

- Current* - **Associate Professor (tenured):** Division of Environmental Science & Engineering, Faculty of Engineering, National University of Singapore (NUS), S117576
- **Principal Scientist & Manager:** Bioenergy Program, Science & Engineering Research Council, Agency for Science Technology & Research, Singapore.
  - **Project Director (Bioenergy):** Tropical Marine Science Institute, NUS

**Qualifications:** B.Sc. (Honors, with distinction), Class I - Dept. of Environmental Science, Lancaster University, UK, 1987.  
Ph.D. Microbiology & Biogeochemistry – research fully sponsored by Water Research Centre, UK 1991.

**Nationality:** British

**Contact:** Tel: 6516 62884; E-mail: esejpo@nus.edu.sg

- Over 18 years work experience (post-doctorate) in environmental science and engineering in both the private and academic sector in the United Kingdom and Asia-Pacific region. Former private sector environmental consultant in the United Kingdom and Hong Kong. Employed by Enviros, one of the UK's leading environmental consultancy firms.
- First Class B.Sc. (Honors) degree (with academic distinction) from a traditional British university that has top-grade research and teaching status. Ph.D. fully sponsored by the Water Research Centre, UK (1991) - several academic awards.
- Principal Scientist & Manager: Bioenergy Program, Science & Engineering Research Council, Singapore. Currently managing budget of about US\$6.5M across the major universities and research institutes in Singapore.
- Active and successful research program in environmental engineering, science and management. Research includes novel production of biofuels from microalgae, and biocatalysis. Over 100 journal manuscripts, 50 conference manuscripts and several book chapters published on aspects of biogeochemistry, persistent organic pollutants, applied microbiology and climate change.
- Team winner of the United Nations & Daimler Chrysler 2005 Mondialogo Award (with laureate 'Special Jury Recognition') - a worldwide competition on environmentally sustainable technical solutions for developing countries.
- Active in science and engineering consultancy projects for the private sector in UK, Singapore and Asia-Pacific region. Wide range of environmental management experience in both aquatic (marine) and terrestrial environments, including bioenergy-related technology. Invited speaker at many forums on bioenergy and climate change. Training experience on bioenergy and climate change to government representatives in Singapore and Association of South East Asian Nations (ASEAN).
- Teaching experience at university level in the UK and Singapore, as well as private sector training. Teaching awards include: Teaching Commendation 2005; Outstanding Mentor Award, Ministry of Education, Singapore 2006; Faculty Honors for Teaching 2007, 2008 & 2009; University Teaching Excellence Award, 2007 & 2008; University Education Initiative Award 2008.
- Associate Editor/Board Member experience of four international academic journal publications, including GCB Bioenergy (current).
- Technical Assessor 'Gold Award' status for technical accreditation of environmental laboratories with the Singapore Accreditation Council.
- Commended by Science & Engineering Research Council, Singapore for contribution to National Science & Technology Plan, 2010 on environmental technologies. Listed in 'Who's Who in Engineering', Institute of Engineering, Singapore. Member of United Nations, UNESCO, Science Committee, Singapore.

## EDUCATION AND QUALIFICATIONS

**1987 - 1991:** PhD in microbiology, & biogeochemistry, fully sponsored by the Water Research Centre, UK (1991)

**1984 - 1987:** Bachelor of Science (Honors) Class I, Dept of Environmental Science, Lancaster University, UK (1987)

Lancaster University is currently ranked 19th out of 113 universities in the UK (UK, Good University Guide), with the Department of Environmental Science awarded five-star national research status, and top teaching quality status in the UK (see: <http://www.es.lancs.ac.uk/>).

