

US EPA ARCHIVE DOCUMENT

CITED REFERENCES

- Abbott, I.A. and G.J. Hollenberg. 1976. *Marine Algae of California*. Stanford University Press, Stanford, CA. 827 pp.
- Allen, L.G. 1982. Seasonal abundance, composition, and productivity of the littoral fish assemblage in upper Newport Bay, California. *Fish. Bull., U.S.* 80 (4): 769-790.
- Allen, L.G. and M.H. Horn. 1975. Abundance, diversity and seasonality of fishes in Colorado Lagoon, Alamitos Bay, California. *Estuar. Coastal Mar. Sci.* 3: 371- 380.
- American Society for Testing and Materials. 1987. Annual Book of ASTM standards; water and environmental technology. Vol 11.04: 382-388.
- Anderson, B.S. and J.W. Hunt. 1988. Bioassay methods for evaluating the toxicity of heavy metals, biocides, and sewage effluent using microscopic stages of giant kelp *Macrocystis pyrifera* (Agardh): a preliminary report. *Mar. Environ. Res.* 26:113-134.
- Anderson, B.S., J.W. Hunt, M. Martin, S.L. Turpen, and F.H. Palmer. 1988. Marine Bioassay Project third report; protocol development: Reference toxicant and initial complex effluent testing. Report No. DWQ 88-7WQ, California State Water Resources Control Board, Sacramento, CA. 154 pp.
- Anderson, B.S., J.W. Hunt, H.R. McNulty, M.D. Stephenson, F.H. Palmer, D.L. Denton and M. Reeve. 1994. Marine Bioassay Project seventh report: Refinements of effluent toxicity testing protocols for four marine species. Report No. 94-2WQ, January 1994, State Water Resources Control Board. Sacramento, CA, p 104.
- Anderson, B.S., J.W. Hunt, W.J. Piekarski, B.M. Phillips, M.A. Englund, R.S. Tjeerdema, and J.D. Goetzl. (1995, In Press). Influence of salinity on copper and azide toxicity to larval topsmelt *Atherinops affinis* (ayres). *Arch. Environ. Contam.*
- Anderson, B.S., D.P. Middaugh, J.W., Hunt, and S.L. Turpen.

1991. Copper toxicity to sperm, embryos, and larvae of topsmelt *Atherinops affinis*, with notes on induced spawning. Mar. Environ. Res. 31, 17-35.
- Anderson, B.S., J.W. Hunt, S.L., Turpen, H.R. Barber, and M.A. Englund. 1994. Off-season spawning and factors influencing toxicity test development with topsmelt (*Atherinops affinis*). Environ. Tox. and Chem. 13 (3), pp 479-485.
- Anderson, B.S., J.W. Hunt, S.L. Turpen, A.R. Coulon, and M. Martin. 1990. Copper toxicity to microscopic stages of *Macrocystis pyrifera*: Interpopulation comparisons and temporal variability. Mar. Ecol. Prog. Ser. 68, 147-156.
- Anderson, B.S., J.W. Hunt, S.L., Turpen, A.R., Coulon, M, Martin, D.L. Denton, and F.H. Palmer. 1990. Procedures manual for conducting toxicity tests developed by the Marine Bioassay Project. Report No. 90-10WQ. State Water Resources Control Board, Sacramento, CA.
- Anderson, B.S., J.W. Hunt, S.L. Turpen, A.R. Coulon, M. Martin, and F.H. Palmer, F.H. 1990. Marine Bioassay Project fifth report: protocol development and interlaboratory toxicity testing with complex effluents. Report No. 90-13WQ. State Water Resources Control Board. Sacramento, CA.
- AOAC. 1990. Agricultural chemicals; contaminants; drugs. Vol. 1, Official methods of analysis. 15th edition. Association of Official Analytical Chemists, Arlington, VA.
- APHA. 1992. Part 8010E.4.b. *In*: Standard methods for the examination of water and wastewater. 18th edition. American Public Health Association, Washington, DC. p. 8-10.
- Asato, S.L. 1989. The effects of heavy metals on survival and feeding of *Holmesimysis costata* (Mysidacea). Biologia Marina, Mem. del VII Simposium, La Paz, Baja California Sur, Mexico: 113-120.
- ASTM. 1987. Annual book of standards, water and environmental technology. American Society for Testing and Materials, Philadelphia, Pennsylvania Vol. 11.04: 375.

- ASTM. 1993. Standard practice for using brine shrimp nauplii as food for test animals in aquatic toxicology. ASTM E1191-90. American Society for Testing and Materials, Philadelphia, PA.
- ASTM. 1994. Standard guide for conducting static acute toxicity tests starting with embryos of four species of saltwater bivalve molluscs. Designation: E 724-89. p. 452-471. In: 1994 Annual Book of ASTM Standards, Section 11, Water and Environmental Technology, Volume 11.04, Pesticides; Resource Recovery; Hazardous Substances and Oil Spill Responses; Waste Management; Biological Effects. ASTM, Philadelphia, PA.
- Ault, J. 1985. Some quantitative aspects of reproduction and growth of the red abalone , *Haliotis rufescens* Swainson. J. World Maricult. Soc. 16: 398.
- Benoit, D.A., F.A. Puglisi, and D.L. Olson. 1982. A fathead minnow, *Pimephales promelas*, early life state toxicity test method evaluation and exposure to four organic chemicals. Environ. Pollut. (Series A) 28:189-197.
- Birge, W.J., J.A. Black, and B.A. Ramey. 1981. The reproductive toxicology of aquatic contaminants. Hazard assessments of chemicals, current developments, Vol. 1, Academic Press, Inc., p. 59-114.
- Birge, W.J., J.A. Black, and A.G. Westerman. 1985. Short-term fish and amphibian embryo-larval tests for determining the effects of toxicant stress on early life stages and estimating chronic values for single compounds and complex effluents. Environ. Tox. Chem. (4):807-821.
- Birge, W.J., and R.A. Cassidy. 1983. Importance of structure-activity relationships in aquatic toxicology. Fundam. Appl. Toxicol. 3:359-368.
- Borthwick, P.W., Patrick, J.M. Jr., and D.P. Middaugh. 1985. Comparative acute sensitivities of early life stages of atherinid fishes to chlorpyrifos and thiobencarb. Arch. Environ. Contam. Toxicol. 14: 465-473.

