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# CV Paul van den Brink



## ***Personal information***

Family name: Van den Brink  
First names: Paulus Johannes  
Date of birth: 21 June 1968  
Nationality: Dutch  
Website: <http://www.stressecology.eu>

## ***Employers***

Name: 1. Wageningen Environmental Research (50%)  
2. Aquatic Ecology and Water Quality Management Group, Wageningen University (50%)  
Position: Professor of chemical stress ecology (personal professorship)  
Address: P.O. Box 47, 6700 AA, Wageningen, The Netherlands  
Phone: +31-317-481615  
Email: [Paul.vandenBrink@wur.nl](mailto:Paul.vandenBrink@wur.nl)

## ***Other affiliations***

Institution	Position
University of York	Honorary visiting professor
South China Normal University	Visiting professor

## ***Education***

Institution	Wageningen University		
From	To	Degree	Major subjects
1986	1992	MSc	Environmental Sciences
1992	1999	PhD	Agricultural and environmental sciences (ecological risk-assessment of pesticides)

## ***Bibliography***

Paul J. Van den Brink is a personal professor at the Aquatic Ecology and Water Quality Management Group of Wageningen University and a senior scientist at the research institute Wageningen Environmental Research, both belonging to the Wageningen University and Research. At Wageningen University Paul chairs the chemical stress ecology group which currently consists of himself, 10 PhD students and 1 PostDoc. For both affiliations, he is involved in supervising and executing international projects on assessing the ecological effects of contaminants like pesticides, veterinary medicines and personal and home care products as well as those of multiple stressors, including drought, nutrients and salinization. Other research topics are the development of effect models (e.g. individual based, meta-

population models and ecoinformatics, expert base models), Traits based Ecological Risk Assessment (TERA) and ecological risk assessment of chemicals in the tropics. Since 1995, Paul van den Brink has published over 200 ISI-listed papers (*h*-index = 45), for three of which he won an international prize. He also co-edited five books. Paul currently coordinates the EU funded Integrative Training Network ECORISK2050 which studies the effects of global change on the emission, fate, effects and risks of chemicals in aquatic ecosystems. In 2006 Paul won the LRI-SETAC Innovative Science Award. He also organized and took part in many international workshops and courses. Paul van den Brink is presently a WIMEK board member which is part of the SENSE research school ([www.sense.nl](http://www.sense.nl)), an associate fellow of the Canadian River Institute, a honorary visiting professor at the University of York and a visiting professor at the South China Normal University. He is also a past-president of SETAC (Society of Environmental Toxicology and Chemistry; [www.setac.org](http://www.setac.org)) World and Europe and a SETAC Fellow.

### ***Bibliometric data***

	SCOPUS	Google Scholar
Total list of publications:	214	430
h-index:	45	56
Total citations:	6360	10610

### ***Awards***

Year	Award
2000	SETAC best publication award on environmental research
2003	ECETOC Science Award, in the category 'Environmental Fate and Effects' (€ 10.000)
2006	CEFIC-LRI, SETAC Innovative Science Award (€ 100.000)
2013	University Fund Wageningen and KLV Wageningen Alumni Network MSc thesis award in the field of environmental sciences (as supervisor)
2015	Environmental Toxicology and Chemistry 2015 Best Paper Award (as co-author)
2016	SETAC Fellows Award

### ***Acquisition (2008 - present)***

Projects with PhD students and/or PostDocs

Start year	Name project	Funder	PhD/ PostDoc
2018	Mechanisms of toxicity of neonicotinoid insecticides towards aquatic arthropod species	CSC	1 PhD
2018	ECORISK2050: Effects of global change on the emission, fate, effects and risks of chemicals in aquatic ecosystems.	EU	2 PhD
2017	EMERCHE: Effect-directed Monitoring tools to assess Ecological and human health Risks of CHemicals of Emerging concern in the water cycle.	NWO	1 PhD
2016	Influence of ecosystem complexity on the ecological effects of pesticides.	CSC	1 PhD
2016	Ecological Risk Assessment of Chemicals in a Central Ethiopian Rift Valley Lake: An Ecosystem Services Approach	NUFFIC	1 PhD
2015	Development of ecological archetypes and models for use in	Chemical	1 PhD