## CAREER HISTORY

**1997 – Present:**

- **Associate Professor (tenured)**, Division of Environmental Science & Engineering, Faculty of Engineering, National University of Singapore. Deputy Head, Research (2005-2008); Chairman of the Faculty of Engineering Working Group on Environmental and Water Technologies (2005-2008); and Chairman of Safety Committee 2001-2004.
- **Project Director (Bioenergy)** Tropical Marine Science Institute, Singapore. Experience includes: Management of government research & development program on marine related environmental projects in excess of US\$6.5M. Specific research interests in biofuels and carbon capture; pollution impacts, hydrocarbon bioremediation, environmental microbiology, strategic environmental assessment and impact of recalcitrant carbon compounds. Successful in securing four successive research grants from the Science & Engineering Research Council (SERC) of the Agency for Science, Technology & Research (A\*STAR) totaling about US\$2M. Current projects on derivation of biofuels from marine microalgae and conversion of microalgae biomass using thermochemical conversion.
- **Principal Scientist & Manager, National Bioenergy Program**, Science & Engineering Research Council, Singapore. Responsible for directing and managing research program on bioenergy technology, research & development at nationwide research institutes, including aspects of carbon capture and sequestration. Program value approx US\$6.5M.
- **Technical Assessor:** Singapore Accreditation Council on certification of environmental testing of commercial laboratories in Singapore. Recipient of Gold Award for service. Also active in environmental consultancy projects for the private sector including major engineering infrastructure developments in Singapore, Hong Kong and elsewhere in the Asia-Pacific region. Voluntary consultancy work for UK based Flora & Fauna International on post-tsunami environmental assessment, Banda Aceh, Sumatra, March 2005.
- **Journal Board Member and/or Associate Editor** experience of the following scientific academic journals: 'Environmental Geochemistry and Health' (Springer Press); 'Environmental International' (Elsevier Publishers); 'Journal of Environmental Quality' (American Society of Agronomy) 2005-2008; currently on the Editorial Review board for: 'GCB Bioenergy' (Wiley, Blackwell) see: <http://www.wiley.com/bw/editors.asp?ref=1757-1693&site=1>
- Active research and teaching program in environmental science and engineering. Current personal research grant value in excess of US\$1M. Current research emphasis on marine microalgae for biofuels; biocatalysis and thermochemical conversion of biomass.
- Supervision and teaching of Undergraduate, Masters and PhD students. Courses taught: Environmental Impact Assessment; Environmental Management Systems; Ecology & Environmental Processes; Global Environmental Issues; Environmental Microbiology; Quantified Risk Assessment; and Environmental Biological Principles.

- 1996 - 1997: **Associate & Environmental Scientist:** Enviros, , Hong Kong.

Enviros provides environmental science and engineering consulting and management services in the areas of: Renewable Energy; Climate Change, Compliance Management, Development and Regeneration, Health and Safety, Management Systems, Resource Management and Risk and Asset Management.

See: <http://www.enviros.com/index.cfm?fuseaction=100&divisionId=3>

Enviros was founded in 1995 and brought together several consultancy companies with a track record of performance in the environmental field, including Aspinwall, March and Quantisci. Aspinwall, the longest established of the Enviros founding consultancies, was established in 1972 as the first multi-disciplinary environmental consultancy in the UK.

See: <http://www.scottwilson.com/default.aspx?page=0>

- 1995 - 1996: **Senior Environmental Consultant:** Aspinwall (UK) Ltd, Edinburgh, UK
- 1992 - 1995: **Senior Environmental Scientist:** Aspinwall (Hong Kong) Ltd, Hong Kong
- 1991 - 1992: **Environmental Scientist:** Aspinwall (UK) Ltd, Shrewsbury, UK
- 1987 **Environmental Scientist:** North West Water plc, UK.

#### ACADEMIC & PROFESSIONAL AWARDS

- Teaching experience at university level in the UK and Singapore, as well as private sector training. Teaching awards include: Teaching Commendation 2005; Outstanding Mentor Award, Ministry of Education, Singapore 2006; Faculty Honors for Teaching 2007, 2008 & 2009; University Teaching Excellence Award, 2007 & 2008; University Education Initiative Award 2008.
- United Nations Mondialogo Award (with laureate 'Special Jury Recognition'). Team member and academic advisor. A worldwide competition on sustainable technical improvements in developing countries. The competition involved 79 countries, 1,700 engineers and 412 international teams addressing UN Millennium Development Goals for Sustainable Development. Co-sponsored by DaimlerChrysler, 2005.
- Gold Award. Singapore Accreditation Council for accreditation of environmental testing in analytical laboratories in Singapore, 2005.
- Commendation from Science & Engineering Research Council Singapore, for contribution to National Science & Technology Plan 2010 on environmental technologies, 2006. Currently serving on National Science & Technology Vision Committee.
- Twelve awards associated with university supervised students 2000-2008 - including two Bayer Young-United Nations Awards; the 2008 Singapore Green Wave Special Merit Award, and the 2008 HSBC Environment Award.
- Contributory author in the book 'The Environment in Asia Pacific Harbors' (Ed. E. Wolanski), Springer Press, New Jersey. This book was given a United Nations Atlas Award for being 'Exceptional', 2006
- Departmental Award for highest overall undergraduate academic achievement, 1987; Chapman and Hall Publishers Award for best undergraduate thesis, 1987; William Pickles Benefaction Award for outstanding performance in a scientific discipline, 1987.

