A-117, 119, 131, 133, 166, 176
Ameirus nebulosus - A-118, 132, 176
American smelt - A-174, 206
Amia calva - A-18
Amphidinium carteri - A-105, 335
Amphipnous cuchia - A-180, 263, 373
Anabaena - A-9
Anabas testudineus - A-178, 263, 373
Anacystis nidulans - A-7, 199, 233, 278, 376, 377
Anas cyanoptera - A-158, 360
Anguilla rostrata - A-113, 121, 141, 266, 355
Anisoptera - A-178, 264, 373
Anisotremis davidsoni - A-149, 354
Aplodinotus grunniens - A-19
Aquatic plants - A-149
Aquila chrysaetos - A-159, 202, 360
Archoplites interruptus - A-115, 116
Arctic grayling - A-46, 124, 146, 197, 354, 422
Artemia salina - A-307
Artemia spp. - A-148
Asellus brevicaudus - A-14, 184, 190, 191, 217, 246, 320, 397, 398, 401, 438, 446, 462, 464, 465
Asplanchnopus - A-112, 121, 136, 313
Asterias forbesi - A-68
Asterias rubens - A-10, 65, 75, 302, 334, 446

Backswimmers - A-40
Belostoma indica - A-180, 264, 373
Benthic insects - A-177
Betta splendens - A-48, 244
Bigmouth buffalo - A-45, 123, 144, 196, 352, 420
Birds - A-150
Black bullhead - A-45, 123, 145, 197, 353, 421
Black crappie - A-45, 124, 145, 197, 353, 421
Bloater - A-44, 123, 144, 174, 195, 207, 352, 420

Blue catfish - A-44, 71, 122, 144, 261, 352, 420
Bluegills - A-44, 122, 146, 195, 346, 351, 419
Blue-green sunfish - A-435, 436
BOD - A-22, 66, 100, 276, 292, 409
Bottom invertebrates - A-168
Boyeria vinosa - A-269
Brachionus - A-179, 265, 374
Brachycentrus americanus - A-269
Brachydanio rerio - A-2, 7, 62, 211, 250, 370, 382, 449
Bridgelip sucker - A-46, 124, 146, 197, 354, 421
Brevoortia patronus - A-27
Brook trout - A-269
Brown bullhead - A-43, 71, 125, 147, 175, 195, 207, 260, 351, 419
Bucephala clangula - A-115
Bugula neritina - A-89, 306, 452

Callibaetis sp. - A-185, 186, 218
Callinectes sapidus - A-27, 28
Cambarus bartoni - A-150
Campeloma decisum - A-94, 95
Campeloma sp. - A-119, 133, 176
Cancer magister - A-127, 422
Carassius auratus - A-18, 30, 41, 52, 55, 64, 97, 114, 128, 154, 155, 164, 235, 247, 248, 258, 277, 279, 280, 284, 298, 308, 309, 317, 365, 391, 403, 428, 431, 441, 449, 454, 458, 467, 468, 469, 470, 471, 472, 473, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488
Carcinus maenas - A-3, 33, 34, 47, 48, 68, 79, 86, 87, 90, 103, 170, 205, 213, 224, 227, 242, 252, 254, 270, 279, 307, 329, 334, 337, 340, 368, 378, 379, 381, 399, 400, 401, 402, 405, 408, 414, 434,
Cardium edule - A-10, 22, 24, 26, 28, 29, 32, 33, 34, 47, 49, 50, 54, 65, 67, 75, 79, 80, 81, 85, 86, 91, 101, 104, 110, 170, 181, 206, 213, 221, 224, 225, 227, 232, 242, 245, 250, 253, 254, 278, 279, 291, 301, 302, 207, 311, 323, 329, 334, 337, 341, 346, 349, 369, 378, 379, 399, 400, 401, 402, 405, 406, 409, 414, 425, 434
Carp - A-43, 71, 122, 147, 175, 195, 260, 351, 419
Carpiodes cyprinus - A-20
Carpiodes sp. - A-198
Catostomus commersoni - A-20, 82, 105, 108, 117, 118, 131, 133, 165, 176, 277, 297, 337, 458
Ceriodaphnia - A-179, 265, 376
Cerorhinca monocerata - A-161, 362
Chaetoceros sp. - A-105, 335
Chain pickerel - A-43, 125, 146, 194, 350, 419
Channa punctatus - A-7, 177, 180, 181, 263, 372
Channel catfish - A-40, 43, 71, 122, 147, 175, 195, 207, 260, 345, 351, 419
Chara sp. - A-345
Chironomus sp. - A-7, 129, 130, 134, 135
Chironomus tentans - A-313
Chiselmouth - A-46, 124, 145, 197, 353, 421
Chlamydotheca arcuata - A-8, 203

Chrosomus eos - A-18
Closterium - A-179, 265, 376
Clupea harengus - A-113, 121, 141, 266, 355, 447, 448
Coho salmon - A-6, 69, 101, 175, 207, 246, 253, 268, 276, 365, 379, 393, 409
Coleps - A-112, 120, 136, 313
Copepods - A-72, 73, 203, 204, 238, 239, 267, 285, 286, 299, 300, 371, 411, 412, 432
Coregonus artedii - A-29, 55, 82, 96, 427, 441, 454
Coregonus clupeaformis - A-17, 29, 30, 31, 51, 55, 56, 77, 82, 96, 97, 280, 281, 302, 310, 331, 393, 394, 427, 429, 441, 454, 455
Coregonus hoyi - A-29, 51, 55, 83, 96, 428, 441, 454
Coscinodiscus - A-112, 120, 137, 313
Cottus bairdi - A-114, 126, 138, 151, 200
Crangon crangon - A-2, 3, 5, 10, 22, 23, 24, 26, 28, 29, 32, 33, 34, 36, 38, 47, 49, 50, 54, 66, 67, 79, 80, 81, 86, 87, 91, 101, 102, 103, 104, 107, 110, 182, 206, 213, 214, 221, 224, 225, 227, 231, 232, 242, 243, 245, 248, 250, 251, 254, 255, 256, 257, 268, 270, 277, 286, 287, 289, 301, 302, 307, 311, 319, 323, 328, 329, 337, 338, 341, 346, 349, 363, 364, 369, 370, 371, 376, 378, 379, 381, 386, 388, 389, 391, 394, 399, 401, 402, 403, 405, 406, 409, 415, 425, 426, 434, 446, 447, 459
Crangon septemspinosa - A-67
Crassostrea commercialis - A-307
Crassostrea virginica - A-4, 13, 14, 26, 103, 169, 181, 204, 205, 217, 220, 223, 230, 231, 233, 240, 260, 284, 300, 301, 305, 326, 340, 343, 364, 367, 377, 389, 394, 398, 416, 418, 424, 425, 438, 463, 464, 465
Crepidostomum farionis - A-222
Culex pipiens - A-112, 120, 133, 134, 136, 312
Cybister sp. - A-178, 264, 373
Cyclops - A-179, 265, 374
Cyclops bicuspidatus - A-72, 73, 168, 203, 204, 238, 239, 285, 286, 299, 300, 371, 411, 412, 432, 433
Cyclops varicans - A-72, 73, 168, 203, 204, 238, 239, 285, 286, 299, 300, 371, 411, 412, 432, 433
Cyclops vernalis - A-72, 73, 168, 203, 204, 238, 239, 285, 286, 299, 300, 371, 411, 412, 432, 433
Cyclotella nana - A-105, 335
Cynoscion nebulosus - A-27
Cypridopsis vidua - A-14, 185, 191, 217, 246, 320, 397, 298, 400, 439, 446, 463, 464, 465
Cyprinodon variegatus - A-68, 176, 241
Cyprinus carpio - A-9, 19, 41, 64, 117, 118, 131, 132, 164, 166, 176, 198, 258, 277, 284, 296, 298, 299, 317, 431, 449, 467, 468, 469, 470, 471, 472, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488
Cypris - A-279, 265, 374

