

Curriculum Vitae Dick de Zwart



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Name : Dr Dick de Zwart
Date of birth : 500105 (Jan 5th, 1950)
Place of birth : Amsterdam, The Netherlands

Residential address : Maria van Boeichoutlaan 25
3984 PE Odijk
The Netherlands
Tel.: +31-30-6564553
Fax.: +31-30-6567600
e-mail: ddz@planet.nl

Work address : DdZ Ecotox
Maria van Boeichoutlaan 25
3984 PE Odijk
The Netherlands
Tel.: +31-30-6564553
Fax.: +31-30-6567600
e-mail: ddz@planet.nl

Family situation : Married since 1978
Children: girl 1981 & boy 1983

Education

- 1962-1966 MULO-B
- 1966-1969 HBS-B
- 1969-1970 University of Amsterdam, Mathematics and physics
- 1970-1976 University of Amsterdam, Biology
- 1976 Graduation biology, "Cum Laude"
Major topic: Aquatic Ecology
Minor topics: Experimental Taxonomy
Electronics
- 2005 PhD, University of Amsterdam

Working experience

- 1976-1979 University of Amsterdam
Micro-ecosystem study on effects of temperature changes
- 1980-2015 RID-RIVM
Continuously involved in ecotoxicological studies
 - Method development
 - International cooperation
 - River water quality (1988-1996)
 - Ecological risk assessment
 - Water quality
 - Ecological risk of harbour sludge dredging

		- Eco-epidemiology
	2004-.....	Head of department Environmental Quality, Lab for Ecological Risk Assessment (16 persons)
	2007-.....	Head of department Ecology, Lab for Ecological Risk Assessment (11 persons)
	2012-2015	Senior scientist RIVM Centre for Sustainability, Environment and Health
	April 2015	Retirement
	2015-.....	Private ecotoxicological consultant
Recognition as toxicologist for legal purposes	1988	Recognition SMBWO, Toxicology
	1997	Renewal SMBWO recognition, Toxicology
	2003	Renewal SMBWO recognition, Toxicology
Courses followed	- 1983	Project management
	- 1991	Conflict management
	- 1995	Management of research
	- 1997	Multi variate statistics
	- 1998	Elementary statistics
	- 1999	S-Plus statistics
	- 2000	S-Plus GLM
	- 2004	Stress management
	- 2006	Personnel problem management
	- 2008	Coaching leadership

Selected publications 1998-2016

Reports:

De Zwart, D. 1998. Multivariate gradient analysis applied to relate chemical and biological observations. In: Kleemola S., Forsius M. (eds), 7th Annual Report 1998. UN ECE ICP Integrated Monitoring. The Finnish Environment 217. Finnish Environment Institute, Helsinki, Finland. ISBN 952-11-0301-9. pp. 15-18.

D. de Zwart, M. Rutgers en J. Notenboom, 1999. Locatiespecifieke ecologische risico's van bodemverontreiniging. RIVM-rapport 711701011, Jan 1999.

De Zwart D. 1999. IM data used for modelling environmental vegetation effects on a European scale. In: 8Th Annual Report 1999 (Kleemola and Forsius, eds). International Cooperative Programme on Integrated Monitoring of Air Pollution Effects on Ecosystems., UN ECE, Convention on Long-Range Transboundary Air Pollution, The Finnish Environment, Report 325:21-25. Helsinki, Finland.

Balk, F., Jongerius, O., Van Veldhuizen, A., De Zwart, D. en Hendriks, J. 1999. Relatie tussen bioassays en chemische analyses. Publikaties en rapporten van het project "Ecologisch herstel Rijn en Maas". Rapport 77.

De Zwart D. 2001. Progress report on modelling understory vegetation at a continental scale. In: 10Th Annual Report 2001 (Kleemola and Forsius, eds). International Cooperative Programme on Integrated Monitoring of Air Pollution

Effects on Ecosystems., UN ECE, Convention on Long-Range Transboundary Air Pollution, The Finnish Environment, Report 498:30-36. Helsinki, Finland.