*Keynote/Invited speaker:* Energy Carta (2009); Price Waterhouse Cooper (2009); Singapore Management University (2009); Global Asia Institute (2009); Singapore Biofuels Conference (2009); European Union Green Innovation (2009); National Sustainability Conference Singapore (2009); Chief Judge for National

Youth Environment Council Environment Awards (2009); Training on energy & climate change for Association of South East Asian Nations ASEAN Vietnam, Thailand, Laos, Cambodia (2009); National Youth Conference, Singapore (2008); PACON 2008, Energy and Climate Change, Hawaii (2008); Asia Pacific Economic Community (APEC) forum on Biofuels Taiwan (2008); Interdisciplinary Forum on Global Warming & Climate Change, NUS (2008); Institute of Southeast Asian Studies (2008); Asia-Pacific Centre on Environmental Law (2008); Bayer Young-United Nations Eco-Camp (2008); Science & Engineering Research Council (SERC) Bioenergy Workshop (2008); SERC Carbon Capture & Utilization Workshop (2008); Climate Change Science, Adaptation & Mitigation, Singapore Environment Institute; Ministry of Foreign Affairs, Singapore (2008 & 2009).

**- Other**

Invited member of Singapore's Science & Technology Vision Committee (2009) on 'Sustainable Development Technology'; Member of Singapore's UNESCO Science Committee.

**PUBLICATIONS*****Journal Publications(In-preparation, Completed ready for submission)***

1. Screening of Singapore Marine Microalgae for Biodiesel Feedstock
2. Enhanced Growth of Microalgae in both Phototrophic and Mixotrophic Culture under Blue Light
3. Glycerol Stimulated Nile Red Staining of Intracellular Lipids in Picoplanktonic *Nannochloropsis Sp.*
4. Air Sparging Assisted Coagulation-Flocculation: A Robust and Energy Efficient Algal Harvesting Technique
5. Air Sparged Coagulation-Flocculation for Harvesting Freshwater Algae
6. One Step Transesterification for Biodiesel Production from Microalgae Biomass
7. A Study on Factors Affecting Lipid Extraction from Marine Microalgae
8. Heterogeneous Catalytic Transesterification of Phosphatidylcholine
9. Removal of Polar Lipids from Biodiesel: Adsorption Isotherms and Kinetic Model
10. Catalytic Properties of Mycelium-Bound Lipase from a Newly Isolated Fungal Strain used as a Whole-Cell Biocatalyst for Biodiesel Production
11. Fungal Whole-Cell Lipase Catalyzed Methanolysis of Palm Oil for Biodiesel Production
12. Optimization of Whole-Cell Catalyzed Methanolysis of Waste Cooking Oil for Biodiesel Production

***Journal Publications(Published)***

1. Tan J, Loganath A, Chong YS, Obbard JP. (2009) Persistent organic pollutants in human breast milk in Singapore: Influential factors and the health risks of infants. *Journal of Toxicology and Environmental Health, Part A*. (provisionally accepted).
2. Ang E.L., Obbard J.P., Zhao H.M. (2009). Directed Evolution of Aniline Dioxygenase for Enhanced Bioremediation of Aromatic amines. *Applied Microbiology and Biotechnology* 81, 1063-1070.