Daphnia - A-179, 264, 267, 374
Daphnia magna - A-6, 7, 14, 69, 112, 114, 115, 120, 128, 129, 133, 134, 136, 184, 191, 217, 246, 312, 320, 397, 398, 400, 439, 446, 462, 463, 464, 465, 466

Diaptomus - A-180, 264
Diatomella - A-112, 120, 137, 313
Diatoms - A-112, 120, 137, 313
Diploneis - A-112, 120, 137, 313
Dragonflies - A-40
Dunaliella tertiolecta - A-105, 335
Dytiscus sp. - A-178, 264, 334, 373

Elanus leucurus - A-159, 360
Emerald shimer - A-174
Enallagma sp. - A-189, 190, 218
Endomychura craveri - A-155, 201, 230, 357
Engraulis mordax - A-126, 422
Ephemerella - A-54, 76, 82, 92, 248, 280, 306, 330, 452
Ephemerella subvaria - A-269
Esomus danrica - A-178, 263, 373
Esox lucius - A-17, 18, 31, 56, 77, 97, 98, 119, 133, 176, 198, 199, 270, 271, 277, 281, 303, 310, 315, 331, 394, 429, 442, 455
Esox niger - A-113, 117, 121, 131, 141, 166, 266, 297, 355
Estigmene acrea - A-111, 119, 135, 312
Eucalia inconstans - A-20
Euclanis - A-112, 121, 136, 313
Eucyclops agilis - A-72, 73, 168, 203, 204, 238, 239, 283, 284, 299, 300, 371, 411, 412, 432, 433
Euglena - A-9
Eupera singleyi - A-239, 433

Falco columbarius - A-159, 361
Falco peregrinus - A-162, 201, 202, 261, 356
Falco sparverius - A-159, 160, 361
Fathead minnow - A-74
Fish (not specified) - A-7, 13, 34, 62, 88, 109, 143, 150, 181, 193, 212, 216, 221, 223, 225, 231, 233, 277, 281, 286, 295, 301, 305, 365, 371, 372, 386, 388, 398, 415, 418, 466, 467
Flannelmouth sucker - A-45, 123, 145, 196, 353, 421
Flathead catfish - A-45, 123, 144, 196, 352, 420
Fregata magnificens - A-158, 359
Freshwater drum - A-44, 122, 144, 170, 196, 206, 352, 420
Freshwater mussels - A-150
Fulmanus glacialis - A-157, 358
Fundulus diaphanus - A-132, 167
Fundulus heteroclitus - A-23, 51, 54, 68, 79, 108, 117, 131, 166, 227, 228, 319, 327, 341, 342, 363, 414, 430
Fundulus majalis - A-68

Gadus macrocephalus - A-127, 153, 423
Gadus morhua - A-121, 355, 429
Galeolaria caespitosa - A-89, 306
Gambusia affinis - A-112, 120, 136, 141, 142, 147, 169, 205, 236, 237, 238, 286, 312, 368, 390
Gammarus fasciatus - A-13, 35, 41, 129, 133, 134, 184, 190, 191, 215, 217, 222, 242, 246, 271, 273, 319, 338, 363, 384, 397, 400, 416, 430, 439, 445, 462, 464, 465

Gammarus oceanicus - A-24, 25, 101, 102, 448
Gammarus pseudolimnaeus - A-69, 95, 271
Gammarus sp. - A-114, 126, 138, 151, 200, 235
Gastrotricha - A-179, 264, 376
Gerris - A-267
Gizzard shad - A-44, 71, 122, 143, 174, 195, 208, 261, 351, 419
Golden shiner - A-435, 436
Goldeye - A-45, 145, 196, 351, 352, 420
Goldfish - A-43, 123, 125, 146, 170, 194, 419
Green sunfish - A-346

Haliotus corrugata - A-149, 355
Haliotis rufescens - A-149, 354
Halocyptena microsoma - A-163, 357
Heteropneustes fossilis - A-178, 263, 334, 373
Hexagenia bilineata - A-7, 129, 133, 135
Hinnites multirugosis - A-149, 354
Hippoglossoides platessoides - A-121, 356
Homarus americanus - A-447
Hyallela azteca - A-189, 219
Hydrophilus sp. - A-179, 265, 374
Hydroprogne caspia - A-160, 362
Hydropsyche - A-54, 76, 82, 92, 248, 280, 306, 330, 452
Hydropsyche betteni - A-269

Ictalurus catus - A-20, 116, 165
Ictalurus melas - A-20, 41, 63, 164, 199, 258, 277, 284, 298, 317, 431, 449, 467, 468, 469, 470, 471, 472, 473, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 489
Ictalurus nebulosus - A-21, 117, 131, 166, 350, 484
Ictalurus punctatus - A-7, 20, 40, 59, 63, 163, 198, 249, 258, 277, 283, 298, 315, 316, 390, 431, 448
Ictiobus cyprinellus - A-20, 198
Invertebrates - A-150
Ischnura verticalis - A-129, 134, 135
Isochrysis galbana - A-105, 335
Isogenus frontalis - A-270

Kelletia kelletii - A-149, 355
Kiyi - A-171, 208
Klamath sucker - A-124, 145, 353, 421
Kuklia sandvicensis - A-169, 205, 287, 368

Labeo rohita - A-177, 266, 333, 372
Lagodon rhomboides - A-25, 27, 28
Lake herring - A-171, 208
Lake trout - A-44, 123, 144, 171, 196, 208, 352, 420
Lake whitefish - A-44, 123, 144, 171, 196, 209, 352, 420
Largemouth bass - A-43, 71, 125, 147, 195, 351, 419
Largescale sucker - A-46, 124, 145, 197, 353, 421
Larus delawarensis - A-115, 130

