

# CURRICULUM VITAE

## PERSONAL DETAILS

**Name:** Deborah Helen OUGHTON      **Date of Birth:** 13th August 1964

**Nationality:** British

**Present position:** Professor



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## BRIEF BIOSKETCH

**Deborah H. Oughton** is professor in Environmental Chemistry, head of the Research school in Ecotoxicology and ethics co-ordinator at the Norwegian University of Life Sciences. She studied chemistry at the University of Manchester, taking a Ph.D. in Environmental Radiochemistry in 1989. She moved to the Agricultural University of Norway in 1990, to continue her Ph.D. research on the environmental consequences of the Chernobyl accident, becoming Professor in Environmental Chemistry in 2002. Since 1992, and in parallel with her scientific work, she has been engaged on research into ethics and radiation protection funded by the Norwegian Research Council's Ethics Programme. She has taught philosophy of science and research ethics to PhD students in the Faculty of Mathematics and Natural Sciences at UiO since 1995. She has also been an honorary research fellow at the Institute of Environment, Philosophy and Public Policy (IEPP), University of Lancaster. She is a board member of the National Ethical Committee for Science and Technology (NENT) and the Ethics Advisory Board for Patents, and was recently appointed as a member of the Norwegian Academy of Sciences Climate Panel.

Her scientific research has focused on radioecology and environmental pollution, including projects on nuclear risks, acid rain, heavy metals and nano-particles. Specific areas of interest include chemical speciation and its influence on the transfer, bioavailability and metabolism of pollutants. She teaches university courses in Inorganic Chemistry, Nuclear Chemistry, Environmental Chemistry, Analytical Chemistry and Ecotoxicology. In ethics and philosophy of science, her main research interests are on risk, scientific uncertainty and the application of ethics in practical decision-making. Her specialist area is in environmental risk assessment and management, and investigations how ethics may help to bridge science and policy. Specialising in the evaluation of radiation risks, research includes both theoretical work (an evaluation of those aspects morally relevant in deciding the acceptability of risks) and practical application (stakeholder involvement and ethical evaluation of decision-making processes). Case studies include general radiation protection policy for humans, accident remediation and protection of the environment from ionising radiation. At UMB she teaches courses on Research Ethics and Bioethics (all to science students), where she is secretary of the Ethics Board (Etikkrådet). She has been consultant on ethical issues for the International Atomic Energy Agency (IAEA) and the OECD. She has recently been involved in 6 EU projects on environmental pollution, radioecology and ethics. She has published more than 150 papers, in both science and ethics, 64 in referred journals.

## EDUCATION

1982-1985: University of Manchester, Dept. of Chemistry, B.Sc, Hons. Chemistry  
1985-1989: University of Manchester, Dept. of Chemistry, Ph.D. in Radiochemistry  
Thesis Title: *The Environmental Chemistry of Radiocaesium and other Radionuclides*. Supervisor: Dr. J.P. Day

## WORK EXPERIENCE

Aug 2006 - June 2006- Jan 2003-2006	Co-ordinator for ethics in teaching and research at UMB Head of Research School in Ecotoxicology, UMB Honorary Research Fellow, Institute of Environment, Philosophy and Public Policy (IEPPP), Lancaster University, UK
September 2002 - 2006 July 2002 - Jan 2001- Jun 2002 Aug 1998 - Aug 2002	Research Fellow (60%), Norwegian Ethics Programme, Oslo Univ. Professor in Environmental Chemistry, Agricultural Uni. Norway Research Scientist (40%), Norwegian Radiation Protection Authority Part time lecturer (40%), Faculty of Mathematics and Natural Science, Oslo University (Philosophy of Science PhD course)
Aug 1997 - Aug 2002 Jan 1996 - Jul 1997	Associate Professor, Agricultural University of Norway (AUN) Research Stipend from NFR's Ethics Programme Centre for Advanced Studies, Norwegian Academy of Science and Letters, Oslo
May 1992 - Dec 1995	50% Research Stipend from NFR's Ethics Programme 50% Research Scientist. AUN
July 1991 - Apr 1992 Jan 1990 - June 1991	Research Scientist, Isotope Laboratory, AUN Royal Society European Exchange Research Fellowship (UK) Agricultural University of Norway
Jan 1989 - Dec 1989	Post Doctoral Research Associate, Department of Chemistry University of Manchester