Slooff, W., D. de Zwart, M. Tonkes, M. Rutgers, en C. van de Guchte. 2001. SOMS: Basis voor effectgerichte beoordeling? RIVM-Rapport nr. 601503.021

Bakkenes, M., De Zwart, D. and Alkemade, J.R.M. 2002, MOVE nationaal MOdel voor de VEgetatie; versie 3.2. RIVM-rapport 408657006.

De Zwart D. 2002. Progress report on modelling forest ground vegetation at a continental scale. In: 11Th Annual Report 2002 (Kleemola and Forsius, eds). International Cooperative Programme on Integrated Monitoring of Air Pollution Effects on Ecosystems., UN ECE, Convention on Long-Range Transboundary Air Pollution, The Finnish Environment, Report 567:26-45. Helsinki, Finland.

Van Dobben, H., De Zwart, D., Reinds, G.J. and De Vries, W. 2002. The vascular species composition of ground vegetation. Ch 3 In: Technical report 2002: Intensive monitoring of forest ecosystems in Europe, Forest Intensive Monitoring Coordinating Institute (FIMCI), ISSN 1020-6078.

Fisher, R, De Vries, W..... and De Zwart, D. 2002 Executive report: The condition of forest in Europe. Federal Research Centre for Forestry and Forest Products, Hamburg, Germany, ISSN 1020-587X.

Mathijssen-Spiekman EAM, Wolters-Balk MAH De Zwart D. 2002. Interpretation of Integrated Monitoring data gathered at the Lheebroekerzand in the Netherlands. RIVM rapport 607165002, december 2002

Wintersen A, Roelofs W, Posthuma L, Zwart de D,
Realisation of the RIVM EcoTox Database
ECO notitie 02/04A, 18/12/2002

Struijs J, Zwart de D
Evaluatie van pT/De bepaling van toxische druk in water.
RIVM Rapport 860703001/2003

De Zwart, D. 2003. Ecological effects of pesticide use in the Netherlands: Modeled and observed effects in field ditches. RIVM report 500002003/2003

Posthuma, L., De Zwart, D., Cuypers, C., and Harmsen, J. 2004. Bagger en Bodem - onderbouwend onderzoek voor de wijziging van concentratie- naar risicogestuurd baggerbeleid. Deel I. Motieven voor- en inpassing van risicogestuurd verspreidingsbeleid (concept voor intern gebruik opdrachtgever). RIVM/RIZA/Alterra, Bilthoven.

Wintersen, A.M., De Zwart, D., and Posthuma, L. 2004. Deel 1: De RIVM e-toxBase een jaar operationeel. Status medio 2004 en evaluatie van het gebruik en de toepassing binnen projecten (in Dutch). Part 2: RIVM e-toxBase V2.0. Reference manual to the 2004 interface (in English), Report LER-Notitie 2004/04, National

Institute for Public Health and the Environment (RIVM), Laboratory for Ecological Risk Assessment (LER), Bilthoven, the Netherlands.

Posthuma, L., J. Lijzen, P.F. Otte, D. de Zwart, A. Wintersen, C. Cuypers, P. van Noort, M. Beek, J. Harmsen, B.J. Groenenberg. 2006. Beslissen over bagger op bodem. 3 deelrapporten. RIVM rapport nummer 711701046 / 2006, National Institute for Public Health and the Environment (RIVM), Laboratory for Ecological Risk Assessment (LER), Bilthoven, the Netherlands.

De Zwart, D. 2006. Conversion of concentration data for individual toxicants to overall combined toxic risk: Data availability status November 25, 2005. ModelKey deliverable EFD1.2, RIVM, Bilthoven, the Netherlands.

De Zwart, D. 2006. Overview of existing diagnostic modelling techniques and decision on modelling techniques to apply in the next stage of the WP Effect 1. ModelKey deliverable EFD1.4, RIVM, Bilthoven, the Netherlands.

De Zwart, D. 2006. Pre-programming of required models for diagnosis of ecosystem impairment in WP Effect 1. ModelKey deliverable EFD1.5, RIVM, Bilthoven, the Netherlands.