3. Montefrio M.J. and Obbard J.P. (2009) Economics of Biodiesel Derived from Waste Cooking Oil in the Philippines. *Energy Sources* (in-press).
4. Montefrio M.J., Ng K.S, Koh L.Y., Torio E, Chua M.H., De Sales-Papa L., & Obbard J.P. (2009). Remediation of the Payatas Disposal Facility in Metro Manila, Philippines. *International Journal on Environmental, Economic, Social and Cultural Sustainability*, 2, 41-52.
5. Tan J., Li, Q.Q., Loganath A. Chong Y.S., Man X., Obbard J.P. (2008) Multivariate Data Analyses of Persistent Organic Pollutants in Maternal Adipose Tissue in Singapore. *Environmental Science & Technology* 42, 2681-2687.
6. Tan J., Loganath A. Chong Y.S., Obbard J.P (2008). Persistent Organic Pollutants in Human Blood: A Review of Worldwide Data and Data for Singapore. *Toxicology & Environmental Chemistry*, 90, 837-859.
7. Cuong D.T. and Obbard J.P. (2008) Distribution of Heavy metals in the dissolved and suspended Phase of the Sea-surface microlayer, Seawater column and Sediments of Singapore's coastal Environment. *Environmental Monitoring and Assessment*, 138, 255-272.
8. Wurl O. and Obbard J.P. (2008) A Modified Technique for Field Measurements of Dry Deposition Fluxes of Polychlorinated Biphenyls in Tropical Regions. *Science of the Total Environment*. In press.
9. Lim L., Wurl O., Karupiah S, Obbard J.P. (2007). Atmospheric wet deposition of PAHs to the sea-surface microlayer. *Marine Pollution bulletin*, 54, 1212-1219.
10. Obbard J.P. (2007) Biofuels- a Stepping Stone to a Clean Energy Future. Invited article published in 'Innovation', the Magazine of Research & Technology, NUS. Volume 7, 38-39.
11. Bayen S., Wurl O., Karupiah S., Sivasothi S., Lee H.K., Obbard J.P. (2007) Exposure of aquacultured oysters, *Crassostrea gigas*, to pollutants in Singapore. *Environmental Research*, 103, 375-382.
12. Ng O.H., Tan B.C. and Obbard J.P (2007) Lichens as bioindicators of atmospheric heavy metal pollution in Singapore. *Environmental Monitoring & Assessment* 123, 63-74.
13. Ang E.L., Obbard J.P., Zhao H. (2007) Probing the molecular determinants of aniline dioxygenase substrate specificity by saturation mutagenesis. *FEBS Journal*, 274, 928-939.
14. Li H. and Obbard J.P. (2007) Biodegradation of pyrene in beach sediments. *Bioremediation Journal* 10, 169-177.
15. Tan J., Cheng S., Loganath A., Chong Y.S., Obbard J.P. (2007). Polybrominated diphenyl ethers in house dust in Singapore. *Chemosphere* 66, 985-992.
16. Wurl O., Lam P.K.S. and Obbard J.P. (2007) Occurrence and distribution of polybrominated diphenyl ethers (PBDEs) in the dissolved and suspended phase of the sea-surface microlayer and seawater in Hong Kong, China. *Chemosphere* 65, 1060-1666.
17. Wurl O. and Obbard J.P. (2007) The role of the sea-surface microlayer in the dynamic of air-sea exchanges of organochlorine compounds. *Science of the Total Environment*, 369, 333-343
18. Wurl O., Lam P.K.S. and Obbard J.P. (2006) Distribution of organochlorines in the dissolved and suspended phase of the sea-surface microlayer and seawater in Hong Kong, China. *Marine Pollution Bulletin* 52, 768-777.
19. Li, Q.Q, Loganath A, Chong Y.S, Obbard J.P. (2006) Levels of persistent organic pollutant residues in human adipose and muscle tissues in Singapore. *Journal of Toxicology & Environmental Health* 69, 1927-1937.
20. Li, Q.Q, Loganath A, Chong Y.S, Obbard J.P. (2006) Persistent organic pollutants and adverse health effects in humans. *Journal of Toxicology & Environmental Health* 69, 1987-2005.

21. Ng K.L. and Obbard J.P. (2006) The prevalence of microplastics in Singapore's coastal marine environment. *Marine Pollution Bulletin* 52, 761-767.
22. Cuong D.T. and Obbard J.P. (2006) Metal speciation in coastal marine sediments from Singapore using a modified BCR-sequential extraction procedure. *Applied Geochemistry* 21, 1335-1346.
23. Wurl O., Subramanian K, and Obbard J.P. (2006) The role of the sea surface microlayer in the air-sea gas exchange of persistent organic pollutants. *Science of the Total Environment* 369, 333-343.
24. Bayen S., Thomas G., Obbard J.P. (2006) Chlorinated paraffins: A review of analysis and environmental occurrence. *Environmental International* 32, 915-929.
25. Foday J.M., Gan Z., Jae J.M., Sweetman A.J., Obbard J.P., Kobara Y. and Jones K.C. (2006). Passive air sampling of PCBs, organochlorine compounds and PBDEs across Asia. *Environmental Science & Technology* 39, 8638-8645.
26. Wurl O. and Obbard J.P. (2006) Distribution of organochlorine compounds in the sea-surface microlayer, water column and sediment of Singapore's coastal environment, *Chemosphere* 62, 1105-1115.
27. Wurl O., Potter J.R., Durville C. and Obbard J.P. (2006) Persistent organic pollutants in the equatorial atmosphere over the open Indian Ocean. *Environmental Science & Technology* 40, 1454-1461.
28. Wurl O., Potter J.R., Durville C. and Obbard J.P. (2006) Polybrominated diphenyl ethers (PBDEs) over the open Indian Ocean" has been published now in *Atmospheric Environment* 40, 2006, 5558-5565.
29. Lim T.B, Xu R, Tan B, Obbard J.P (2006) Persistent organic pollutants in moss as bioindicators of atmospheric pollution in Singapore. *Chemosphere* 64, 596-602.
30. Wurl O. and Obbard J.P. (2005) Chlorinated Pesticides and PCBs in the sea-surface microlayer and seawater samples of Singapore. *Marine Pollution Bulletin* 50, 1233-1243.
31. Li, Q.Q, Loganath A, Chong Y.S, Obbard J.P. (2005) Persistent organic pollutants in human adipose tissue from normal pregnant women: a review of global trends and preliminary data for Singapore. *Singapore J Obstet Gynaecol* 2005; 36: 8-18.
32. Xu R., Li C.Y., Lim Y.G., Obbard J.P. (2005). Use of slow-release fertilizer and biopolymers for stimulating hydrocarbon biodegradation in oil contaminated beach sediments. *Marine Pollution Bulletin* 51, 1101-1110.
33. Xu R., Lau A.N.L., Lim Y.G., Obbard J.P. (2005). Bioremediation of oil-contaminated sediments on an inter-tidal shoreline using a slow release fertilizer and chitosan. *Marine Pollution Bulletin* 51, 1062-1070.
34. Ang E.L. Zhao H, Obbard J.P. (2005) Bioremediation of persistent organic pollutants via biomolecular engineering. *Enzyme & Microbial Technology*, 37, 487-496. *This article was placed # 1 out of the Top 25 downloaded articles from Science Direct.*
35. Cuong D.T., Bayen S., Wurl O., Karuppiyah K., Wong K.K. S., Sivasothi N., Obbard J.P. (2005). Heavy metal contamination in mangrove habitats of Singapore. *Marine Pollution Bulletin* 61, 303-313.
36. Wurl O. and Obbard J.P. (2005) Organochlorine compounds in the marine atmosphere of Singapore. *Atmospheric Environment* 39, 7206-7216. *This article was placed # 10 out of the Top 25 downloaded articles from Science Direct.*
37. Bayen S., Wurl O., Karruppiyah S., Sivasothi S., Lee H.K., Obbard J.P. (2005) Persistent organic pollutants in mangrove food webs in Singapore. *Chemosphere* 61 303-313.
38. Wurl O. and Obbard J.P (2005) Organochlorine Pesticides, PCBs and PBDEs in Singapore`s Coastal Marine Sediments. *Chemosphere* 58, 925-933.