## SCIENTIFIC RESEARCH - ADMINISTRATIVE EXPERIENCE

2009-2010	Lead Contractor on Nordic Collaboration on Ecotoxicology of Silver Nanoparticles
2008-2010	Project leader, NFR Miljø 2015, Development of tracing methods for nanoparticles
2007-2010	Contractor NFR NANOMAT Project: Environmental fate and toxicology of nanoparticles.
2007-2009	Sub-contractor on the EU 6 <sup>th</sup> Framework project PROTECT: Protection of the Environment from Ionising Contaminants
2007	NATO grant to organise a workshop on "Hot Particles Released from Different Nuclear Sources", Yalta, May 2007
2005-2007	Project Leader "Ecological Risks of Nanoparticles" UMB Miljøforsk project.
2004-2007	Lead Contractor on two EU 6 <sup>th</sup> Framework Projects: ERICA: Environmental Risk from Ionising Contaminants: Assessment and Management. <a href="http://www.ERICA-project.org">www.ERICA-project.org</a> EURANOS: A European Dimension to Emergency Risk Management
2005-2008	Project Leader NFR Project "Advanced Mass Spectrometry of Determination of concentrations and physico-chemical forms of transuranics".
2000-2004	Leading Contractor on EU 5 <sup>th</sup> Framework Projects: STRATEGY: Institute of Terrestrial Ecology, UK; Risoe National Laboratory, DK; Dept. Economics, Spain; Lancaster University, UK; NRPA, Norway, GSF, Germany; NRPA, UK. ESTABLISH: NRPA, Norway, Hamburg University, Germany, Typhoon Institute of Experimental Meteorology, Russia; Veransky Institute, Moscow; Arctic and Antarctic Research Institute, St. Petersburg.
2001-2004	Europäische Akademie, Germany: <i>Environmental Standards: Dose-effect relations in the Low dose range and their risk evaluation.</i>
1996-2001	Project Leader NFR Project "Determination of concentrations and physico-chemical forms of transuranics".
1995-1998	Project Co-ordinator of EU/INTAS project on "Mobilisation of Radionuclides from Fuel Particles".

Collaborator in 24 other international and national research projects (1990-2006).

## BOARD MEMBER/CONSULTANCY

2009-	Member of the Norwegian Academy of Sciences Climate Panel
2009-	Consultant International Atomic Energy Agency (IAEA) social and ethical aspects of environmental remediation
2006-	Board member, The Ethics Advisory Board for Patents
2006-	Board member, National Committee for Research Ethics in Science and Technology
2005-2007	Advisory Board, Norwegian Research Councils "Pollution" Programme, Miljø 2015
2002-	Board member, International Union of Radioecology
1997-2001	Member Ethics Committee, Agricultural University of Norway.
2000-2001	Board Member of Norwegian Research Council's Ethics Programme.
1998-2000	Member Joint Norwegian-Russian Expert Group on Radioactive Waste.
1999-2002	Consultant IAEA, Protection of the Environment from Ionising Radiation.
2002	Consultant, OECD, Environmental Protection
1989	Awarded the prize for best PhD thesis in Chemistry, University of Manchester

## MSc and PhD Supervision

Main/Joint Supervisor to 7 MSc Students (including two at the University of Manchester). Main supervisor to four Ph.D. students (Lindis Skipperud—graduated 2005; Turid Hertel-Aas; Gjermund Strømman; Claire Coutris). Joint supervisor to four Ph.D. students (UMB, Nordforsk) and three Ph.D. students (University of Manchester, exchange visits).

## FIELDS OF INTEREST AND PRESENT RESEARCH ACTIVITIES

**Field of Specialization:** Environmental Chemistry/Radiochemistry/Ecotoxicology/Ethics

- 1) Environmental Chemistry and Radiochemistry: The application of advanced radiochemical methods (i.e., tracer techniques,) and radioanalytical methods (i.e., neutron activation analysis, accelerator mass spectrometry) to the study of the environmental chemistry of pollutants.
- 2) Ecotoxicology: The speciation, transfer and distribution of radionuclides, metals and nanoparticles within the environment, their bioavailability and biological effects in plants, animals and humans
- 3) Ethics: The ethics and philosophy of science, particularly the use of applied ethics to study societal impacts of science and technology. Specific applications: risk assessment, nuclear technologies, environmental protection, biotechnology, nanotechnology.