De Zwart, D., S. Gottardo, C. Micheletti, P. Nunes, Elena Semenzin, A. Critto, and A. Marcomini. 2006. Proposed Preliminary Weight of Evidence procedures for Site Specific Integrated Risk Indices (IRI). ModelKey deliverable DD2.3, RIVM, Bilthoven, the Netherlands.

De Zwart, D., S. Gottardo, E. Semenzin, A. Critto, S. Giove, A. Brancia, J. Rizzi, C. S., and A. Marcomini. 2008. Procedure for calculating Integrated Risk Indices for definitive ERA. ModelKey deliverable DD2.9, RIVM, Bilthoven, The Netherlands.

De Zwart, D., and C. Micheletti. 2006. Critical review of Weight of Evidence approaches and tools. ModelKey deliverable DD2.1, RIVM, Bilthoven, the Netherlands.

De Zwart, D., and L. Posthuma. 2008. Application of developed models to a limited number of well-documented case studies for validation purposes. ModelKey deliverable EFD1.6, RIVM, Bilthoven, The Netherlands.

De Zwart, D., L. Posthuma, M. Gevrey, and S. Lek. 2008. Intercomparison of developed diagnostic models for the Scheldt catchment surface water data. Modelkey deliverable EFD1.7, RIVM, Bilthoven, The Netherlands.

De Zwart, D., and P. C. Von der Ohe. 2006. Construction of a site oriented MS Access database for model input data in collaboration with EFFECT 2 on the basis of the Meta database from BASIN 1. ModelKey deliverable EFD1.3, RIVM, Bilthoven, the Netherlands.

De Zwart, D., P. C. Von der Ohe, M. Gevrey, and S. Lek. 2005. Overview and interpretation of required data available and identification of data gaps in close

collaboration with BASIN 1. ModelKey deliverable EFD1.1, RIVM, Bilthoven, the Netherlands.

Gevrey, M., G. Grenouillet, M. Bottin, D. De Zwart, P. C. Von der Ohe, E. De Deckere, I. Muñoz-Gracia, and S. Lek. 2007. Patterns of community in relation to patterns of toxin and environmental factors. Modelkey deliverable EFD2.3, CNRS, Université Paul Sabatier, Toulouse, France.

Gottardo, S., C. Micheletti, P. Nunes, S. Giove, E. Semenzin, A. Critto, A. Marcomini, and D. De Zwart. 2007. Review and preliminary proposal for prioritization of hot spot based on risk and economic assessment of biodiversity and ecological impairment. ModelKey deliverable DD1.5, CVR, Venice, Italy.

Gottardo, S., J. Rizzi, E. Semenzin, S. Chiarato, A. Critto, A. Marcomini, and D. De Zwart. 2008. Experimental application of IRI and WOE procedures to MODELKEY basins and sites. ModelKey deliverable DD2.5, Consorzio Venezia Ricerche, Venice, Italy.

Lek, S., G. Grenouillet, D. De Zwart, E. De Deckere, P. C. Von der Ohe, and M. Gevrey. 2008. Patterns of community prediction relating to the environmental condition. ModelKey deliverable EFD2.4, CNRS, Université Paul Sabatier, Toulouse, France.

Zabeo, A., S. Gottardo, E. Semenzin, A. Critto, A. Marcomini, D. De Zwart, and P. C. Von der Ohe. 2008. Programming of IRI and WoE procedures. Beta prototype. ModelKey deliverable DD2.4, Consorzio Venezia Ricerche, Venice, Italy.

De Zwart, D., J. Slootweg, et al. (2010). Loss of species due to cadmium and lead depositions in Europe. Progress in the modelling of critical thresholds and dynamic modelling, including impacts on vegetation in Europe. CCE Status Report 2010. J. Slootweg, M. Posch and J.-P. Hetteling. Bilthoven, The Netherlands, CCE: 101-104.