39. Chanbasha B., Obbard J.P., and Lee H.K. (2005). Analysis of persistent organic pollutants in Singapore's marine sediments using a novel microwave assisted solvent extraction and liquid-phase micro-extraction technique. *Journal of Chromatography A* 1068, 221-228.
40. Karups S, Annamali S and Obbard J.P. (2005) Organochlorine pesticide residues in odontocete species from the southeast coast of India. *Chemosphere* 60, 891-897.
41. Ng K.L. and Obbard J.P. (2005) Strategic Environmental Assessment in Hong Kong. *Environment International*, 31, 483-493. *This article was placed # 12 out of the Top 25 downloaded articles from Science Direct.*
42. Li, Q.Q, Loganath A, Chong Y.S, Obbard J.P. (2005) Determination and occurrence of polybrominated diphenyl ethers (PBDEs) in maternal adipose tissue from inhabitants of Singapore. *Journal of Chromatography B* 819, 253-257.
43. Bayen S, Koroleva E, Lee H.K., Obbard J.P (2005) Persistent organic pollutants and heavy metals in typical seafood types consumed in Singapore. *Journal of Toxicology and Environmental Health*, 68 151-166.
44. Bayen S, Gong Y., Chin H.S., Lee H.K., Leong E.Y, Obbard J.P (2005) Contamination and endocrine disruption in the green mussel, *Perna viridis*, from Singapore. *Environmental Health Perspectives* 112, 1467-1471.
45. Karups S, Annamalai S, Obbard J.P. (2005) Barnacle, attached to the Bottle-Nose Dolphin, *Xenobalanus globicipitis* (Cirripedia, Coronulidae), *Tursiops truncatus* (Mammalia, Cetacea) on the Southeastern Coast of India. *Crustaceana* 77, 879-882.
46. Bayen S, Barlow P., Lee H.K., Obbard J.P (2005). Effect of cooking on the loss of persistent organic pollutants from salmon. *Journal of Toxicology and Environmental Health* 68, 151-166.
47. Wong K.W., Toh B.A., Ting Y.P., Obbard J.P. (2005) Biodegradation of Phenanthrene in a zinc contaminated soil. *Letters in Applied Microbiology* 40, 50-55.
48. Bayen S., Giusti P., Lee H.K., Obbard J.P. (2005) Bioaccumulation of DDT pesticide in cultured Asian seabass following ingestion exposure *Journal of Toxicology and Environmental Health* 68, 51-65.
49. Obbard J.P., Ng K.L., Xu R. (2004) Bioremediation of petroleum contaminated beach sediments: use of crude palm oil and slow release fertilizer Osmocote to enhance biodegradation. *Water, Air and Soil Pollution* 157: 149-161.
50. Briffett C., Obbard J.P., MacKee J. (2004) Environmental Assessment in Malaysia: a means to an end or a new beginning? *Impact Assessment and Project Appraisal* 22, 221-233.
51. Wurl O. and Obbard J.P (2004) A Review of Pollutants in the Sea-Surface Microlayer (SML): A Unique Habitat for Marine Organisms. *Marine Pollution Bulletin* 48 1016-1030. *This article was placed # 1 out of the Top 25 downloaded articles from Science Direct.*
52. Xu R, Ng K.L., Lau N.L.A., Obbard J.P. (2004) Application of a slow release fertilizer for indigenous petroleum hydrocarbon degradation in oil contaminated beach sediment. *Journal of Environmental Quality* 33 1210-1216.
53. Bayen S, Gong Y., Chin H.S., Lee H.K., Leong E.Y, Obbard J.P (2004) Determination of polybrominated diphenyl ethers (PBDEs) in marine biological tissues using microwave assisted extraction (MAE). *Journal of Chromatography A* 1035, 291-294.