Larus heermani - A-156, 357
Larus occidentalis - A-160, 361
Larus spp. - A-115, 130
Lavinia exilicauda - A-116
Lebistes reticulatus - A-169, 205, 267, 287, 368, 381, 450
Leiostomus xanthurus - A-25
Lepdotius floridanus - A-199
Lepisosteus platostomus - A-17
Lepomis auritus - A-118, 132, 167
Lepomis cyanellus - A-20, 72, 116, 201, 238, 262, 277, 283, 316, 347, 348, 394, 410, 411, 467, 468, 469, 470, 471, 472, 473, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 489
Lepomis gibbosus - A-19, 116, 131, 165
Lepomis macrochirus - A-2, 3, 4, 14, 16, 19, 21, 41, 58, 59, 64, 87, 93, 108, 117, 131, 156, 164, 166, 168, 185, 186, 191, 192, 199, 217, 239, 240, 241, 246, 249, 258, 277, 284, 295, 298, 315, 317, 320, 323, 327, 344, 347, 358, 367, 380, 382, 388, 390, 394, 397, 398, 400, 403, 404, 408, 431, 439, 446, 449, 450, 452, 457, 462, 463, 464, 465, 467, 468, 469, 470, 471, 472, 473, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 489
Lepomis microlophus - A-19, 41, 64, 164, 240, 258, 271, 284, 298, 431, 453
Libellula sp. - A-129, 130, 134, 135, 187, 219, 228
Limanda limanda - A-34, 49, 101, 382
Lepomis megalotis - A-19
Limnephilus rhombicus - A-113, 125, 137, 150, 199, 235
Limnephilus sp. - A-187, 188, 219
Limnodrilus sp. - A-410
Longnose sucker - A-46, 124, 146, 197, 354, 422
Loomelania melania - A-163, 357
Lophodytes cucullatus - A-150
Lymnaea stagnalis - A-17

Macrocyclops albidus - A-72, 73, 168, 203, 204, 238, 239, 285, 286, 299, 300, 371, 411, 412, 432, 433
Macrognathus aculeatum - A-180, 372
Mastocembelus pancalus - A-180, 372
Megaceryle alcyon - A-150
Mercenaria mercenaria - A-4, 8, 9, 10, 69, 70, 102, 103, 181, 185, 221, 222, 223, 225, 226, 233, 247, 257, 260, 286, 323, 325, 326, 327, 328, 336, 340, 342, 343, 367, 377, 385, 388, 389, 394, 415, 416, 417, 418, 433, 434, 438
Mergus merganser - A-115, 150
Merluccius productus - A-123, 128, 152, 153, 422, 423
Microcystis - A-9
Micropogon undulatus - A-27
Micropterus dolomieui - A-19, 117, 131, 166
Micropterus salmoides - A-19, 41, 64, 116, 130, 164, 188, 259, 284, 299, 316, 317, 431, 449
Minytrema melanops - A-20
Monochrysis lutheri - A-106, 335

Morone saxatilis - A-5, 22, 39, 67, 102, 285, 295, 299, 425
Mosquitofish - A-436
Muds - A-150, 345
Mya arenaria - A-68, 220
Myriophyllum spicatum - A-221
Mystus vitatus - A-180, 265, 373
Mytilus edulis - A-68, 121, 307, 355
Mytilus edulis planulatus - A-89

Nandus nandus - A-180, 265, 372
Nannochloris occulata - A-106, 335
Nassarius obsoletus - A-69
Nauplius - A-179, 264, 374
Navicula - A-112, 120, 137, 313
Negaprion brevirostris - A-69, 181, 242, 267, 323, 333, 365, 384, 386, 405, 414, 466
Nepa sp. - A-179, 265, 375
Nereis virens - A-23, 51, 69, 79, 108, 228, 319, 327, 342, 363, 430
Nine-spined stickleback - A-172, 209
Nitzschia closterium - A-106, 335
Nitzschia linearis - A-2, 3, 4, 16, 59, 60, 87, 327, 367, 380, 382, 404, 408, 450
Northern squawfish - A-46, 124, 145, 197, 353, 423
Notemigonus crysoleucas - A-72, 117, 131, 166, 262, 283, 297, 316, 347, 348, 349, 394, 411, 458
Notomatta - A-112, 121, 136, 313
Notonecta sp. - A-178, 265
Notropis analostanus - A-132, 167
Notropis hudsonius - A-30, 54, 76, 82, 97, 428, 441
Notropis cornutus - A-117, 132, 166
Nuclearia - A-112, 120, 136, 313
Nycticorax nycticorax - A-160, 361

Oceanodroma homochroa - A-157, 359
Oedogonium cardiacum - A-112, 120, 136, 312
Olisthodiscus luteus - A-106, 335
Oncorhynchus kisutch - A-35, 41, 63, 64, 148, 152, 164, 235, 252, 259, 284, 296, 299, 317, 336, 383, 385, 432, 449, 459
Oncorhynchus nerka - A-337
Oncorhynchus tshawytscha - A-94, 336, 387, 459
Ophiogomphus rubinsulensis - A-269
Orconectes nais - A-14, 40, 133, 134, 184, 190, 191, 217, 246, 320, 397, 398, 400, 440, 448, 463, 464, 465
Orconectes rusticus - A-94
Orthocyclops modestus - A-72, 73, 168, 169, 203, 204, 238, 239, 285, 286, 299, 300, 371, 411, 412, 432, 433
Orthodon microlepidotus - A-115
Oscillatoria - A-9
Osmerus mordax - A-17, 30, 31, 55, 57, 77, 83, 96, 98, 281, 303, 310, 331, 394, 428, 430, 441, 442, 448, 455
Ostrea edulis - A-49, 91, 243, 255, 307, 329, 403

Pacific oyster - A-6, 101
Pagurus longicarpus - A-68
Palaemonetes kadiakensis - A-13, 72, 110, 111, 115, 129, 133, 134, 165, 184, 170, 191, 217, 228, 237, 246, 259, 262, 263, 285, 317, 318, 320, 348, 393, 397, 400, 411, 432, 439, 446, 462, 464, 465
Palaemonetes vulgaris - A-68, 342
Pandalus montagui - A-379, 381, 394, 401, 402, 403, 409, 415, 434
Pandion haliaetus - A-159, 236, 361
Pandorina - A-179, 264, 374
Pandulus montagui - A-32, 35, 49, 80, 91, 182, 213, 224, 225, 227, 243, 247, 253, 254, 256, 279, 280, 307, 329, 337, 341, 369
Panopenus herbstii - A-199
Panulirua interruptus - A-149, 355
Paralabrax clathratus - A-11, 12, 13, 37, 38, 57, 58, 60, 61, 77, 78, 79, 83, 84, 85, 98, 99, 100, 274, 275, 281, 282, 283, 289, 290, 292, 293, 303, 304, 305, 320, 321, 322, 331, 332, 333, 375, 376, 395, 396, 397, 412, 413, 414, 443, 444, 455, 456, 457
Paralabrax nebulifer - A-149, 354
Paralichthys sp. - A-26
Paramecium - A-112, 120, 136
Parophrys vetulus - A-127, 152, 422
Pelecanus occidentalis - A-158, 202, 236, 259
Peloscolex sp. - A-410
Penaeus duorarum - A-25, 27, 28
Penaeus setiferus - A-27
Perca flavescens - A-17, 19, 30, 31, 41, 56, 57, 64, 77, 83, 97, 98, 116, 118, 130, 132, 164, 165, 176, 259, 281, 285, 297, 299, 303, 310, 317, 331, 394, 428, 430, 432, 440, 442, 449, 455, 467, 468, 469, 470, 471, 472, 473, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 489
Percopsis omiscomaycus - A-30, 56, 77, 83, 97, 428, 440
Petromyzon marinus - A-425
Phalacrocorax pelagicus - A-158, 360
Phalacrocorax peniciliatus - A-158, 359
Phalaropus fulicarus - A-160, 362
Phormidium ambiguum - A-4, 9, 10, 15, 47, 48, 59, 70, 76, 85, 87, 88, 89, 90, 92, 107, 109, 183, 215, 222, 223, 266, 271, 273, 313, 322, 328, 330, 339, 382, 383, 384, 389, 390, 395, 407, 408, 410, 426, 437, 451, 459, 460, 461, 462, 473, 474, 475, 478, 487, 488, 489
Physa gyrina - A-204, 239, 433
Physa heterostropha - A-2, 17, 109, 327, 367, 380, 382, 450
Physa integra - A-95
Physa spp. - A-111, 119, 136, 312
Pilodictus olivaris - A-20
Pimelometopon pulchrum - A-149, 354
Pimephales promelas - A-20, 22, 41, 47, 64, 66, 69, 73, 81, 93, 100, 105, 108, 140, 153, 164, 211, 214, 215, 235, 237, 245, 258, 272, 276, 278, 284, 287, 291, 292, 297, 298, 301, 317, 337, 346, 347, 409, 426, 431, 449, 452, 453, 458, 461, 467, 468, 469, 470, 471, 472, 473, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488

