Alexander J. Horne

Professor Emeritus

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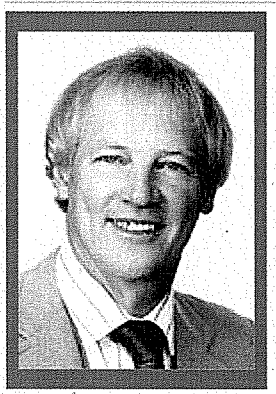

Biography

Professor Horne's research emphasizes quantification of environmental and ecological problems to define engineered solutions. Some of the problems tackled have been the in situ measurement of toxic and biostimulatory effects of highly-treated wastewaters in estuaries, rivers, wetlands, lakes, reservoirs, and oceans. Effects of heavy metals, oil spills, chlorinated wastewaters, and selenium have been studied recently. Emphasis has been on indigenous organism communities rather than individual organisms from laboratory cultures. The effects of water volume, timing of water withdrawals, and water quality on reservoir problems including taste and odor and eutrophication are of current interest. Special attention has been given to teaching students high precision but "low tech" methodology which allows many more samples to be analyzed. In turn this permits statistically significant detection of small environmental effects. Current work on water quality in reservoirs and the design of new reservoirs emphasizes problems in semi-arid regions such as Southern and Central California.

Education

Ph.D.	Nitrogen Fixation, University of Dundee, Scotland	1969
Honours,	Biological Chemistry, Bristol University,	1964

B.Sc. United Kingdom

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Dr. Alex Horne was the professor of Ecological Engineering at the Department of Civil & Environmental Engineering at the University of California, Berkeley from 1971-2003. Early studies included the English Lake District lakes, wetlands and oceans in Antarctica, and East African lakes. USA work began on eutrophication at Clear Lake and many reservoirs in California in 1970. His Berkeley career was been devoted to determining the effects and control of metal, sewage and organic pollutants on lakes, rivers, estuaries and the open ocean. He is proud of his part in the design of over 1,000 acres of beautiful wetlands that combine water treatment, wildlife habitat enhancement, and aesthetics. Some wetlands have received engineering awards and are a part of the drinking water supply for over 2 million people from Southern California to Arizona. His work first demonstrated a major reversal of eutrophication in a large reservoir by the addition of pure oxygen to the hypolimnion. Work on mercury was primarily with Dr. Doris Vidal and reduction of methyl-mercury by lake oxygenation. He over 225 publications and wrote the popular undergraduate textbook, *Limnology*. (McGraw-Hill, 1994, 2nd Ed, 564 p.).

Selected Recent publications emphasizing mercury

1. Vidal D.E. & A. J. Horne. 2003. Mercury Toxicity in the Aquatic Oligochaete Sparganophilus pearsei I: Variation in Resistance Among Populations. Archives Env. Tox. Chem. 45(2) pp 184-189.
2. Vidal D.E. & A. J. Horne. 2003. Inheritance of Mercury Tolerance in the Aquatic Oligochaete Tubifex tubifex. Environ. Toxic. Chem. 22: 2130-2135
3. Vidal D.E. & A.J. Horne. 2003. Mercury Toxicity in the Aquatic Oligochaete Sparganophilus pearsei II: Autotomy as a Novel Form of Protection. Archives Env. Tox. Chem. 45: 462-467.
4. Horne, A. J., J. Kane, K. Elkins & S. Stoller. 2003. Beneficial use impairment in Bridgeport Reservoir: Final limnological report on nutrient loading, eutrophication, Twin Lakes, proposed numeric target and active reservoir management options. Rept. To Lahontan Regional Water Quality Control Board, S. Lake Tahoe, Summer 2003.
5. Horne, A. J. 2003. Selenium concentrations in biota from the selenium-contaminated sections of San Diego Creek in fall 2002. Report to the Santa Ana Regional Water Quality Control Board, Riverside California. 25 May 2003. 27 p.
6. Horne, A. J. 2003. Seasonal and long-term changes in the abundance of macroalgae (seaweed) in the Newport Bay-Estuary in 2003 and in 1966-2003. Report to the Orange County Public Facilities and Resources Department. 16 November, 2003. 24 p.
7. Horne, A. J. (mainly with B. Pastorak, with minor contributions from others) 2003. Aeration white paper: Onondaga Feasibility Study (for reduction of methylmercury in fish). Draft for Parsons Engineering & Honeywell. ~ 20 p. December 2003.
8. Hauri, J.F. & A.J. Horne. 2004. Reduction in Labile Copper in the 7-day *Ceriodaphnia dubia* Toxicity Test due to the interaction with zooplankton food. Chemosphere. 56: 717-723.
9. Horne, A. J. & M. Fleming-Singer. Phytoremediation using constructed wetlands: An overview.pp 329-376 in M. Fingerman & R. Nagabhushanam (eds.) Bioremediation of Aquatic and Terrestrial Ecosystems. Science Publishers Enfield (NH) USA.
10. Hauri, J.F. & A.J. Horne. 2006. Copper toxicity reduction via EDTA addition: a real world application. Water Environment Research. (in press).