- Bottomley, J.P., J.R. Gully, R.B. Baird, T. Gerlinger, and W.J. North. 1991. Effects of seasonality and sporophyll storage time on the sensitivity of the giant kelp *Macrocystis pyrifera* spore germination bioassay. Abstract of poster presented at the Society of Environmental Toxicology and Chemistry (SETAC) annual meetings, Seattle, WA.
- Bower, C.E. 1983. The basic marine aquarium. Charles C. Thomas, Publ., Springfield, IL.
- Bruiland, K.W., R.P. Franks, G.A. Knauer, and J.H. Martin. 1979. Sampling and analytical methods for the determination of copper, cadmium, zinc, and nickel at the nannogram per liter level in seawater. Anal. Chem. Acta 150: 233 - 245.
- Chung, I.K. and B.H. Brinkhuis. 1986. Copper effects in early life stages of kelp *Laminaria saccharina*. Mar. Pol. Bull. 17: 213-218.
- Clark, W. 1971. Mysids of the southern kelp region. In: W. North, ed., Biology of Giant Kelp Beds (*Macrocystis*) in California. J. Cramer Publisher, Lehre, Germany: p 369 - 380.
- Clutter, R.I. 1967. Zonation of nearshore mysids. Ecology. 48(2): 200-208.
- Clutter, R.I. 1969. The microdistribution and social behavior of some pelagic mysids. J. Exp. Mar Biol. Ecol. 3: 125-155.
- Croaker, R.S. 1934. The spawning of *Atherinops insularum insularum*. Copeia 1934: 43.
- Davidson, B.M., A.O. Valkirs and P.F. Seligman. 1986. Acute and chronic effects of tributyltin on the mysid *Acanthomysis sculpta* (Crustacea, Mysidacea). Proceedings, Oceans 86, Washington, D.C., Sept 23-24: p 1219-1225.
- DeLisle, P.F. and M.H. Roberts. 1988. The effect of salinity on cadmium toxicity to the estuarine mysid *Mysidopsis bahia*: role of chemical speciation. Aquatic Toxicology 12: 357 - 370.

- Deysher, L.E. and T.A. Dean. 1984. Critical irradiance levels and the interactive effects of quantum irradiance and quantum dose on gametogenesis in the giant kelp, *Macrocystis pyrifera*. J. Phycol. 20: 520-524.
- DeWoskin, R.S. 1984. Good laboratory practice regulations: a comparison. Research Triangle Institute, Research Triangle Park, NC, 63 pp.
- Dunnett, C.W. 1955. Multiple comparison procedure for comparing several treatments with a control. J. Amer. Statist. Assoc. 50:1096-1121.
- Ebert, E.E. and J.L. Houk. 1984. Elements and innovations in the cultivation of red abalone *Haliotis rufescens*. Aquaculture. 39: 375-392.
- Emerson, K., R.C. Russo, R.E. Lund, and R.V. Thurston. 1975. Aqueous ammonia equilibrium calculations; effect of pH and temperature. J. Fish. Res. Bd. Can. 32(12): 2379-2383.
- FDA. 1978. Good laboratory practices for nonclinical laboratory studies. Part 58, Fed. Reg. 43(247):60013-60020, December 22, 1978.
- Finney, D.J. 1971. Probit analysis. Third Edition. Cambridge Press, NY, NY. 668 pp.
- Foster, M.S. and D.R. Schiel. 1985. The ecology of giant kelp forests in California: a community profile. U.S. Fish and Wild. Serv. Biol. Rep. 85 (7.2) 152 pp.
- Fronk, R.H. 1969. Biology of *Atherinops affinis* Hubbs in Newport Bay. M.S. Thesis, Univ. of Calif., Irvine. 106p.
- Gaetz, C.T. 1986. Toxicity of used drilling fluids to mysids (*Mysidopsis bahia*). Environ. Toxicol. Chem. 5: 813 - 821.
- Gentile, J.H., S.M. Gentile, G. Hoffman, J.F. Heltshe, and N.G. Hairston, Jr. 1983. The effects of chronic mercury exposure on the survival, reproduction and population dynamics of *Mysidopsis bahia*. Environ. Toxicol. Chem. 2:61-68.