Posthuma, L., D. De Zwart, et al. (2016 (in Dutch)). Watersysteemanalyse met de Ecologische Sleutelfactor Toxiciteit: Deel 1: De systematiek en de onderbouwing. Amersfoort, the Netherlands, STOWA: pp. 80.

Publications:

O. Klepper, T.P. Traas, A.J. Schouten, G.W. Korthals, D. de Zwart. Estimating the effect on soil organisms of exceeding no-observed effect concentrations (NOECs) of persistent toxicants. *Ecotoxicology* nr. 8, 9-21 (1999)

A.M. Breure, D.T. Jager, D. van de Meent, Ch. Mulder, W.J.G.M. Peijnenburg, L. Posthuma, M. Rutgers, A.J. Schouten, A. Sterkenburg, J. Struijs, P. van Beelen, M. Vonk, and D. de Zwart. 2001. Ecological Risk Assessment of Environmental Stress. *Encyclopedia of Life Support Systems*. <http://www.eolss.net/eolss/E1-08.asp>

de Zwart D. 2002. Observed regularities in SSDs for aquatic species. In: Posthuma L., Traas T.P. Suter, G.W. (2002) *The use of Species Sensitivity Distributions in Ecotoxicology*.

De Zwart, D. and A. Sterkenburg. 2002. Toxicity-based assessment of water quality. In: Posthuma L., Traas T.P. Suter, G.W. (2002) The use of Species Sensitivity Distributions in Ecotoxicology.

Posthuma, L., Traas, T.P., De Zwart, D. and Suter, G.W. 2002, Conceptual and technical outlook on species sensitivity distributions. In: Posthuma L., Traas T.P. Suter, G.W. (2002) The use of Species Sensitivity Distributions in Ecotoxicology.

Traas, T.P., Van de Meent, D., Posthuma, L., Hamers, T., Kater, B.J., De Zwart, D. and Aldenberg, T. 2002. The potentially affected fraction as a measure of ecological risk. In: Posthuma L., Traas T.P. Suter, G.W. (2002) The use of Species Sensitivity Distributions in Ecotoxicology.

Willie Peijnenburg, Henri den Hollander, Dik van de Meent, Dick de Zwart. 2002. Ontwikkeling en toepassing van een milieukwaliteitsindicator bestrijdingsmiddelen. H2O, Nr 18, 2002.

'Ecologische risicobeoordeling van mengsels door het RIVM'
Leo Posthuma, Dick de Zwart, Dik van de Meent, Miranda Mesman - Laboratorium voor Ecologische Risicobeoordeling, Theo P. Traas - Centrum voor Stoffen en Risicobeoordeling, NVT Nieuwsbrief, TCDD 2002 (4)

Mulder, Ch., De Zwart, D., van Wijnen, H.J., Schouten, A.J. and Breure, A.M. 2003 Observational and simulated evidence of ecological shifts within the soil nematode community of agroecosystems under conventional and organic farming. *Functional Ecology*, 17, 516-525.

Mulder, Ch., De Zwart, D. 2003. Assessing fungal species sensitivity to environmental gradients by the Ellenberg indicator values of above-ground vegetation. *Basic Appl. Ecol.* 4, 557–568.

Breure AM, Jager DT, Meent van de D, Mulder Ch, Peijnenburg WJGM, Posthuma L, Rutgers M, Schouten AJ, Sterkenburg A, Struijs J, Beelen van P, Vonk M, Zwart D, Ecological Risk Assessment of Environmental Stress. EOLSS, Encyclopaedia of Life-Support Systems – Unesco, Paris / World Summit on Sustainable Development (Rio + 10), Johannesburg. On line at <http://www.eolss.net>

Posthuma, L., Traas, T.P., Roelofs, W., De Zwart, D., and Van de Meent, D. 2003. Species sensitivity distributions in a context of practical application for risk-based decisions. Ghent, Belgium. 2003. FZK/TNO, Vol.8, pp. 276-286.

Van Herk, C.M., Mathijssen-Spiekman, E.A.M., and De Zwart, D. 2003. Long distance nitrogen air pollution effects on lichens. *Lichenologist*, 35(4): 347-359.