Pisidium sp. - A-119, 133
Pizonyx viversi - A-163, 357
Plankton - A-115
Plants - A-149
Platessa vulgaris - A-250
Platichthys flexus - A-91, 110, 225, 251, 308, 341, 369, 415, 447
Platichthys stellatus - A-127, 153, 423
Platymonas subcordiformis - A-105, 335
Pleuronectes platessa - A-104, 170, 349
Podiceps caspicus - A-163
Poecilia latipinna - A-193, 194
Poecilia reticulata - A-423, 424
Pomoxis annularis - A-156, 198, 358
Pomoxis nigromaculatus - A-19, 115, 118, 132, 156, 167, 198, 358
Porphyridium cruentum - A-105, 335
Procambarus simulans - A-40
Prosopium cylindraceum - A-29, 51, 55, 83, 96, 428, 441, 454
Protozoa - A-112, 120, 136, 313
Pseudopleuronectes americanus - A-92, 93
Pteronarcys dorsata - A-270
Ptychocheilus oregonensis - A-458
Ptychocheilus umpquae - A-459
Ptychoramphus aleuticua - A-161, 362
Puffinus creatopus - A-157, 358
Puffinus griseus - A-157, 359
Puffinus tenuirostris - A-157, 359
Pumpkinseed - A-43, 125, 147, 194, 351, 419
Puntius sophore - A-8, 177, 180, 265, 334, 373
Puntius ticto - A-46, 212, 252, 278, 297, 394, 416
Pygoscelis adeliae - A-156, 358

Rainbow trout - A-46, 124, 145, 197, 345, 353, 421, 435, 453
Rana temporaria - A-128, 154
Ranatra filiformis - A-178, 265, 334, 373
Rasbora heteromorpha - A-3, 5, 6, 11, 15, 16, 21, 23, 31, 32, 33, 34, 35, 36, 38, 39, 41, 42, 51, 52, 53, 61, 65, 66, 67, 73, 74, 75, 87, 102, 104, 106, 109, 110, 137, 139, 141, 142, 143, 182, 183, 184, 185, 192, 193, 211, 212, 216, 226, 229, 230, 232, 241, 244, 245, 246, 248, 249, 252, 255, 256, 257, 261, 267, 273, 275, 276, 288, 391, 293, 294, 297, 305, 306, 310, 318, 319, 324, 325, 326, 327, 338, 339, 344, 345, 366, 367, 370, 371, 377, 384, 385, 386, 387, 393, 402, 404, 407, 416, 417, 425, 426, 427, 430, 431, 436, 439, 442, 444, 445, 447, 448, 451, 463, 465, 466, 473, 487
Redbreast sunfish - A-122, 146, 295, 351, 421
Redhorse sucker - A-43, 71, 122, 143, 195, 351, 419
Red shiner - A-436
Rhinichthys atratulus - A-114, 118, 126, 132, 138, 139, 151, 167, 200, 201
Rita rita - A-180
Roccus americanus - A-118, 132, 166
Roccus chrysops - A-30, 52, 56, 83, 97, 199, 428, 440, 454
Roccus saxatilis - A-40, 94, 220, 229, 252, 256, 277, 380, 383, 399
Rock bass - A-44, 122, 144, 171, 195, 209, 352, 420

Rotifers - A-112, 120, 136, 313
Round whitefish - A-46, 124, 146, 171, 197, 209, 354, 422

Salmo aquabonita - A-223
Salmo clarki - A-21, 62, 63, 148, 234, 296
Salmo gairdneri - A-14, 15, 18, 21, 35, 41, 48, 63, 64, 70, 73, 91, 95, 100, 106, 148, 154, 164, 191, 192, 213, 217, 226, 229, 234, 249, 250, 251, 259, 267, 272, 276, 284, 294, 296, 299, 315, 317, 322, 324, 325, 330, 333, 336, 343, 366, 368, 370, 378, 387, 388, 390, 395, 398, 399, 405, 406, 407, 429, 432, 437, 439, 442, 445, 449, 452, 453, 454, 457, 459, 466, 467, 468, 469, 470, 471, 472, 473, 475, 476, 477, 479, 480, 481, 482, 483, 484, 485, 486, 488
Salmo salar - A-23, 24, 101, 113, 121, 141, 155, 266, 355, 447
Salmo trutta - A-18, 41, 64, 142, 143, 164, 251, 259, 284, 299, 315, 317, 432, 449
Salvelinus fontinalis - A-18, 62, 98, 107, 114, 126, 137, 138, 147, 150, 151, 152, 155, 167, 200, 234, 295, 296, 315, 407, 437, 438, 441, 448, 459
Salvelinus namaycush - A-18, 30, 51, 55, 83, 96, 309, 310, 314, 315, 428, 454
Sauger - A-45, 123, 145, 196, 353, 421
Scardium - A-112, 121, 136, 313
Scomber scombrus - A-113, 121, 141, 266, 355
Sea lamprey - A-172, 209
Sebastodes alutus - A-128, 153, 423
Sebastodes flavidus - A-127, 153, 423
Sebastodes marinus - A-121, 355
Sebastodes sp. - A-149, 354
Semotilus atromaculatus - A-114, 117, 126, 131, 138, 150, 151, 166, 200
Semotilus corporalis - A-117, 131, 166
Sialis sp. - A-114, 126, 138, 151, 200, 235
Simulium venustum - A-168
Siphlonurus sp. - A-134, 135
Skeletonema costatum - A-105
Slimy sculpin - A-172, 209
Smallmouth bass - A-46, 124, 145, 197, 353, 421
Smallmouth buffalo - A-45, 123, 144, 196, 261, 352, 420
Sorghum halpense - A-111, 119, 311
Sphaerodema annulatum - A-178, 265, 373
Spirogyra sp. - A-9, 345
Spirorbis lamellosa - A-89, 306, 451
Spottail shiner - A-172
Spotted sucker - A-44, 122, 143, 195, 351, 419
Steelhead trout - A-6, 69, 100, 245, 253, 268, 276, 365, 379, 391, 409
Stenonema candidum - A-313
Stenonema rubrum - A-269
Sterna forsteri - A-160, 361
Stizostedion vitreum - A-19, 30, 52, 56, 83, 97, 198, 314, 428, 440
Stolephorus purpurea - A-169, 205, 287, 368
Stonecat - A-172