54. Bayen, S., Gong, Y. H., Chin, H. S., Lee, H. K., Leong, Y. E., Obbard, J. P. (2004) Androgenic and estrogenic response of green mussel extracts from Singapore's coastal environment using a human cell-based bioassay", *Environmental Health Perspectives*, 112, 1467.
55. Xu R, and Obbard J.P. (2004) Biodegradation of polycyclic aromatic hydrocarbons in oil-contaminated beach sediments treated with nutrient amendments. *Journal of Environmental Quality* 33, 861-867 (2004).
56. Bayen S, Thomas G.O., Lee H.K., Obbard J.P. (2004) Organochlorine pesticides and heavy metals in green mussel, *Perna viridis*, in Singapore. *Water, Air, Soil Pollution* 155, 103-116.
57. Chanbasha B., Obbard J.P., Lee H.K. (2004) Application of liquid phase microextraction and gas chromatography-mass spectrometry for the analysis of polychlorinated biphenyls in blood plasma. *Journal of Chromatography A* 1022, 161-169.
58. Bayen S, Thomas G.O., Lee H.K., Obbard J.P. (2003) Occurrence of PCBs and PBDEs in green mussels (*Perna viridis*) sampled from Singapore's coastal waters. *Environmental Toxicology and Chemistry Vol 22* 2432-2437.
59. Chanbasha B., Lee H.K., Obbard J.P. (2003) Persistent organic pollutants in Singapore's marine environment, Part I: Seawater. *Water, Air, Soil Pollution* 149, 295-313
60. Chanbasha B., Lee H.K., Obbard J.P. (2003) Persistent organic pollutants in Singapore's marine environment, Part II: Sediments. *Water, Air, Soil Pollution* 149, 315-325
61. Gong Y., Chin H.S., Lim E., Loy C.J., Obbard J.P., Yong E.L. (2003) Clustering of sex hormone disrupters in Singapore's coastal marine environment. *Environmental Health Perspectives* 111, 1448-1453.
62. Toh Y.C. & Yen J., Obbard J.P., Ting Y.P. (2003) Decolourisation of azo dyes by an isolate of white rot fungi. *Enzyme & Microbial Technology* 33, 569-575.
63. Zheng Z.M. and Obbard J.P. (2003) Oxidation of polycyclic aromatic hydrocarbons by fungal isolates from oil contaminated refinery soil. *Environmental Science and Pollution Research* 10, 173-176.
64. Zheng Z.M., Foo Y., Obbard J.P., Lin J. and Cen P. (2003) A simple structure model for enzyme production by *Phanerochaete chrysosporium*. *Chinese J. Chem Eng*, 11, 414-419.
65. Xu R. and Obbard J.P. (2003) Effect of Nutrient Amendments on Indigenous Hydrocarbon Biodegradation in Oil-Contaminated Beach Sediments. *Journal of Environmental Quality* 32, 1234 -1243.
66. Xu R. and Obbard J.P. (2003) The optimization of fertilizer dosage for bioremediation of oil-contaminated sediments. *World Journal of Environmental Microbiology* 19, 719-725.
67. Shan H. and Obbard J.P. (2003) Immobilisation of nitrifying bacteria for treatment of fresh aquaculture water. *Biotechnology Letters* 25, 1469-1471.
68. Zheng Z.M. and Obbard J.P. (2003) Oxidation of polycyclic aromatic hydrocarbons by fungal isolates from oil contaminated refinery soil. *Environmental Science and Pollution Research* 10, 173-176.
69. Briffett C., Obbard J.P., MacKee J. (2003) Towards strategic environmental assessment for the developing nations of Asia. *Environmental Impact Assessment Review* 23, 171-196.
70. Obbard J.P. and Lim S.F. (2003) Airborne concentrations of bacteria in a hospital environment in Singapore. *Water, Air, Soil Pollution* 144: 333-341.
71. Obbard J.P., Lai Y.C., Briffett C. (2002) Environmental assessment in Vietnam: Theory into practice? *Journal of Assessment Policy & Management* 4, 267-295.