2014	chemical risk assessment Effects of agrochemicals on aquatic ecosystem and fish biodiversity	industry NUFFIC	1 PhD
2013	Fate and effects of personal care ingredients in subtropical and tropical sediments	Chemical industry	1 PhD
2012	Biological control of Schistosomiasis using molluscivorous freshwater fishes	NUFFIC	1 PhD
2012	Post-registration monitoring of pesticide-induced environmental and human health risks in Ghana.	Ghana government	1 PhD
2011	Assessing the effects of chemicals in untreated household wastewater on the ecosystems of rivers in developing regions	Chemical industry	2 PhD 1 PostDoc
2011	Environmental Risk Assessment of Pesticides in Ethiopia	Dutch Ministry of Economic Affairs	1 PhD
2009	CREAM. Mechanistic Effect Models for Ecological Risk Assessment of Chemicals	EU	1 PhD 1 PostDoc
2009	SEAT, Sustainable Ethical Aquaculture Trade	EU	1 PhD 1 PostDoc
2009	Adaptive capacity and functionality of multitrophic aquatic ecosystems	WIMEK / SENSE	1 PhD

#### Projects without PhD students and/or PostDocs

Start year	Name project	Funder
2018	Chemicals: Assessment of Risks to Ecosystem Services II	CEFIC
2016	Tools for Assessment and Planning of Aquaculture Sustainability	EU
2015	Chemicals: Assessment of Risks to Ecosystem Services	CEFIC
2015	Development of ecological archetypes and models for use in chemical risk assessment	Chemical industry
2014 till 2015	Ecological scenarios	Dutch ministry of Economic Affairs
2009 till 2016	Professorship Paul van den Brink	WUR
2013	AquaStress	Belgian science policy office
2013	CHIMERA: Towards more ecologically realistic assessment of chemicals in the environment	CEFIC
2013	SOLUTIONS: Solutions for present and future emerging pollutants in land and water resources management	EU
2013	Recovery and multistress	Dutch ministry of Economic Affairs
2010 and 2012	Models chemical stress	WUR
2011	Evaluation of test methods for measuring toxicity to sediment organisms	CEFIC
2010	Pesticide Risk Reduction Programme – Ethiopia	Dutch ministry of Economic Affairs
2008 till 2011	Metapopulation modelling	Chemical industry
2008	A model for integrated risk assessment of pesticide use in the Brazilian Amazon	WUR

### ***PhD students and PostDocs***

- 2 vacant positions (January 2019 – January 2023). Effects of global change on the emission, fate, effects and risks of chemicals in aquatic ecosystems. PhD projects funded by the EU.
- Anna Huang (September 2018 – current). Mechanisms of toxicity of neonicotinoid insecticides towards aquatic arthropod species. PhD project funded by China Scholarship Council (CSC).
- Bo Cheng (January 2018 – January 2019). Effects of chemicals used in aquaculture on marine benthic ecosystems. PostDoc project funded by China Scholarship Council (CSC).
- Lara Schuijt (January 2018 – current). Effect-directed monitoring tools to assess ecological and human health risks of chemicals of emerging concern in the water cycle. PhD project funded by the Netherlands Organisation for Scientific Research (NWO).
- Zhao Qinghua (September 2016 - current). Can food-chain length increase the ecological effects of insecticides? PhD project funded by China Scholarship Council (CSC).
- Lemessa Merga (March 2016 – current). Occurrence, fate and effects of newly emerging chemicals in tropical freshwater sediments. PhD project funded by NUFFIC.
- Sanne van den Berg (February 2016 – current). Development of ecological scenarios and models for use in chemical risk assessment. PhD project funded by chemical industry.
- Michael Onwona-Kwakye (September 2012 - current). Post-registration monitoring of pesticide-induced environmental and human health risks in Ghana. PhD project funded by the Ghana government.
- Naisheng Zhang (September 2011 - current). Assessing the effects of chemicals in untreated household wastewater on the ecosystems of rivers in China. Unfunded PhD project.
- Jadipa Khatikarn (August 2011 - current). Assessing the effects of chemicals in untreated household wastewater on the ecosystems of rivers in Thailand. Unfunded PhD project.