Striped mullet - A-44, 71, 122, 144, 195, 351, 420
Strongylocentrotus franciscanus - A-149, 354
Sturnella neglecta - A-161, 363
Sula leucogaster - A-158, 202, 236, 359
Synthliboramphus antiquum - A-161, 362

Taeniopteryx nivalis - A-313
Taeniopteryx maura - A-269
Tendipedidae - A-220
Thalasseus elegans - A-156, 357
Tilapia mossambica - A-169, 205, 287, 368
Trachinotus carolinus - A-5, 93, 252, 383
Trichogaster fasciatus - A-177, 265, 372
Triturus cristatus - A-128, 154
Trout perch - A-173
Tubifex sp. - A-412
Tubifex tubifex - A-8, 73, 169, 204, 215, 228, 239, 244, 259, 277, 286, 300, 318, 349, 364, 372, 393, 412, 424, 433
Tubificids - A-267
Tyto alba - A-161, 363

Ulothrix sp. - A-8, 203
Uria aalge - A-161, 362
Urophycis tenuis - A-121, 355
Urosalpinx cineria - A-68

Volvox - A-179, 264, 374
Vorticella - A-112, 120, 136, 313

Walleye - A-45, 71, 123, 145, 173, 196, 210, 353, 421
Watersipora cucullata - A-306, 451
Whirligig beetles - A-40
White bass - A-45 , 123, 145, 173, 197, 210, 353, 421
White catfish - A-43, 125, 146, 194, 350, 419
White crappie - A-45, 123, 144, 196, 352, 420
White perch - A-43, 71, 125, 146, 173, 194, 210, 350, 418, 419
White sucker - A-42, 71, 125, 143, 173, 194, 210, 350, 418
Wolffia papulifera - A-105, 147, 184, 211, 272, 301, 394, 466

Xiphophorus maculatus - A-453

Yellow perch - A-42, 125, 146, 173, 194, 211, 350

Zenaidura macroura - A-161, 363

APPENDIX C

IDENTIFICATION OF COMMERCIAL CHEMICALS

(Note: Many of the names included in this list are tradenames and should be treated as such.)

Chemical Name	Composition
ABS	Alkyl benzene sulfonate
Acriflavine	Mixtures of 2,8-diamino-10-methylacridinium chloride and 2,4-diaminoacridine
Acrolein	see Aqualin
Actusol	No information available
Aflatoxin B1	C17H12O6
Agridip	No information available
Amitrole	3-Amino-1,2,4-triazole
Amitrol-T	3-Amino-1,2,4-triazole-ammonium thiocyanate mixture
Amphenone B	3,3-Bis [p-aminophenyl]-2-butanone-2-dihydrochloride
Antimycin A	C28H40N2O9
Aphitox	Fluoroacetamide and Lissapol
AQ	No information available
Aquaclene	No information available
Aquaclene 100	No information available
Aqualin	2-Propenal
Aquathol	Disodium salt of endothal (19.2 percent-H-Pennsalt)
Aroclor 1221	Commercial PCB with 21 percent chlorine
Aroclor 1242	Commercial PCB with 42 percent chlorine
Aroclor 1248	Commercial PCB with 48 percent chlorine
Aroclor 1254	Commercial PCB with 54 percent chlorine
Aroclor 1260	Commercial PCB with 60 percent chlorine
Aroclor 1262	Commercial PCB with 62 percent chlorine
Asuntol (Sheep dip)	see Coumaphos
Asulum	Methyl-4-aminobenzene sulfonyl-carbamate
Atlas 1901	No information available
Atlavar	Sodium chlorate, 2,4-D, Monuron mixture

Chemical Name	Composition
Atrazine	2-Chloro-4-ethylamine-6-isopropyl-amino-s-triazine
Avadex	S-2,3-Dichloroallyl diisopropylthio-carbamate
Avadex BW	S-2,3,3-Trichloroallyl-diisopropyl thiolcarbamate
Azinphosmethyl	see Guthion
Balan	see Benefin
Banner DG01	No information available
Banner DG02	No information available
Banner DG03	No information available
Banner DG04	No information available
Banvel	3,6-Dichloro-o-anisic acid
Barban	4-Chloro-2-butynyl-m-chlorocarbanilate
Basol AD6	No information available
Basol 99	No information available
Bayer 39007	N-methyl 2 isopropoxyphenyl carbamate
Bayluscide	2',5-Dichloro-4'-nitrosalicylanilide ethanolamine
Baytex	see Fenthion
Baywood 43	Maleic hydrazide, 2,4-D as triethanol, amine salt, wetting agent, water
Benazolin	No information available
Bensulide	see Betasan
Betasan	S-(O,O-Diisopropyl phosphorodithioate) ester of N-(2-mercaptoethyl) benzenesulfonamide
BHC	Benzene hexachloride
Borasceu	No information available
BP	No information available
BP 1002	No information available
BP 1100	No information available
BP 1100X	No information available
Brakontrole	4-CPA
Bromophos	see OMS-658
Bromoxynil	3,5-Dibromo-4-hydroxybenzonitrile
Busan 90	No information available
Busan 881	Organosulfur formulation
Canal Bank Weedkiller	No information available
Captan	cis-N-((trichloromethyl)thio)-4-cyclohexene-1,2-dicarboximide
Carbaryl	1-Naphthyl methylcarbamate
Carbophenothion	see Trithion
Carbyne	see Barban
Casol	No information available
Casoron	see Dichlobenil
Casoron G	see Dichlobenil
Casoron 133	see Dichlobenil
Chem-Hoe	Isopropyl N-phenylcarbamate
Chevron NI-O	No information available

Chemical Name	Composition
Chloramphenicol	(Chloromycetin) D-(-)-threo-2-dichloroacetamido-1-p-nitrophenyl-1,3-propanediol
Chloral hydrate	2,2,2-Trichloro-1,1-ethanediol
Chloramine	(N-Chloro-p-toluenesulfonamido)sodium
Chlorax	No information available
Chlordane	Mixture of 60 percent octachloro-4,7-methanotetrahydroindane and 40 percent related compounds
Chlorea	see Monuron
Chlorfenvinfos	2,4-Dichlorophenyl-1-chloroethylene diethyl phosphate
Chloroflurazole	No information available
Chloropropylate	No information available
Chlorthiamid	No information available
CI	No information available
Cleanosol	No information available
Clophen A30	No information available
Clophen A40	No information available
Clophen A50	Commercial mixture of PCB
Clophen A60	No information available
Compass	No information available
Cooper's Fly Dip	see Chlorfenvinfos
Co-Ral	O,O-Diethyl O-3-chloro-4-methyl-2-oxo-2H-1-benzopyran-7-yl-phosphorothioate
Corexit 7664	No information available
Corexit 8666	No information available
Coumaphos	see Co-Ral
Craine OSR	No information available
Crossguard	Nó information available
Crotothane	see Karathane
Crow Solvent M	No information available
Cunilate RQ 24	Oxine copper
Cuprinol	No information available
CX	No information available
Dalacide	Dalapon-Na, Sodium 2,2,3,trichloro-propionate
Dalapon	2,2 Dichloropropionic acid
D.B. Granular	No information available
DBP	4,4'-Dichlorobenzophenenone
DDD	see TDE
DDE	1,1-Dichloro-2,2-bis (p-chlorophenyl) ethylene
DDT	1,1,1-Trichloro-2,2-bis(p-chlorophenyl) ethane
DDVP	O,O-dimethyl-O-(2,2-dichlorovinyl) phosphate
Decamethonium dibromide	No information available
De De Tane	see DDT
Delrad	Dehydroabiethylamine acetate