72. Chanbasha B., Lee H.K. and Obbard J.P. (2002). Determination of organochlorine pesticides in seawater using liquid-phase hollow fibre membrane microextraction and gas chromatography-mass spectrometry. *J. Chromatography A* 968, 191.
73. Zheng Z.M. and Obbard J.P. (2002) Polycyclic aromatic hydrocarbons removal from soil by surfactant solubilization and *Phanerochaete chrysosporium* oxidation. *J. Environmental Quality* 31, 1842-1847.
74. Zheng Z.M. and Obbard J.P. (2002) Removal of surfactant solubilised polycyclic aromatic hydrocarbons by *Phanerochaete chrysosporium* in a rotating biological contactor. *Journal of Biotechnology* 96, 241-249.
75. Zheng Z.M. and Obbard J.P. (2002) Oxidation of polycyclic aromatic hydrocarbons (PAH) by the white rot fungus, *Phanerochaete chrysosporium*. *Enzyme and Microbial Technology* 31, 3-9.
76. Zheng Z.M. and Obbard J.P. (2002) Evaluation of elevated non-ionic surfactant critical micelle concentration in a soil/aqueous system. *Water Research* 36, 2667-2672.
77. Shan H. and Obbard J.P. (2001) Ammonia removal from prawn aquaculture pond water using immobilized cultures of nitrifying bacteria. *Applied Microbiology and Biotechnology* 57, 791-798.
78. McKee J., Obbard J.P., Briffett C. (2001) Environmental impact assessment in Sri Lanka: status and potential for strategic environmental assessment. *Environmental Assessment Policy and Management* 3, 221-229.
79. Obbard J.P. (2001) The effects of heavy metals on microbial activities in contaminated soils. *Applied Geochemistry* 16, 1405-1411.
80. Zheng Z.M. and Obbard J.P. (2001) Effect of non-ionic surfactants on biodegradation of Polycyclic aromatic hydrocarbons by *Phanerochaete chrysosporium*. *Journal of Chemical Technology & Biotechnology* 76, pp. 423-429.
81. Mathew M., Obbard J.P. (2001) Optimisation of dehydrogenase activity measurements in beach sediments contaminated with petroleum hydrocarbons. *Biotechnology Letters* 23, 227-230.
82. Zheng Z.M. and Obbard J.P. (2001) Removal of polycyclic aromatic hydrocarbons in soil by the white rot fungus *Phanerochaete chrysosporium*. *Journal of Chemical Technology & Biotechnology* 75, 1183-1189.
83. Obbard J.P. (2001) Measurement of dehydrogenase activity using 2-p-iodophenyl-3-p-nitrophenyl-5-phenyltetrazolium chloride (INT) in the presence of copper. *Biology & Fertility of Soils* 33, 328-330.
84. Obbard J.P. and Jones K.C. (2001) Measurement symbiotic nitrogen fixation in leguminous host plants grown in heavy metal contaminated soils amended with sewage sludge. *Environmental Pollution* 111, 311-320.
85. Chew I., Obbard J.P., Stanforth R.R. (2000) Microbial cellulose decomposition in soils from a rifle range contaminated with heavy metals. *Environmental Pollution* 111, 367-375.
86. Goh I , Obbard J.P., Viswanathan S, Huang Y. (2000) Airborne bacteria and fungal spores in the indoor environment: a case study in Singapore. *Acta Biotechnologica* 20 (1), 67-73.
87. Tan K.S., B. Johnson B., Goh B.P.L., Tun K.P.P., Low J.K.Y., Gin K.Y.H., Ting Y.P., Obbard J.P., Tan H.M., Mathew M., Chou L.M. (1999). An assessment of the impact of the Evoikos oil spill on the marine environment in Singapore. *Singapore Maritime and Port Journal* 1999: 69-81.
88. Obbard J.P., Barr M.J., Robinson H.D. Carville M.S., Mathew M. (1999): Landfill leachate: characteristics and biological treatment. *Journal of Resource and Environmental Biotechnology* 2, 235-248.
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- Malaysia
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- Philippines
- Sri Lanka
- Vietnam

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**Consultancy Experience**

Private sector experience in Asia and the UK has been focused mainly on the management of scientific aspects of environmental impact assessment (EIA) for government infrastructure projects for both marine and terrestrial based projects. The table below summarizes science and engineering project experience for both private and public sector projects. Indicative total project values are as follows: US\$: \* <10,000; \*\* 10,000-100,000; \*\*\* 100,000 -1,000,000