- Gentile, S.M., J.H. Gentile, J. Walker, and J.F. Heltshe. 1982. Chronic effects of cadmium on two species of mysid shrimp: *Mysidopsis bahia* and *Mysidopsis bigelowi*. *Hydrobiologia*. 93: 195-204.
- Green, J.M. 1970. Observations on the behavior and larval development of *Acanthomysis sculpta* (Tattersall), (Mysidacea). *Can. J. Zool.* 48: 289-292.
- Grigg, R.W. and R.S. Kiwala. 1970. Some ecological effects of discharged wastes on marine life. *Calif. Fish Game* 56: 145 - 155.
- Hahn, K.O. 1989. Handbook of culture of abalone and other marine gastropods. CRC Press, Inc. Boca Raton, Florida. 348 pp.
- Hines, A.H. and J.H. Pearse. 1982. Abalones, shells, and sea otters: dynamics of prey populations in central California. *Ecology* 63: 1547 - 1560.
- Hodges, J.L., Jr., and E.L. Lehmann. 1956. The efficiency of some nonparametric competitors of the t Test. *Ann. Math. Statist.* 31:625-642.
- Holmquist, C. 1979. *Mysis costata* and its relations (Crustacea, Mysidacea). *Zool. Jb. Syst.* 106: 471-499.
- Holmquist, C. 1981. The genus *Acanthomysis* Czerniavsky, 1882 (Crustacea, Mysidacea) *Zool. Jb. Syst.* 108: 386-415.
- Hopkin, R. and J.M. Kain. 1978. The effects of some pollutants on survival, growth and respiration of *Laminaria hyperborea*. *Est. and Coast. Mar. Science* 7; 531-553.
- Horn, M.H. 1979. Diel and seasonal variation in abundance and diversity of shallow-water fish populations in Morro Bay, California. *Fish. Bull.* 78: 759-770.
- Horne, J.D., M.A. Swirsky, T.A. Hollister, B.R. Oblad, and J.H. Kennedy. 1983. Aquatic toxicity studies of five priority pollutants, Contract Report, EPA Contract No. 68-01-6201, U. S. Environmental Protection Agency, Washington, DC.

- Hose, J.E., J.R. Stoffel, and K.E. Zerba. 1983. Behavioral responses of selected marine fishes to chlorinated seawater. *Mar. Env. Res.* 9: 37-59.
- Hunt, J.H. and B.S. Anderson. 1989. Sublethal effects of zinc and municipal effluents on larvae of the red abalone, *Haliotis rufescens*. *Mar. Biol.* 101: 545 - 552.
- Hunt, J.W. and B.S. Anderson. 1993. From research to routine: A review of toxicity testing with marine molluscs. *In: Environmental Toxicology and Risk Assessment*, ASTM STP 1179, Wayne G. Landis, Jane S. Hughes, and Michael A. Lewis, Eds, American Society for Testing and Materials, Philadelphia, pp 320-339.
- Hunt, J.W., B.S. Anderson, S.L. Turpen, H. R. Barber, M. Martin, D.L. Denton, and F.H. Palmer. 1991. Marine Bioassay Project sixth report: Interlaboratory comparison and protocol development with four marine species. Report No. 91-21-WQ, State Water Resources Control Board, Sacramento, CA, p 62.
- Hunt, J.W., B.S. Anderson, S.L. Turpen, A.R. Coulon, M. Martin, F.H. Palmer, J.J. Janik. 1989. Marine Bioassay Project fourth report: Experimental evaluation of effluent toxicity testing protocols with giant kelp, mysids, red abalone, and topsmelt. DWQ report No. 89-5WQ, State Water resources Control Board, Sacramento, CA.
- Hunt, J.W., B.S. Anderson, S.L. Turpen, M.A. Englund, and W.J. Piekarski. (In Press) Precision and sensitivity of a seven-day growth and survival toxicity test using the west coast mysid crustacean, *Holmesimysis costata*. *Environ. Toxicol. and Chem.*
- James, D.E., S.L. Manley, M.C. Carter, and W.J. North. 1987. Effects of PCBs and hydrazine in life processes in microscopic stages of selected brown seaweeds. *Hydrobio.* 151/152: 411-415.
- Jensen, A.L. 1972. Standard error of LC50 and sample size in fish bioassays. *Water. Res.* 6:85-89.

- Johnson, M.S. 1975. Biochemical systematics of the atherinid genus *Menidia*. Copeia 4:662-691.
- Kikuchi, S. and N. Uki. 1974. Technical study on artificial spawning of abalone, genus *Haliotis* IV. Duration of fertility related to temperature. Bull. Tohoku Reg. Fish. Res. Lab., 34: 73.
- Kume, M. and K. Dan. 1957. Invertebrate Embryology. U.S. Department of Commerce, National Technical Information Service, No. TT67-58050, Washington, D.D. 605 pp.
- Kuwabara, J.S. 1981. Gametophytic growth by *Macrocystis pyrifera* (Phaeophyta) in response to various iron and zinc concentrations. J. Phycol. 17: 417-419.
- Leger, P., Bengtson, D.A., Simpson, K.L. and Sorgeloos, P. 1986. "The use and nutritional value of *Artemia* as a food source," M. Barnes (ed.), Oceanography and Marine Biology Annual Review, Vol. 24, Aberdeen University Press, Aberdeen, Scotland, 1986, pp. 521-623.
- Leger, P., Sorgeloos, P., Millamena, O.M., and Simpson, K.L. 1985. "International Study on *Artemia*. XXV. Factors determining the nutritional effectiveness of *Artemia*: The relative impact of chlorinated hydrocarbons and essential fatty acids in San Francisco Bay and San Pablo Bay *Artemia*." J. Exp. Mar. Biol. Ecol., Vol. 93, 1985. pp. 71-82.
- Leighton, D.L. 1974. The influence of temperature on larval and juvenile growth in three species of southern California abalones. Fishery Bulletin 72: 1137 - 1145.
- Linfield, J.L.T., M. Martin and J. Norton. 1985. Marine Bioassay Project first progress report: bioassay species selection and recommended protocols. California State Water Resources Control Board, Sacramento, CA.
- Luning, K. 1980. Critical levels of light and temperature regulating the gametogenesis of three Laminaria species (Phaeophyceae). J. Phycol. 16: 1-15.