Chemical Name	Composition
Delrad 70	Technical grade of dehydroabietylamine
Demeton methyl	see Meta-Systox
Dermol	No information available
Diazinon	0,0-Diethyl 0-(2-isopropyl-6-methyl-4-pyrimidinyl) phosphorothioate
Dicamba	see Banvel
Dicapthon	0-(2-Chloro-4-nitrophenyl)0,0-dimethyl phosphorothioate
Dichlobenil	2,6-Dichlorobenzonitrile
Dichlone	2,3-Dichloro-1,4-naphthoquinone
Dichlorofenthion	see VC-13
Dichlorophen	2,2'-Methylenebis [4-chlorophenol]
Dichlorvos	see DDVP
Dicofol	1,1-bis(p-Chlorophenyl)-2,2,2-trichloroethanol
Dieldrin	Not less than 85 percent of 1,2,3,4,10,10-hexachloro-6,7-epoxy-1,4,4a,5,6,7,8,8a-octahydro-1,4-endo-exo-5,8-dimethanonaphthanlene
Difolatan	cis-N-[(1,1,2,2-Tetrachloroethyl)thio]-4-cyclohexene-1,2-dicarboximide
Dimanin	Alkyldimethylbenzyl ammonium chloride plus urea
Dimecron	see Phosphamidon
Dimethoate	0,0-Dimethyl S-(N-methylcarbamyl-methyl) phosphorodithioate
Dimite	1,1-bis(p-Chlorophenyl)ethanol
Dinocap	see Karathane
Dinoseb	2-(sec-Butyl)-4,6-dinitrophenol
Diphenamid	N,N-Dimethyl-2,2-diphenylacetamid
Dipterex	see Dylox
Diquat	6,7-Dehydrodipyrido [1,2a:2',1'c] pyrazinedium salts
Dispersol SD	No information available
Disulfoton	0,0-Diethyl-S-[2-(ethylthio)-ethyl] phosphorodithioate
Di-Syston	see Disulfoton
Diuron	3-(3,4-Dichlorophenyl)-1.1-dimethylurea
DNOC	2-Methyl-4,6-dinitrophenol sodium salt
Dobs JN	No information available
Dobs 055	No information available
Dowicide A	0-phenylphenol, sodium salt
Dowicide G	Sodium pentachlorophenate
Dowpon	see Dalapon
Doxide (C 102)	No information available
DSS	see Dioctyl sodium sulfosuccinate
DTMC	see Dicofol
Dursban	0,0-Diethyl 0-3,5,6-trichloro-2-pyridyl phosphoro thioate
Dylox	0,0-dimethyl (2,2,2-trichloro-1-hydroxyethyl) phosphonate
E-314	No information available
EC-90	No information available

Chemical Name	Composition
Econal 13086	2,4,5-T (as butoxy ethyl ester)
Emcol H-146	No information available
Emcol 702	No information available
EMID	2,4-Dichlorophenoxy-acetamide
Emkem Spill Wash	No information available
Empilan	No information available
Emulsifier Blend 350	No information available
Endosulfan	6,7,8,9,10,10-Hexachloro-1,5,5a,6,9,9a-hexahydro-6,9-methano-2,4,3-benzodioxathiepin-3-oxide
Endothal	see Endothall
Endothall	7-Oxabicylo(2.2.1)heptane-2,3-dicarboxylic acid
Endrin	1,2,3,4,10,10-Hexachloro-6,7-epoxy-1,4,4a,5,6,7,8,8a-octahydro-1,4-endo-endo-5,8-dimethanonaphthalene
Epichlorohydrin	1-Chloro-2,3-epoxypropane
Eptam	S-Ethyl dipropylthiocarbamate
Eserine sulfate	No information available
ESSO Solvent FG-155	No information available
Essolvene	No information available
Ethanediol	No information available
Ethion	O,O,O',O'-Tetraethyl S,S'-methylene biophosphorodithioate
Ethomeen S-25	No information available
Ethyl Parathion	see Parathion
EVIK	2-(Ethylamino)-4-(isopropylamino)= 6-(methylthio)-s-triazine
Fenac	2,3,6-Trichlorophenylacetic acid or sodium salt
Fenoprop	No information available
Fenthion	O,O-Dimethyl-O-[4](methylthio)-m-tolyl]-phosphorothioate
Fentin acetate	No information available
Fenuron	3 Phenyl-1,1-dimethylurea
Finasol ESK	No information available
Finasol OSR2	No information available
Finasol SC	No information available
Flock O.P. Fly Dip	see Dichlorofenthion
Florescein sodium	9-(O-carboxyphenyl)-6-hydroxy-3-isoxanthenone
Fluorokill	Fluoroacetamide
F.O. 300B	No information available
Foilzoil	No information available
Folpet	N-(Trichloromethylthio)-phthalimide
Formothion	Phosphorodithioic acid O,O-dimethyl ester S-ester with N-formyl-2-mercapto-N-methylacetamide
Furfural	2-Furaldehyde
Gamlen CW	No information available
Gamlem D	No information available
Gamlen OSR	No information available

Chemical Name	Composition
Gamlen PBX	No information available
Gamlen WBX	No information available
Gamma BHC	see Lindane
Gesapax	see EVIK
Globe Terramycin Pet Tabs	Oxytetracycline hydrochloride
Gloquat C	No information available
Gramoxone W	see Paraquat
Griseofulvin	7-Chloro-2',4,6-trimethoxy-6'β-methyl-spiro-[benzofuran-2(3H),1' [2] cyclohexene]-3,4'-dione
Gulf Agent 1009	No information available
Guthion	O,O-Diethyl-s-[4-oxo-1,2,3-benzotriazin-3(4H)-ylmethyl]-phosphorodithioate
Heptachlor	74 percent 1,4,5,6,7,8,8a-Heptachloro-3a,4,7a-tetrahydro-4,7-methanoindene
Heptachlor epoxide	Photoisomer of Heptachlor
Herbane	3-(Hexahydro-4,7-methanoinden-5-yl)-1, a-dimethylurea
Hillvale Fly Dip	Dichlorofenthion
Histamine phosphate	No information available
Hobstone OSD	No information available
Hoc SC 1780	No information available
Holl-Chem 622	No information available
Houghtosolve	No information available
Hydrothol 191	Mono (N,N-dimethylalkylamine) salt of endothall
IAA	Indole-3-acetic acid
Ialine Brushweed Killer	No information available
Ialine grass growth regulator (Regulox)	see Maleic hydrazide
Ialine Vergicide Weedkiller D	No information available
Ialine Vergicide Weedkiller	see Vergemaster
I.C.I. Summer Sheep Dip	see Pyrimithate
Ioxynil	3,5-Diodo-4-hydroxybenzonitrile
Ioxynil Na	No information available
IPC	see Chem Hoe
Jansolv-60	No information available
Juglone	5-Hydroxy-1,4-naphthoquinone
Karathane	2-(1-Methylheptyl)-4,6-dinitrophenyl crotonate
Karmex	see Diuron
Kelthane	see Dicofol
Ketoendrin	No information available
Klofos	No information available
LAS	Linear alkylate sulfonate
Lenacil	3-Cyclohexyl-6,7-dihydro-1H-cyclopentapyrimidine-2,(3H,5H)-dione
Lindane	1,2,3,4,5,6-Hexachlorocyclohexane containing at least 99 percent gamma isomer