### ***(Co-)supervised completed PhD theses***

- Fengjiao Peng (2018). Ecological risks of personal care ingredients for subtropical benthic communities. PhD Thesis Wageningen University, Wageningen, The Netherlands. Supervisor.
- Kizar Ahmed Sumon (2018). Effects of insecticides on aquatic ecosystems in Bangladesh. PhD Thesis Wageningen University, Wageningen, The Netherlands. Supervisor.
- Jacqueline Augusiak (2016). Improving communication and validation of ecological models - A case study on the dispersal of aquatic macroinvertebrates. PhD Thesis Wageningen University, Wageningen, The Netherlands. Supervisor.
- Berhan Teklu (2016). Environmental risk assessment of pesticides in Ethiopia: A case of surface water systems. PhD Thesis Wageningen University, Wageningen, The Netherlands. Supervisor.
- Concillia Monde (2016). Impact of natural and anthropogenic factors on the trophic interactions of molluscivores and Schistosoma host snails. PhD Thesis Wageningen University, Wageningen, The Netherlands. Supervisor.
- Mauricio Rocha Dimitrov (2016). Assessing the effects of chemicals on aquatic microbial ecosystems. PhD Thesis Wageningen University, Wageningen, The Netherlands. Supervisor.
- Noel Diepens (2015). Evaluation of test methods for measuring toxicity to sediment organisms. PhD thesis Wageningen University, Wageningen, The Netherlands. Co-supervisor

- Andreu Rico (2014). Environmental risk assessment of veterinary medicines used in Asian aquaculture. PhD Thesis Wageningen University, Wageningen, The Netherlands. Supervisor.
- Mazhar Iqbal Zafar (2012). Extrapolation of effects of pesticides on aquatic communities and ecosystems across different exposure patterns. PhD Thesis Wageningen University, Wageningen, The Netherlands. Supervisor.
- Nika Galic (2012). Assessing recovery potential of aquatic macroinvertebrate populations using ecological models. PhD Thesis Wageningen University, Wageningen, The Netherlands. Supervisor.
- Tahla Ansara-Ross (2011). Environmental and human risk in pesticide use in Southern Africa. PhD thesis University of Johannesburg, Johannesburg, South Africa. Co-supervisor.
- Mascha N. Rubach (2010). Predicting the response of aquatic invertebrates to stress using species traits and stressor mode of action. PhD Thesis Wageningen University, Wageningen, The Netherlands. Supervisor.
- Stephen J. Maund (2009). The aquatic ecotoxicology of the synthetic pyrethroids: from laboratory to landscape. PhD Thesis Wageningen University, Wageningen, The Netherlands. Supervisor.
- Michiel A. Daam (2007). Influence of climatic factors and microcosm complexity on the fate and effects of pesticides. PhD Thesis Universidade de Aveiro, Aveiro, Portugal. Co-supervisor.

***Member of PhD thesis committee***

- Nadia J. Vendrig (2018). Out of the box : Statistical methods for the analysis of automated home cage experiments. Wageningen University, Wageningen, The Netherlands.
- Pepijn de Vries (2018). Targeted selection of existing aquatic in vivo bioassay data in ecotoxicological hazard quantification. Wageningen University, Wageningen, The Netherlands.
- Wenbo Liu (2018). Anaerobic manganese- or iron-mediated pharmaceutical degradation in water. Wageningen University, Wageningen, The Netherlands.
- Justine van Eenennaam (2017). Marine snow formation during oil spills: additional ecotoxicological consequences for the benthic ecosystem. Wageningen University, Wageningen, The Netherlands.
- Yujie He (2017). Removal of pharmaceutically active compounds in constructed wetlands: mechanisms and application. Wageningen University, Wageningen, The Netherlands.
- Belay Tizazu Mengistie (2016). Environmental governance of pesticides in Ethiopian vegetable and cut flower production. Wageningen University, Wageningen, The Netherlands.
- Karel Viaene (2016). Improving ecological realism in the risk assessment of chemicals: Development of an integrated model. Ghent University, Ghent, Belgium.
- Patrik Henriksson (2015). Evaluating European import of Asian aquaculture products using statistically supported Life Cycle Assessments. Leiden University, Leiden, The Netherlands.
- Oleksandra Ieromina (2015). Effects of pesticides on aquatic macrofauna in the field. Leiden University, Leiden, The Netherlands.
- Gert Everaert (2015). Potential risk of organic micropollutants on marine phytoplankton in the greater North Sea: integration of modelling and experimental approaches. Ghent University, Ghent, Belgium.
- Alpar Barsi (2014). Towards understanding the effects of putative endocrine disruptors in the great pond snail *Lymnaea stagnalis*: experimental and toxicokinetic-toxicodynamic modelling approaches. VU university, Amsterdam, The Netherlands.