## SELECTED PUBLICATIONS (2003-2009).

### *Peer-reviewed Journal Articles and Books*

96. Oughton, D. H. 2003. Ethical issues in protection of the environment from ionising radiation, *Journal of Environmental Radioactivity*, **66**: 3-18.
103. Streffer, C., Bolt, H., Føllesdal, D., Hall, P., Hengstler, J.G., Jakob, P., Oughton, D.H., Preiss, K., Reh binder, E., Swaton, E. 2004. *Low Dose Exposures in the Environment: Dose-Effect Relations and Risk Evaluation*. Springer-Verlag: Berlin (ISBN 3-540-21083-0)
104. Oughton, D.H., Bay, I., Forsberg, E-M, Kaiser, M., Howard, B. 2004. An ethical dimension to sustainable resoration and long-term management of contaminated areas, *Journal of Environmental Radioactivity*, **74**: 171-183. ISSN 0265-931X.
105. Oughton, D. H., Strand, P. 2004. The Oslo Consensus conference on protection of the environment, *Journal of Environmental Radioactivity*, **74**: 7-17. ISSN 0265-931X
106. Skipperud, L and Oughton, D.H., (2004) Use of AMS in the Marine Environment, *Environment International*, **30**, 815 - 825.
107. Skipperud, L. Oughton, D. H., Fifield, L. K., Lind, O. C., Tims, S., Brown, J., and Sickel, M. (2004) Plutonium isotope ratios in Yenisey and Ob Estuaries, *Applied Radiation and Isotopes*, **60** (2-4), 589-593.
108. Oughton, D.H., Skipperud, L., Fifield, L.K., Cresswell, R.C., Salbu, B., and Day, J.P., (2004) Accelerator Mass Spectrometry measurement of <sup>240</sup>Pu/<sup>239</sup>Pu isotope ratios in Novaya Zemlja and

- Kara Sea sediments. *Applied Radiation and Isotopes*, **61**: 249-253.
110. Howard, B.J., Liland, A., Beresford, N.A., Anderson, K.G., Cox, G., Gil, J.M., Hunt, J., Nisbet, A., Oughton, D.H., Voigt, G. A critical evaluation of the Strategy project, *J. Radiation Dosimetry*. **109**: 63-67
112. Cox, G., Beresford, N., Alvarez, B., Nisbet, A.F., Oughton, D., Kis, Z., Egen, K., Andersson, K., Thørring, H., Hunt, J., Wright, S., Barnett, C., Gil, J., Howard, B. and Crout, N. 2005. Identification of optimal countermeasure strategies for radioactively contaminated regions: case studies. *J. Environ. Radioact.* **83**:383-397
119. Skipperud, L., and Oughton, D.H., (2005) "Measuring Pu isotope ratios with MS" *Kjemi*, **65**: 20-26
125. Oughton, D.H. 2005. Hypothesis testing and the choice of dose-response model. *J. Toxicology Suppl.* 1-2
126. Salbu, B., Rosseland, B.O., Oughton, D.H. 2005. Multiple stressors – a challenge for the future, *J. Environmental Monitoring*, 539-540.
128. Kleja Berggren, D., Standring, W.J.F., Oughton, D.H., Fifield, J.K. 2005. Assessment of isotopically exchangeable Al in soil materials using <sup>26</sup>Al tracer. *Geochimica et Cosmochimica Acta.* **69**: 5263-5277.
129. Skipperud, L., Oughton, D.H., Salbu, B., Strand, P., Drozcho, E., and Mokrov, Y., 2005. Plutonium contamination in soils and sediments at Mayak PA, Russia, *Health Physics.* **89**, 1-12.
130. Oughton, D.H. 2006. Hypothesis testing and the choice of dose-response model. *Toxicology Letters*, **162**: 98-110 (ISSN 0378-4274)
133. Lind, O.L., Oughton, D.H., Salbu, B., Skipperud, L., Sickel, M.A., Brown, J.E., Fifield, L.K., Tims, S.G. 2006. Transport of low <sup>240</sup>Pu/<sup>239</sup>Pu atom ratio plutonium species in the Ob and Yenisey Rivers to the Kara Sea. *Earth and Planetary Science Letters*, **251**: 33-43
134. Mothersill, C., Salbu, B., Sørli, L., Teien, H-V., Denbeigh, J., Oughton, D.H., Seymour, C. Multiple stressor effects of radiation and metals in rainbow trout. 2007. *J. Environ Radioactivity*, **96**: 20-31
135. Hertel-Aas, T., Brunborg, G., Jaworska, A., Bjerke, H., Salbu, B., Oughton, D.H. Effects of chronic gamma irradiation on reproduction in the earthworm. 2007. *Eisenia fetida. Radiation Research.* **168**: 515-526. (ISSN: 0033-7587)
136. Skipperud, L., Oughton, D.H., Støwer Rosten, L., Wharton, M.J., and Day, J.P., (2007) Measurement of <sup>99</sup>Tc using Electrothermal Vaporisation Inductive Coupled Plasma – Mass Spectrometry (ETV-ICP-MS). *Journal of Environmental Radioactivity.* Vol 98 (3), 251-263.
140. Oughton, D.H. (2008) Promises and pitfalls of public participation *Energy and Environment*, **19**: 485-496
142. Garnier-Laplace, J., Copplestone, D., Gilbin, R., Alonzo, F., Ciffroy, P., Gilek, M., Agüero, A., Björk, M., Oughton, D.H., Jaworska, A., Larsson, C-M. and Hingston, J.L. (2008) Issues and practices in the use of effects data from FREDERICA in the ERICA Integrated Approach. *Journal of Environmental Radioactivity*, **99**:
143. Oughton, D.H., Agüero, A., Avila, R., Brown, J.E., Copplestone, D., Gilek, M. (2008). Addressing Uncertainties in the ERICA Integrated Approach. *Journal of Environmental Radioactivity* **99**: 1384-1392
144. Alonzo, F, Hertel-Aas, T., Gilek, M., Gilbin, R., Oughton, D. And Garnier-Laplace, J. (2008) Modelling the propagation of effects of chronic exposure to ionising radiation from individuals to populations. *Journal of Environmental Radioactivity*, **99**, 1464-1473.
145. Zinger, I., Oughton, D.H., Jones S. (2008) Stakeholder interaction within the ERICA integrated approach, *Journal of Environmental Radioactivity*, **99**: 1503-1509
147. Salbu, B., Denbeigh, J., Smith, R.W., Heier, L., Teien, H-C., Rosseland, B., Oughton, D.H., Seymour, C., Mothersill, C. Environmentally relevant mixed exposures to radiation and heavy metals induce measureable stress responses in Atlantic salmon. *Environmental Science and Technology*, in press.
153. Oughton, D.H., Hertel-Aas, T., Pellicer, E., Mendoza, E., Joner, E.J (2008) Neutron activation of engineered nanoparticles as a tool for tracing their environmental fate and uptake in organisms. *Environmental Toxicology and Chemistry* **27**, 1883–1887.