Chemical Name	Composition
Linuron	3-(3,4-Dichlorophenyl)-1-methoxy-1-methylurea
Lirostanol	Fentin acetate
Lissapol IPA	Mixture of the sodium salts of sulfated fatty alcohols
Lissapol NM	Mixture of the sodium salts of sulfated fatty alcohols
Lissapol NX	Mixture of the sodium salts of sulfated fatty alcohols
Lubrol APNS	No information available
Lubrol L	No information available
Magic Power	No information available
Malathion	O,O-Dimethyl phosphorodithioate of diethyl mercaptosuccinate
Maleic hydrazide	1,2-Dihydro-3,6-pyridazinedione
Manazon	No information available
Mancozeb	No information available
Maneb	Manganous ethylene bisdithiocarbamate
Manoxol	No information available
MCPA	2-Methyl-4-chlorophenoxyacetic acid
Mecarbam	No information available
Mecoprop	No information available
Menazon	S-(4,6-Diamino-s-triazin-2-ylmethyl) O,O-dimethyl phosphorodithioate
Meta-Systox	Isomeric mixture of O-[2-(ethylthio) ethyl]O,O-dimethyl phosphorothioate
Methoxychlor	2,2-bis(p-Methoxyphenyl)-1,1,1-trichloroethane
Methyl parathion	O,O-Dimethyl O-p-nitrophenyl phosphorothioate
Methylpentynol	No information available
Mevinfos (Mevinphos)	2-Carbomethoxy-1-methylvinyl dimethyl phosphate, α isomer
Milbex	No information available
MM	No information available
Moaspill	No information available
Mobilsol	No information available
Molinate	see Ordram
Monoxone	No information available
Monuron	3-(p-Chlorophenyl)-1,1-dimethylurea
Morphothion	No information available
MS-222	Tricaine methanesulfonate
Mystox LSC-P	No information available
Mystox LSE-L	No information available
Mystox LSE-P	No information available
Mystox LSL	No information available
Mystox LSL-L	No information available
Mystox LSL-P	No information available
N-3452	Alkyl(C_8-C_{18})dimethyl benzyl ammonium chloride

Chemical Name	Composition
N-3514	2-Chloro-1-nitropropane
NA	No information available
Nabam	Disodium ethylenebisdithiocarbamate
Nalco 201	Chlorinated phenol formulation
Nalco 240	Organobromine formulation
Nalco 243	Organosulfur formulation
Neburon	1-n-Butyl-3-(3,4-dichlorophenyl)-1-methylurea
Nemagon	1,2-Dibromo-3-chloropropane
New BP 1100	No information available
Nitrofurazone	5-Nitro-2-furaldehyde semicarbazone
Nitrofen	2,4-Dichlorophenyl p-Nitrophenyl ether
Norea	see Herban
Norseman	No information available
NPH 1253	see Ioxynil
NPH 1313	see Mecoprop
Nucidol Diazinon Sheep Dip	see Diazinon
Nystatin	No information available
OD	No information available
Oil Herder	No information available
Ordram	S-Ethyl hexahydro-1H-azepine-1-carbothioate
Omazene (Omazine)	Cupric dihydrazinium sulfate
OMS-658	O-(4-Bromo-2,5-dichlorophenyl) O,O-dimethyl phosphorothioate
Paraquat	1,1'-Dimethyl-4,4'-bipyridinium dichloride or 1,1'-Dimethyl-4,4'-bipyridiniumbis [methylsulfate]
Parathion	O,O-Diethyl-O-p-nitrophenyl phosphorothioate
PC	see Phosphocreatine
PCB	Polychlorinated biphenyl
Pebulate	see Tillam
Penetone X	No information available
Perolin No. 5	No information available
Perthane	1,1-Dichloro-2,2-bis(p-ethylphenyl) ethane (88 percent) plus related compounds, 12 percent
Petrolite W-1439	No information available
Phenkapton (Phencapton)	O,O-Diethyl-S-(2,5-dichlorophenyl-thiomethyl) phosphorodithioate
Phenobarbital	5-Ethyl-5-phenylbarbituric acid
Phenoxylene	No information available
Phenoxytol (Phenoxetol)	2-Phenoxyethanol
Phorate	O,O-Diethyl S-(ethylthio)-methyl phosphorodithioate
Phordene	No information available
Phosalone	see Zolone
Phosdrin	see Mevinfos

Chemical Name	Composition
Phosphamidon	2-Chloro-N,N-diethyl-3-(dimethoxyphosphinyloxy)crotonamide
Phosphocreatine	N-(Phosphonoamidino)sarcosine
Phostox	No information available
Photoaldrin	Photoisomer of Aldrin
Photodieldrin	Photoisomer of Dieldrin
Phygon	see Dichlone
Picloram	4-Amino-3,5,6-trichloropicolinic acid
PMA	Pyridylmercuric acetate
Polycell Product	Sodium carboxymethyl cellulose
Polyclens	No information available
Polycomplex A	No information available
Polycomplex A-11	No information available
Polyotic	Tetracycline hydrochloride
Polyram	Mixture of 5.2 parts by weight (83.9 percent) of ammoniates of [ethylene-bis-(dithiocarbamate)] zinc with 1 part by weight (16.1 percent) ethylene bis[dithiocarbamatic acid], bimolecular and trimolecular cyclic anhydrosulfides and disulfides
Praparat Alfol WV 1019	Hexadecanol
Princep	2-Chloro-4,6-bis(ethylamino)-s-triazine
Procaine hydrochloride	p-Aminobenzoyldiethylaminoethanol hydrochloride
Pro-Noxfish	Rotenone
Propanil	3,4-Dichloropropionanilide
Propham	see Chem Hoe
Protim	Copper pentachlorophenate plus chloronaphthalene and dieldrin
PVP-Iodine	1-Vinyl-2-pyrrolidinone polymers, iodine complex
Pyramin	5-Amino-4-chloro-2 phenyl-3 (2H)-pyridazinone
Pyrazon	see Pyramin
Pyrimithate	Phosphorothioic acid O-[2-dimethylamino)-6-methyl-4-pyrimidinyl] O,O-diethyl ester
Quinaldine	2-Methylquinoline
R-1910	Ethyl-N,N-diisobutyl thiolcarbamate
Raynap Sol B	No information available
RD 14639	N-methyl carbamate derivative
Reglone	Diquat-dibromide
Rhodamine B	[9-(O-carboxyphenyl)-6-diethylamino)=3H-xanthene-3-ylidene]diethylammonium chloride
Ridzlik	No information available
Roccal	Benzalkonium chloride
Rola OSD	No information available
Ro-Neet	S-Ethyl N-ethyl-N-cyclohexylthiocarbamate