- Lussier, S.M., J.H. Gentile, and J. Walker. 1985. Acute and chronic effects of heavy metals and cyanide on *Mysidopsis bahia* (Crustacea: Mysidacea). *Aquat. Toxicol.* 7:25-35.
- Macek, K.J., and B.H. Sleight. 1977. Utility of toxicity tests with embryos and fry of fish in evaluating hazards associated with the chronic toxicity of chemicals to fishes. *In: Mayer, F. L., and J. L. Hamelink, eds., Aquatic Toxicology and Hazard Evaluation, ASTM STP 634, American Society for Testing and Materials, Philadelphia, PA.* pp. 137-146.
- Machuzak, M.J. and T.K. Mikel, Jr. 1987. Drilling fluid bioassays using Pacific ocean mysid shrimp, *Acanthomysis sculpta*, a preliminary introduction. *In: W.J. Adams, G.A. Chapman, and W.G. Landis, eds., Aquatic Toxicology and Hazard Assessment: 10, ASTM STP 971. American Society for Testing and Materials, Philadelphia, PA:* 447-453.
- Martin, F.D. and G.E. Drewry. 1978. Development of fishes of the Mid-Atlantic Bight. An atlas of eggs, larval, and juvenile stages. Biological Service Program, Fish and Wildlife Service, U.S. Department of the Interior, Washington DC. FWS/OBS-78/12.
- Martin, M., J.W. Hunt, B.S. Anderson, S.L. Turpen, and F.H. Palmer. 1989. Experimental evaluation of the mysid *Holmesimysis costata* as a test organism for effluent toxicity testing. *Environ. Toxicol. Chem.* 8: 1003 - 1012.
- Martin, M., M.D. Stephenson, and J.H. Martin. 1977. Copper Toxicity Experiments in Relation to Abalone Deaths Observed in a Power Plant's Cooling Waters. *Calif. Fish and Game, Vol. 63, No. 2, pp.* 95-100.
- McKim, J.M. 1977. Evaluation of tests with the early life stages of fish for predicting long-term toxicity. *J. Fish. Res. Bd. Can.* 34:1148-1154.
- McLuscky, D.S. and L. Hagerman. 1987. The toxicity of chromium, nickel, and zinc: effects of salinity and temperature, and the osmoregulatory consequences in the mysid *Praunus flexuosus*. *Aquatic Toxicology* 10: 225 - 238.

- McNulty, H.R., B.S. Anderson, J.W. Hunt, S.T. Turpen, and M.M. Singer. 1994. Age-specific toxicity of copper to larval topsmelt *Atherinops affinis*. Environ. Tox. and Chem. 13 (3), pp 487-492.
- Middaugh, D.P and B.S. Anderson. 1993. Utilization of the topsmelt, *Atherinops affinis* in environmental toxicological studies along the Pacific coast of the United States. Rev. Environ. Toxicol. (E. Hodgson, Ed.), Toxicology Communications Inc., Raleigh, NC, pp 1-50.
- Middaugh, D.P, B.S. Anderson, and M.J. Hemmer. 1992. Laboratory spawning of topsmelt, *Atherinops affinis*, with notes on culture and growth of larvae. Environ. Toxicol. and Chem. 292-399.
- Middaugh, D.P., and M.J. Hemmer. 1984. Spawning of the tidewater silverside *Menidia peninsulae* (Goode and Bean), in response to tidal and lighting schedules in the laboratory. Estuaries 7(2): 139 - 148.
- Middaugh, D.P., Hemmer, M.J., and L.R. Goodman. 1987. Methods for spawning, culturing and conducting toxicity tests with early life stages of four atherinid fishes: The inland silverside, *Menidia beryllina*, Atlantic silverside, *M. menidia*, tidewater silverside, *M. peninsulae* and California grunion, *Leuresthes tenuis*. EPA/600/8-87/004, pp 56.
- Middaugh, D.P., Hemmer, M.J., and E.M. Lores. 1988. Teratological effects of 2,4-dinitrophenol 'produced water' and naphthalene on embryos of the inland silverside *Menidia beryllina*. Dis. Aquat. Org. 4: 53-65.
- Middaugh, D.P. and J.M. Shenker. 1988. Salinity tolerance of young topsmelt, *Atherinops affinis*, cultured in the laboratory. Calif. Fish Game, 74 (4): 232-235
- Miller, D.J. and R.N. Lea. 1972. Guide to the coastal marine fishes of California. Calif. Dep. Fish Game Bull. 157. 235 p.
- Miller, R.G. 1981. Simultaneous statistical inference. Springer-Verlag, New York. 299 pp.