164. Andersson, P., Garnier-Laplace, J., Beresford, N.A., Copplestone, D., Howard, B.J., Howe, P., Oughton, D.H., Whitehouse, P., 2009. Protection of the environment from ionising radiation in a regulatory context (PROTECT): proposed numerical benchmark values. *Journal of Environmental Radioactivity*, (in press).
151. Oughton, D.H. and Kasparov, V. (eds) 2009. *Hot Particles released from Nuclear Sources*. NATO Science for Peace Series C. (Springer: Amsterdam) in press

*Book Chapters and Reports*

94. Andersson, K.G., Roed, J., Eged, K., Kis, Z., Voight, G., Merkbach, R., Oughton, D.H., Hunt, J., Lee, R., Beresford, N.A., Sandals, F.J. 2003. Physical Countermeasures to sustain acceptable Living and Working Conditions in Radioactively Contaminated Residential Areas, Risø R-1396 (EN) ISBN 87-550-3190-0, 143 pp. Risø: Roskilde.
124. Bay, I and Oughton, D.H. 2005. Social and economic effects. In: *Chernobyl, Catastrophe and Consequences* (eds J. Smith and N.A. Beresford) Springer-Verlag: Berlin, pp 239-262. (ISBN 3-540-23866-2)
137. Oughton, DH. 2007. Uncertainties from Multiple Stressors, In: *Multiple Stressors: A Challenge for the Future*, NATO Science for Peace and Security Series C: Environmental Security, pp. 113-134
148. Oughton, D.H. and Forsberg, E-M. 2009. Non-radiological perspectives – holistic assessment of countermeasure strategies, In: *Radioactive contamination in residential areas* (Editor, K. Andersson), Radioactivity in the Environment Series, Elsevier: Oxford. pp.260-294.
149. Oughton, D.H., Bay-Larsen, I., Voigt, G. 2009. Social, ethical, environmental and economic aspects of remediation, in: *Remediation of Contaminated Environments* (S. Fessenko and G. Voigt, eds.) Elsevier Press: Oxford. pp.428-444 (ISSN 1569-4860).