Mesman, M., Rutgers, M., Peijnenburg, W.J.G.M., Bogte, J.J., Dirven - Van Breemen, M.E., De Zwart, D., Posthuma, L., and Schouten, A.J. 2003. Site-specific ecological risk assessment: the Triad approach in practice. Conference proceedings: ConSoil. 8th International FZK/TNO conference on contaminated soil: 649-656.

- De Zwart, D., S. D. Dyer, L. Posthuma, and C. P. Hawkins. 2006. Predictive models attribute effects on fish assemblages to toxicity and habitat alteration. *Ecological Applications* 16:1295-1310.
- De Zwart, D., and Posthuma, L. 2005. Mixture toxicity for ecological communities: a proposed methodology. *Environmental Toxicology and Chemistry*: 24(10) 2665–2676.
- De Zwart, D. 2005. Ecological effects of pesticide use in the Netherlands: Modeled and observed effects in the field ditch. *Integrated Environmental Assessment and Management*: 1:123-134.
- Mulder, C., Aldenberg, T., De Zwart, D., Van Wijnen, H.J., and Breure, A.M. 2005. Evaluating the impact of pollution on plant-Lepidoptera relationships. *Environmetrics*: 16(4):357-373.
- De Zwart, D. 2005. Thesis University of Amsterdam, Sept 29th 2005. Impact of toxicants on species composition of aquatic ecosystems. p. 224.
- Posthuma, L., and D. De Zwart. 2006. Predicted effects of toxicant mixtures are confirmed by changes in fish species assemblages in Ohio, USA rivers. *Environmental Toxicology and Chemistry* 25:1094-1105.
- Solomon, K. R., T. C. M. Brock, S. D. Dyer, L. Posthuma, S. M. Richards, H. Sanderson, P. K. Sibley, P. J. Van den Brink, and D. De Zwart, editors. 2008. *EXPECT: Extrapolation practice for ecological effects and exposure characterization of chemicals*. SETAC Press (in Press), Pensacola, FL.
- De Zwart, D., A. Warne, V. E. Forbes, W. J. G. M. Peijnenburg, and D. Van de Meent. 2008. Matrix and media extrapolation. in K. R. Solomon, T. C. M. Brock, S. D. Dyer, L. Posthuma, S. M. Richards, H. Sanderson, P. K. Sibley, P. J. Van den Brink, and D. De Zwart, editors. *Extrapolation practice for ecological effect characterization of chemicals (EXPECT)*. SETAC Press, Pensacola, FL.
- de Zwart, D., L. Posthuma, M. Gevrey, P. C. von der Ohe, and E. de Deckere. 2009. Diagnosis of ecosystem impairment in a multiple stress context – how to formulate effective river basin management plans. *Integrated Environmental Assessment and Management* 5:38-49 (DOI: 10.1897/IEAM_2008-1030.1891).
- Gevrey, M., L. Comte, et al. (2010). "Modeling the chemical and toxic water status of the Scheldt basin (Belgium), using aquatic invertebrate assemblages and an advanced modeling method." *Environmental Pollution* 158: 3209-3218.
- Hamers, T., J. Legler, et al. (2013). "Expert Opinion on Toxicity Profiling—Report from a NORMAN Expert Group Meeting." *Integrated Environmental Assessment and Management* 9(2): 185–191.
- Hendriks, A. J., J. A. Awkerman, et al. (2013). "Sensitivity of species to chemicals: Dose–response characteristics for various test types (LC50, LR50 and LD50) and modes of action." *Ecotoxicology and Environmental Safety* 97: 10-16.

Posthuma, L. and D. De Zwart (2014). Species Sensitivity Distributions. Encyclopedia of Toxicology, 3rd edition, Elsevier Inc., Academic Press. 4: 363–368.

Pilière, A., A. M. Schipper, et al. (2014). "Comparing responses of freshwater fish and invertebrate community integrity along multiple environmental gradients." Ecological Indicators 43(0): 215-226.