- Morris, R., D. Abbott, and E. Haderlie. 1980. Intertidal invertebrates of California. Stanford Univ. Press. 690pp.
- Morse, D.E., H. Duncan, N. Hooker, and A. Morse. 1977. Hydrogen peroxide induces spawning in molluscs, with activation of prostaglandin endoperoxide synthetase. Science 196: 298-300.
- Morse, D.E., H. Hooker, H. Duncan, and L. Jensen. Gamma-Aminobutyric Acid, a Neurotransmitter, Induces Planktonic Abalone Larvae to Settle and Begin Metamorphosis. Science, Vol. 204, 1979, pp. 407-410.
- Mount, D.I., and C.E. Stephan. 1967. A method for establishing acceptable toxicant limits for fish - Malathion and 2,4-D. Trans. Am. Fish. Soc. 96: 185-193.
- Nacci, D., and E. Jackim. 1985. Rapid aquatic toxicity assay using incorporation of tritiated-thymidine into sea urchin, *Arbacia punctulata*, embryo. In: Bahner, R.C., and D.J. Hansen. eds., Aquatic Toxicology and Hazard Assessment: Eighth Symposium. STP 891. American Society for Testing and Materials, Philadelphia, PA. pp. 382-393.
- Nimmo, D.R., L.H. Bahner, R.A. Rigby, J.M. Sheppard, and A. J. Wilson, Jr. 1977. *Mysidopsis bahia*: an estuarine species suitable for life-cycle tests to determine the effects of a pollutant. ASTM STP 634, American Society for Testing and Materials, Philadelphia, PA: 109-116.
- Norberg, T.J., and D.I. Mount. 1983. A seven-day larval growth test. Presented at the Annual Meeting, Society of Environmental Toxicology and Chemistry, November 6-9, 1983, Arlington, VA.
- Norberg, T.J., and D.I. Mount. 1985. A new fathead minnow (*Pimephales promelas*) subchronic toxicity test. Environ. Toxicol. Chem. 4(5):711-718.
- Norberg-King, T.J. 1991. Calculations of ICp values of IC15, IC20, IC25, IC30, and IC50 for Appendix A of the revised technical support document. Memorandum to M. Heber, USEPA, Washington, DC.

- North, W.J. 1976. Aquaculture techniques for creating and restoring beds of giant kelp, *Macrocystis* spp. J. Fish. Res. Board Can. 33: 1015-1023.
- North, W.J., ed. 1971. The Biology of Giant Kelp Beds (*Macrocystis*) in California. Nova Hedwigia, 32:1-600.
- Owen, B., J. McLean, and B. Meyer. 1971. Hybridization in the eastern Pacific abalone (*Haliotis*). Bull. Los Angeles County Museum Nat. Hist. Sci. (9).
- Pastorok, J.W., J.W. Anderson, M.K. Butcher, and J.E. Sexton. 1994. West Coast Marine Species Chronic Protocol Variability Study. PTI Environmental Services, Bellvue, WA.
- Reish, D.J., and J.A. Lemay. 1988. Bioassay manual for dredged sediments: U.S. Army Corps of Engineers. Research report, U.S. ACE Environmental Resources Branch, Contract No. DACW-09--83R-005: 34 pp.
- Renfro, W.C. 1960. Salinity relations of some fishes in the Aransas River. Tulane Stud. Zool. 8:83-91.
- Richards, F.A., and N. Corwin. 1956. Some oceanographic applications of recent determinations of the solubility of oxygen in seawater. Limnol. Oceanogr. 1(4):263-267.
- Simmons, E.G. 1957. Ecological survey of the Upper Laguna Madre of Texas. Publ. Inst. Mar. Sci. 4(2):156-200.
- Singer, M.M., D.L. Smalheer, R.S. Tjeerdema, and M. Martin. 1990. Toxicity of an oil dispersant to the early life stages of four marine species. Env. Tox. and Chem. 9: 1389-1397.
- Singer, M.M., D.L. Smalheer, R.S. Tjeerdema, and M. Martin. 1991. Effects of spiked exposure to an oil dispersant on the early life stages of four marine species. Env. Tox. and Chem. 10: 1367-1374.
- Smith, B.A. 1971. An ecological study of the Delaware River in the vicinity of Artificial Island. Part V. The fish of

- four low-salinity tidal tributaries of the Delaware River estuary. Progress Report to Public Service Electric and Gas Co. Ichthyological Assoc. Ithaca, NY. 291 pp.
- Smith, B.M. and F.L. Harrison. 1978. Sensitivity of *Macrocystis* gametophytes to copper. U.S. Nuclear Regulatory Commission, NUREG/CR-0694; UCRL-52481. 1-34.
- Snedecor, G.W., and W.G. Cochran. 1980. Statistical Methods. Seventh edition. Iowa State University Press, Ames, IA. 593 pp.
- Sokal, R.R. and F.J. Rohlf. 1969. Biometry. W.H. Freeman and Company, San Francisco, CA: 776 pp.
- Spotte, S. 1973. Marine aquarium keeping. John Wiley and Sons, NY, NY.
- Spotte, S., G. Adams, and P.M. Bubucis. 1984. GP2 as an artificial seawater for culture or maintenance of marine organisms. Zool. Biol. 3:229-240.
- Steel, R.G. 1959. A multiple comparison rank sum test: treatments versus control. Biometrics 15:560-572.
- Tatem, H.E. and A.S. Portzer. 1985. Culture and toxicity tests using Los Angeles district bioassay animals, *Acanthomysis* and *Neanthes*. U.S. Army Corps of Engineers, Misc. Paper EL-85-6, Waterways Experiment Station, Vicksburg, MI: 13pp
- Taylor, J.K. 1987. Quality assurance of chemical measurements. Lewis Publ., Inc., Chelsea, MI.
- Thompson, R.S. and E.M. Burrows. 1984. The toxicity of copper, zinc, and mercury to the brown macroalga *Laminaria saccharina*. In: Ecotoxicological Testing For The Marine Environment. G Persoone, E. Jaspers, and C Claus (Eds). State Univ. Ghent and Inst. Mar. Scient. Res. Brendene, Belgium 2: 588pp.
- Thursby, G.B., B.S. Anderson, G.E. Walsh, and R.L. Steele. 1993. A review of the current status of marine algal toxicity testing in the United States, In: Environmental Toxicology

and and Risk Assessment, ASTM STP 1179, Wayne G. Landis, Jane S. Hughes, and Michael A. Lewis, Eds, American Society for Testing and Materials, Philadelphia, PA, pp 362-377.