Chemical Name	Composition
Rosin Amine D	see Delrad 70
S.D. 3562 (Bidrin)	Phosphoric acid dimethyl ester, ester with cis-3-hydroxy-N,N-dimethylcrotanamide
S.D. 8211	Phosphoric acid, 2-chloro-1-(2,5-dichlorophenyl)vinyl dimethyl ester
S.D. 8447	2-Chloro-1-(2,4,5-trichlorophenyl)vinyl dimethyl phosphate
Seasweep	No information available
Sefoil	No information available
Sesamex	No information available
Sevin	see Carbaryl
Shamash R1885	No information available
Shell D-50	2,4,D amine (triethanolamine salt)
Silvex	2-(2,4,5-Trichlorophenoxy)-propionic acid
Simazine	see Princep
Slickgone 1	No information available
Slickgone 2	No information available
Slix	No information available
S.N. 5215	No information available
Snowdrift SC98	No information available
Spill Remover	No information available
Spill-X	No information available
Streptomycin Sulfate	$2\ C_{21}H_{39}N_7O_{12} \cdot 3H_2SO_4$
Strobane	Terpene polychlorinates
Sulfisoxazole	N^1-(3,4-Dimethyl-5-isoxazolyl) sulfanilamide
Sulmet	(Sodium sulfamethazine) sodium (4,6-dimethyl-2-sulfanilamidopyramidine)
Sumithion	O,O-Dimethyl O-(4-nitro-m-tolyl)-phosphorothioate
Sutan	S-Ethyl diisobutylthiocarbamate
TCC	3,4,4'-Trichlorocarbanilide
TCP	Tritolyl phosphate ($C_{21}H_{21}O_4P$)
TDE	1,1-Dichloro-2,2-bis(p-chlorophenyl) ethane
TEPA	tris-(1-Aziridinyl)phosphine oxide
TEPP	Tetraethyl pyrophosphate
Tetradifon	4'-Chlorophenyl 2,4,5-trichlorophenyl sulfone
TFN (Lamprecid)	3-Trifluoromethyl-4-nitrophenol, sodium salt
Thimet	see Phorate
Thiolutin	No information available
Thiumet	see Polyram
Thyroxine	No information available
Tillam	S-Propyl butylethylthiocarbamate
Timsan	6.25 Percent ethyl mercury phosphate
TN	No information available

Chemical Name	Composition
TOK	see Nitrofen
Tordon C	Picloram (potassium salt) plus mecoprop
Tordon M	Picloram (potassium salt) plus MCPA
Toxaphene	Chlorinated camphene with 67-69 percent chlorine
Toxion	No information available
Treflan E.C.	see Triflurolin
Trifluralin	α,α,α-Trifluoro-2,6-dinitro-N,N-dipropyl-dipropyl-p-toluidine
Trioxone	No information available
Trithion	S-[[p-Chlorophenyl)thio]methyl] o,o-diethyl phosphorodithioate
Trixabon	Ioxynil plus Dimexan, cycluron, BIPC, emulsifier, methyl alcohol, propionic acid, and solvent naphtha
Tubotox	see Dinoseb
Ureabor	No information available
Vamidothion	No information available
Vapam	Sodium N-methyl-dithiocarbamate
VC-13	O-2,4-Dichlorophenyl O,O-diethyl phosphorothioate
Velsicol AR 50G	No information available
Venzar	see Lenacil
Vergemaster	No information available
Vernam	S-Propyl dipropylthiocarbamate
Vernolate	see Vernam
Weedazol	see Amitrole
Weedazol T-L	No information available
WL 4205	A triazine
Young's Defly	see Trithion
Zectran	4-Dimethylamino 3,5-Xylyl methyl-carbamate
Zolone	O,O-Diethyl S[(6-chloro-2-oxobenzoxazolin-3-yl)methyl] phosphorodithioate
2,4-D	2,4-Dichlorophenoxyacetic acid
2,4,5-T	2,4,5-Trichlorophenoxyacetic acid

SELECTED WATER RESOURCES ABSTRACTS

INPUT TRANSACTION FORM

1. Report No. | 2. | W

4. Title **WATER QUALITY CRITERIA DATA BOOK - VOL. 5 - EFFECTS OF CHEMICALS ON AQUATIC LIFE**

5. Report Date

6.

8. Performing Organization Report No.

7. Author(s)
Kemp, H. T.; Little, R. L.; Holoman, V. L.; Darby, R. L.

Battelle Memorial Institute, Columbus, Ohio
Columbus Laboratories

R-800942

18050 HLA

13. Type of Report and Period Covered

12. Sponsoring Organization

15. Supplementary Notes
Environmental Protection Agency report number, 18050HLA09/73

16. Abstract

This report is an extensive compilation of data on the effects of chemicals on aquatic life which were extracted from literature published during the period 1968-1972. It is an update of an earlier report entitled "Water Quality Criteria Data Book, Volume III, Effects of Chemicals on Aquatic Life" (Kemp, et al., 1971). The data are arranged alphabetically by chemical and are concisely represented in a columnar format which includes organism names, type of study, chemical effect, controlled parameters, significant comments on the test, and source of the data. The data were compiled using a program prepared as part of the work. (Little-Battelle)

17a. Descriptors Toxicity, Water pollution effects, Industrial wastes, Pesticides, Aquatic plants, Aquatic animals, Absorption, Reviews, Marine fish, Freshwater fish, Chlorinated hydrocarbon pesticides, Carbamate pesticides, Phosphothioate pesticides, Organic acids, Antibiotics (pesticides), Heavy metals, Metals, Inorganic pesticides, Biochemical oxygen demand, Thiocarbamate pesticides, Triazine pesticides, Organophosphorus pesticides, Polychlorinated biphenyls, Surfactants, Nutrients, Urea pesticides, Organic compounds, Organic pesticides, Zooplankton, Phytoplankton, Aquatic algae, Marine algae, Water birds, Chlorophyta, Pyrrophyta, Cyanophyta, Chrysophyta, Crustaceans, Mollusks, Annelids, Aquatic insects, Benthic fauna, Protozoa, Invertebrates, Diatoms, Euglenophyta, Frogs, Marine animals, Newts, Toxins, Phenolic pesticides, Dyes, Chemicals,

17b. Identifiers
Anesthetics, Oil dispersants, Echinoderms, Macroinvertebrates

17c. COWRR Field & Group 05C, 05B, 05A

18. Availability	19. Security Class. (Report)	21. No. of Pages	Send To:
	20. Security Class. (Page)	22. Price	WATER RESOURCES SCIENTIFIC INFORMATION CENTER U.S. DEPARTMENT OF THE INTERIOR WASHINGTON, D.C. 20240

Abstractor Robert L. Little | Battelle's Columbus Laboratories, Columbus, Ohio