**Asia Experience**

<b>Role &amp; Project</b>	<b>Approx. overall project value (US\$)</b>
• <i>Bioenergy expert to feasibility study on the potential for bioenergy and biofuels in Singapore. Singapore Energy Marketing Authority</i>	***
• <i>Technical training to government officials on bioenergy technologies</i>	*
• <i>Technical audit and evaluation, algae-to-biodiesel facility, USA</i>	**
• <i>Technical training to Asian government officials on bioenergy technologies</i>	**
• <i>Contaminated land and landfill expert, Tampines Dumping Ground Singapore.</i>	**
• <i>Technical training to government officials in ASEAN on climate change science &amp; mitigation</i>	**
• <i>Environmental risk assessment, volcanic mudflow, Surabaya, Indonesia</i>	**
• <i>Environmental risk assessment, ESSAR Oil Terminal Facility, Mumbai, India</i>	**
• <i>Laboratory Technical Accreditor, Singapore Accreditation Council – over 25 projects completed</i>	*
• <i>Environmental audit and risk assessment, shipping company, Singapore</i>	*
• <i>Biological impact assessment, Public Utilities Board, Singapore</i>	**
• <i>Environmental assessor, for marine pipeline, Shell Petroleum, Singapore</i>	**
• <i>Technical training on bioremediation, Regional Institute of Environmental Technology, Indonesia</i>	*
• <i>Contaminated land assessor for industrial development park, JTC Corporation, Singapore</i>	**
• <i>Environmental impact assessor (water), Tuas Desalination Plant, Singapore</i>	**
• <i>Environmental impact assessor (sediments &amp; water), North East Coast Reservoir Study, Public Utilities Board, Singapore</i>	***
• <i>Environmental advisor Chemical Exhibition Centre, Jurong Island, JTC Corporation, Singapore</i>	***
• <i>Team Member for environmental impact assessment (EIA) of coastal waste transfer station, Environmental Protection Department, Hong Kong</i>	***
• <i>Project manager for EIA for restoration of Tseung Kwan O Landfills, Environmental Protection Department, Hong Kong</i>	***
• <i>Project Manager for EIA of Ma On Shan Water Treatment Works, Water Services Department Hong Kong</i>	**
• <i>Team Member of environmental audit for Modern Terminals Ltd., Hong Kong.</i>	**
• <i>Project Manager for environmental monitoring program (including marine) for the Privatisation of SENT Landfill. Environmental Protection Department, Hong Kong</i>	***
• <i>Project Manager, Environmental management plan for an airport fueling facility, American Airlines, Hong Kong</i>	**
• <i>Project Manager of EIA and monitoring and audit manual for the West of Sulphur Channel Marine Borrow Area, Civil Engineering Department, Hong Kong</i>	***
• <i>Project Manager and Water Quality Assessor for EIA of proposed waste-to-energy incineration plant, Environmental Protection Department, Hong Kong</i>	***
• <i>Project Manager for environmental monitoring programme for the Privatization of SENT Landfill, Environmental Protection Department, Hong Kong</i>	***
• <i>Team member for ecotoxicological assessment and remediation of contaminated river sediments in the Shing Mun River, Environmental Protection Department, Hong Kong</i>	**
• <i>Project Manager of EIA and monitoring and audit manual for the Green Island</i>	***

Reclamation (Part) Public Dump, Civil Engineering Department, Hong Kong	
• <i>Project Manager of EIA</i> for rail cutting through Kwai Fong landfill, Environmental Protection Department, Hong Kong	**
• <i>Project Manager</i> for EIA of construction design for West Rail Depot, Kowloon-Canton Railway Corporation, Hong Kong	***
• <i>Environmental Representative</i> on Department of Trade and Industry Mission to China to advise government and private sectors on environmental technology and industrial waste management, Guangdong, China	**
• <i>Environmental Representative</i> on Scottish Trade International Mission to Taiwan to advise government and private sectors on scientific services and waste management technologies, Taiwan	**

**UK Experience**

<b>Role &amp; Project</b>	<b>Approx. overall project value (US\$)</b>
• <i>Project Manager</i> of EIA for development of a waste disposal facility, Fermanagh District Council, N. Ireland, UK	***
• <i>Project Manager</i> for technical review of Landfill EIA for International United Distillers, UK	**
• <i>Project Manager</i> of EIA for the development of an industrial manufacturing plant, Locate in Scotland, Scottish Enterprise, UK	***
• <i>Team Member</i> of environmental audit of clinical waste handling facility, private client, UK	**
• <i>Project Manager</i> of ecological assessment of wetland nature reserve, Blackpool Borough Council, UK	**
• <i>Project Manager</i> of environmental reports for three opencast mine developments, Scottish Coal, UK	**
• <i>Project Manager</i> of environmental audit of haulage and materials handling depot, Christian Salvesson plc, UK	**
• <i>Project Manager</i> of environmental audit of industrial property, Royal Mail Property Holdings, UK	**
• <i>Team Member</i> of EIA of a sewage drying process, Wessex Water plc, UK	**
• <i>Team Member</i> of EIA of metallic printing inks, Wolstenholme Rink, UK	**
• <i>Team Member</i> of research and analysis team, B&Q plc, UK	***

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