- Thurston, R.V., R.C. Russo, and K. Emerson. 1974. Aqueous ammonia equilibrium calculations. Tech. Rep. No. 741. Fisheries Bioassay Laboratory, Montana State University, Bozeman, MT. 18 pp.
- Turpen, S.L., J.W. Hunt, B.S. Anderson, and J.S. Pearse. 1994. Population structure, growth, and fecundity of the kelp forest mysid, *Holmesimysis costata* in Monterey Bay, California. J. Crust. Biol. 14(4):657-664.
- USDA. 1989. Methods which detect multiple residues. Vol. 1. Pesticide analysis manual. U. S. Department of Health and Human Services, Washington D.C.
- USEPA. 1973. Biological field and laboratory methods for measuring the quality of surface waters and effluents. C. I. Weber (ed.). U. S. Environmental Protection Agency, Methods Development and Quality Assurance Research Laboratory, Cincinnati, OH 45268. EPA 600/4-73/001.
- USEPA. 1975. Methods for acute toxicity tests with fish, macroinvertebrates, and amphibians. Environmental Research Laboratory, U. S. Environmental Protection Agency, Duluth, MN 55804. EPA/660/3-75/009.
- USEPA. 1979. Methods for chemical analysis of water and wastes. Environmental Monitoring and Support Laboratory, US EPA, Cincinnati, Ohio, EPA/600/4-79/020., revised March 1983.
- USEPA. 1979a. Handbook for analytical quality control in water and wastewater laboratories. U. S. Environmental Protection Agency, Environmental Monitoring and Support Laboratory, Cincinnati, OH 45268. EPA/600/4-79/019.
- USEPA. 1979b. Methods for chemical analysis of water and wastes. Environmental Monitoring and Support Laboratory, U. S. Environmental Protection Agency, Cincinnati, OH 45268. EPA-600/4-79/020, revised March 1983.

- USEPA. 1979d. Good laboratory practice standards for health effects. Paragraph 772.110-1, Part 772 - Standards for development of test data. Fed. Reg. 44:27362-27375, May 9, 1979.
- USEPA. 1980a. Appendix B - Guidelines for Deriving Water Quality Criteria for the Protection of Aquatic Life and Its Uses. Federal Register, Vol. 45, No. 231, Friday, November 28, 1980.
- USEPA. 1980b. Proposed good laboratory practice guidelines for toxicity testing. Paragraph 163.60-6. Fed. Reg. 45:26377-26382, April 18, 1980.
- USEPA. 1980c. Physical, chemical, persistence, and ecological effects testing; good laboratory practice standards (proposed rule). 40 CFR 772, Fed. Reg. 45:77353-77365, November 21, 1980.
- USEPA. 1981. *In situ* acute/chronic toxicological monitoring of industrial effluents for the NPDES biomonitoring program using fish and amphibian embryo/larval stages as test organisms. Birge, W.J., and J.A. Black. Office of Water Enforcement and Permits, U. S. Environmental Protection Agency, Washington, DC 20460. OWEP-82-001.
- USEPA. 1982. Methods for organic chemical analysis of municipal and industrial wastewater. Environmental Monitoring and Support Laboratory, U. S. Environmental Protection Agency, Cincinnati, OH 45268. EPA/600/4-82/057.
- USEPA. 1983. Guidelines and format for EMSL-Cincinnati methods. Kopp, J.F. Environmental Monitoring and Support Laboratory, U. S. Environmental Protection Agency, Cincinnati, OH 45268. EPA/600/8-83/020.
- USEPA. 1984. Effluent and ambient toxicity testing and instream community response on the Ottawa River, Lima, Ohio. Mount, D.I., N.A. Thomas, T.J. Norberg, M. T. Barbour, T.H. Roush, and W.F. Brandes. Environmental Research Laboratory, U. S. Environmental Protection Agency, Duluth, MN 55804. EPA/600/3-84/080.

- USEPA. 1985a. Methods for measuring the acute toxicity of effluents to freshwater and marine organisms. Third Edition. Peltier, W., and C.I. Weber. eds. Environmental Monitoring and Support Laboratory, U. S. Environmental Protection Agency, Cincinnati, OH 45268. EPA/600/4-85/013.
- USEPA. 1985c. Validity of effluent and ambient toxicity tests for predicting biological impact, Scippo Creek, Circleville, Ohio. Mount, D.I., and T.J. Norberg-King (eds.). Environmental Research Laboratory, U. S. Environmental Protection Agency, Duluth, MN 55804. EPA/600/3-85/044.
- USEPA. 1985d. Validity of effluent and ambient toxicity testing for predicting biological impact on Five Mile Creek, Birmingham, Alabama. Mount, D.I., A.E. Steen, and T.J. Norberg-King (eds.). Environmental Research Laboratory, U. S. Environmental Protection Agency, Duluth, MN 55804. EPA/600/8-85/015.
- USEPA. 1985e. Validity of effluent and ambient toxicity tests for predicting biological impact, Ohio River, near Wheeling, West Virginia. Mount, D.I., A. E. Steen, and T.J. Norberg-King (eds.). Environmental Research Laboratory, U. S. Environmental Protection Agency, Duluth, MN 55804. EPA/600/3-85/071.
- USEPA. 1986a. Validity of effluent and ambient toxicity tests for predicting biological impact, Back River, Baltimore Harbor, Maryland. Mount, D.I., A. E. Steen, and T. Norberg-King (eds.). Environmental Research Laboratory, U. S. Environmental Protection Agency, Duluth, MN 55804. EPA/600/8-86/001.
- USEPA. 1986b. Validity of effluent and ambient toxicity tests for predicting biological impact, Skeleton Creek, Enid, Oklahoma. Norberg, T.J., and D.I. Mount (eds.). Environmental Research Laboratory, U. S. Environmental Protection Agency, Duluth, MN 55804. EPA/600/8-86/002.
- USEPA. 1986c. Validity of effluent and ambient toxicity tests for predicting biological impact, Kanawha River, Charleston, West Virginia. Mount, D.I., and T. Norberg-King (eds.).

Environmental Research Laboratory, U. S. Environmental Protection Agency, Duluth, MN 55804. EPA/600/3-86/006.

- USEPA. 1986d. Validity of effluent and ambient toxicity tests for predicting biological impact, Naugatuck River, Connecticut. Mount, D.I., T. Norberg-King, and A.E. Steen (eds.). Environmental Research Laboratory, U. S. Environmental Protection Agency, Duluth, MN. 55804 EPA/600/8-86/005.
- USEPA. 1986e. Occupational health and safety manual. Office of Administration, U. S. Environmental Protection Agency, Washington, DC 20460.
- USEPA. 1987a. Users guide to the conduct and interpretation of complex effluent toxicity tests at estuarine/marine sites. Schimmel, S.C., ed. Environmental Research Laboratory, U. S. Environmental Protection Agency, Narragansett, RI 02882. Contribution No. 796., 265 pp.
- USEPA. 1987b. Guidance manual for conducting complex effluent and receiving water larval fish growth-survival studies with the sheepshead minnow (*Cyprinodon variegatus*). Contribution No. X104. Hughes, M.M., M.A. Heber, S.C. Schimmel, and W.J. Berry. *In*: Schimmel, S.C., ed. Users guide to the conduct and interpretation of complex effluent toxicity tests at estuarine/marine sites. Environmental Research Laboratory, U. S. Environmental Protection Agency, Narragansett, RI 02882. Contribution No. 796., 265 pp.
- USEPA. 1987c. Guidance manual for rapid chronic toxicity tests on effluents and receiving waters with larval inland silversides (*Menidia beryllina*). Contribution No. 792. Heber, M.A., M.M. Hughes, S.C. Schimmel, and D.A. Bengtson. *In*: Schimmel, S.C. ed., Users guide to the conduct and interpretation of complex effluent toxicity tests at estuarine/marine sites. Environmental Research Laboratory, U. S. Environmental Protection Agency, Narragansett, RI 02882. Contribution No. 796., 265 pp.
- USEPA. 1987e. Guidance manual for conducting sperm cell tests with the sea urchin, *Arbacia punctulata*, for use in testing complex effluents. Nacci, D., R. Walsh, and E. Jackim.

Contribution No. X105. In: Schimmel, S.C., ed. Users guide to the conduct and interpretation of complex effluent toxicity tests at estuarine/marine site. Environmental Research Laboratory, U. S. Environmental Protection Agency, Narragansett, RI 02882. Contribution No. 796., 265 pp.

- USEPA. 1987f. Guidance manual for conducting sexual reproduction test with the marine macroalga *Champia parvula* for use in testing complex effluents. Contribution No. X103. Thursby, G.B., and R.L. Steele. In: Schimmel, S. C., ed. Users guide to the conduct and interpretation of complex effluent toxicity tests at estuarine/marine sites. Environmental Research Laboratory, U. S. Environmental Protection Agency, Narragansett, RI 02882. Contribution No. 796., 265 pp.
- USEPA. 1987g. Methods for spawning, culturing and conducting toxicity-tests with early life stages of four antherinid fishes: the inland silverside, *Menidia beryllina*, Atlantic silverside, *M. menidia*, tidewater silverside, *M. peninsulae*, and California grunion, *Leuresthes tenuis*. Middaugh, D.P., M.J. Hemmer, and L.R. Goodman. Office of Research and Development, U. S. Environmental Protection Agency, Washington, DC 20460. EPA/600/8-87/004.
- USEPA. 1988. Weber, C.I., W.B. Horning, D.J. Klemm, T.W. Neiheisel, P.A. Lewis, E.L. Robinson, J. Menkedick, and F. Kessler. Short-term methods for estimating chronic toxicity of effluents and receiving waters to marine and estuarine organisms. EPA/600/4-87/028. U.S. Environmental Protection Agency, Cincinnati, OH.
- USEPA. 1988b. NPDES compliance inspection manual. Office of Water Enforcement and Permits (EN-338), U. S. Environmental Protection Agency, Washington, DC 20460.
- USEPA. 1988c. Methods for aquatic toxicity identification evaluations: Phase I toxicity characterization procedures. D.I. Mount and L. Anderson-Carnahan. Environmental Research Laboratory, U. S. Environmental Protection Agency, Duluth, MN 55804. EPA-600/3-88/034.

- USEPA. 1988d. An interpolation estimate for chronic toxicity: The ICp approach. Norberg-King, T.J. Technical Report 05-88, National Effluent Toxicity Assessment Center, Environmental Research Laboratory, U. S. Environmental Protection Agency, Duluth, MN 55804.
- USEPA. 1989b. Toxicity reduction evaluation protocol for municipal wastewater treatment plants. J.A. Botts, J.W. Braswell, J. Zyman, W.L. Goodfellow, and S.B. Moore (eds.). Risk Reduction Engineering Laboratory, U. S. Environmental Protection Agency, Cincinnati, OH 45268. EPA/600/2-88/062.
- USEPA. 1989c. Generalized methodology for conducting industrial toxicity reduction evaluations (TRES). J.A. Fava, D. Lindsay, W.H. Clement, R. Clark, G.M. DeGraeve, J.D. Cooney, S. Hansen, W. Rue, S. Moore, and P. Lankford (eds.). Risk Reduction Engineering Laboratory, U. S. Environmental Protection Agency, Cincinnati, OH 45268. EPA/600/2-88/070.
- USEPA. 1989d. Methods for aquatic toxicity identification evaluations: Phase II toxicity identification procedures. D.I. Mount, and L. Anderson-Carnahan. Environmental Research Laboratory, U. S. Environmental Protection Agency, Duluth, MN 55804. EPA-600/3-88/035.
- USEPA. 1989e. Methods for aquatic toxicity identification evaluations: Phase III, toxicity confirmation procedures. D.I. Mount. Environmental Research Laboratory, U. S. Environmental Protection Agency, Duluth, MN 55804. EPA-600/3-88/036.
- USEPA. 1990a. Macroinvertebrate field and laboratory methods for evaluating the biological integrity of surface waters. Klemm, D.J., P.A. Lewis, F. Fulk, and J.M. Lazorchak. Environmental Monitoring Systems Laboratory, U. S. Environmental Protection Agency, Cincinnati, OH 45268. EPA/600/4-90/030.
- USEPA. 1990b. Supplemental methods and status reports for short-term saltwater toxicity tests. G. Morrison and G. Chapman. ERL Contrib. No. 1199. Environmental Research Laboratory, U. S. Environmental Protection Agency, Narragansett, RI 02882. 127 pp.

- USEPA. 1991a. Technical support document for water quality-based toxic controls. Office of Water Enforcement and Permits and Office of Water Regulations and Standards, U. S. Environmental Protection Agency, Washington, DC 20460. EPA/505/2-90/001.
- USEPA. 1991b. Methods for aquatic toxicity identification evaluations: Phase I, toxicity characterization procedures. 2nd ed., T. Norberg-King, D.I. Mount, E. Durhan, G. Ankley, L. Burkhard, J. Amato, M. Ludasewycz, M. Schubauer-Berigan, and L. Anderson-Carnahan (eds.). Environmental Research Laboratory, U. S. Environmental Protection Agency, Duluth, MN 55804. EPA/600/6-91/003.
- USEPA. 1991c. Manual for the evaluation of laboratories performing aquatic toxicity tests. Klemm, D.J., L.B. Lobring, and W.H. Horning. Environmental Monitoring Systems Laboratory, U. S. Environmental Protection Agency, Cincinnati, OH 45268. EPA/600/4-90/031.
- USEPA. 1992. Toxicity identification evaluation: Characterization of chronically toxic effluents: Phase I. T.J. Norberg-King, D.I. Mount, J.R. Amato, D.A. Jensen, and J.A. Thompson. Environmental Research Laboratory, U. S. Environmental Protection Agency, Duluth, MN 55804. EPA-600/6-91/005F.
- USEPA. 1993a. Methods for measuring the acute toxicity of effluents and receiving waters to freshwater and marine organisms. Fourth Edition. Weber, C.I. (ed.). Environmental Monitoring Systems Laboratory, U. S. Environmental Protection Agency, Cincinnati, OH 45268. EPA/600/4-90/027F.
- USEPA. 1993b. Short-term methods for estimating the chronic toxicity of effluents and surface waters to freshwater organisms. Third edition. Lewis, P.A., D.J. Klemm, and J.M. Lazorchak (eds.). Environmental Monitoring Systems Laboratory, U. S. Environmental Protection Agency, Cincinnati, OH 45268. EPA/600/4-91/002.
- USEPA. 1993c. Fish field and laboratory methods for evaluating the biological integrity of surface waters. Klemm, D.J.,

- Q.J. Stober, and J.M. Lazorchak. Environmental Monitoring Systems Laboratory, U.S. Environmental Protection Agency, Cincinnati, OH 45268. EPA/600/R-92/111.
- USEPA. 1994. Short-term methods for estimating the chronic toxicity of effluents and receiving waters to marine and estuarine organisms. Second edition. Environmental Monitoring Systems Laboratory, U. S. Environmental Protection Agency, Cincinnati, OH 45268. EPA/600/4-91/003.
- Vanhaecke, P. and Sorgeloos, P. 1980. "International Study on *Artemia*. IV. The biometrics of *Artemia* strains from different geographical origin." In: G. Persoone, P. Sorgeloos, O. Roels and E. Jaspers (eds.), The Brine Shrimp *Artemia*, Vol. 3, Ecology, Culturing Use in Aquaculture, Universal Press, Wetteren, Belgium. pp. 393-405.
- Vanhaecke, P., Steyaert, H. and Sorgeloos, P. 1980. "International Study on *Artemia*. III. The use of Coulter Counter equipment for the biometrical analysis of *Artemia* cysts. Methodology and Mathematics," In: G. Persoone, P. Sorgeloos, O. Roels, and E. Jaspers (eds.), The Brine Shrimp *Artemia*, Vol. 1, Morphology, Genetics, Radiobiology, Toxicology. Universal Press, Wetteren, Belgium, 1980, pp. 107-115.
- Walters, D.B., and C.W. Jameson. 1984. Health and safety for toxicity testing. Butterworth Publ., Woburn, MA.
- Ward, G.S., and P.R. Parrish. 1980. Evaluation of early life stage toxicity tests with embryos and juveniles of sheepshead minnows. In: J. G. Eaton, P.R. Parrish and A.C. Hendricks, Aquatic Toxicology, ASTM STP 707, American Society for Testing and Materials, Philadelphia, PA. p. 243-247.
- Woltering, D.M. 1984. The growth response in fish chronic and early life stage toxicity tests: A critical review. Aquat. Toxicol. 5:1-21.
- Zar, J. H. 1974. Biostatistical Analysis. Prentice-Hall, Inc., Englewood Cliff, N.J.