- Nander van Praet (2014). Effects of environmental contaminants on aquatic macroinvertebrates using sublethal bioindicators. University of Antwerp, Antwerp, Belgium.
- Devdutt Kulkarni (2014) A combined approach of experiments and modelling for the implementation of freshwater copepods in ecological risk assessment. RWTH Aachen University, Aachen, Germany.
- Edwin M. Foekema (2013). Eggsposed. Impact of maternally transferred POPs to fish early life development. Wageningen University, Wageningen, The Netherlands.
- Charl Wijnand Malherbe (2013). Validation and implementation of an ecological risk assessment (ERA) framework for pesticide use in the Vaalharts irrigation scheme. University of Johannesburg, Johannesburg, South Africa.
- Elke Zimmer (2013). The pond snail under stress: interactive effects of food limitation, toxicants and copulation explained by dynamic energy budget theory. VU university, Amsterdam, The Netherlands.
- Raúl A. Loayza-Muro (2013). Life at the edge: benthic invertebrates in high altitude Andean streams. University of Amsterdam, Amsterdam, The Netherlands.
- Henrique M.R. Anselmo (2012). Effects of marine persistent organic pollutants on early life development and metamorphosis of echinoids. Wageningen University, Wageningen, The Netherlands.
- Signe Pedersen (2012). Effect of pesticide pulse exposure on non-target aquatic organisms – Implications for ecological risk assessment. Roskilde University, Roskilde, Denmark.
- Catherine Bo Choung (2012). Ecotoxicological assessment of the impacts of a herbicide-insecticide mixture on freshwater ecosystems. Macquarie University, New South Wales, Australia.
- Gordon C. O'Brien (2012). Regional scale risk assessment methodology using the relative risk model as a management tool for aquatic ecosystems in South Africa. University of Johannesburg, Johannesburg, South Africa.
- Hendrik Trekels (2011). Functional ecological study of the effects of two key stressors in aquatic Hemiptera. From cell to (meta)community. K.U. Leuven, Leuven, Belgium.
- Pham Van Hoi (2010). Governing pesticide use in vegetable production in Vietnam. Wageningen University, Wageningen, The Netherlands.
- Raphael K. N'Guessan (2009). Insecticide resistance in the West African malaria vector *Anopheles gambiae* and investigation of alternative tools for its delay. Wageningen University, Wageningen, The Netherlands.
- P. Mangala C.S. De Silva (2009). Pesticide effects on earthworms. A tropical perspective. VU university, Amsterdam, The Netherlands.
- Rinus Bogers (2008). Markers of endocrine disruption in fish. Wageningen University, Wageningen, The Netherlands.
- Roman Ashauer (2007). Predicting effects of fluctuating or pulsed exposure to pesticides on aquatic organisms. University of York, York, UK.
- Andrew H. Siwela (2007). Some ecotoxicological aspects of selected freshwater bodies around Bulawayo. National University of Science and Technology, Bulawayo, Zimbabwe.
- Helene Roussel (2005). Effects of copper on structure and function of freshwater ecosystems: a lotic mesocosms study. Universite Paul Sabatier, Toulouse, France.
- N. Claire Wells (2003). The ecoepidemiology of rivers in England and Wales. University of London, London, UK.

### ***On-going projects***

EMERCHE: Effect-directed Monitoring tools to assess Ecological and human health Risks of Chemicals of Emerging concern in the water cycle.

TAPAS: Tools for Assessment and Planning of Aquaculture Sustainability. Collaborative project funded by the European Commission within the Horizon 2020 Programme.

Chemicals: Assessment of Risks to Ecosystem Services II. Project funded by CEFIC-LRI.

Development of ecological scenarios and models for use in chemical risk assessment. Project funded by chemical industry.

Fate and effects of personal care ingredients in subtropical and tropical sediments: the importance of sediment-dwelling invertebrates for degradation. Project funded by chemical industry.

SOLUTIONS: Solutions for present and future emerging pollutants in land and water resources management. Collaborative project funded by the European Commission within the 7<sup>th</sup> Framework Programme.

Assessing the effects of chemicals in untreated household wastewater on the ecosystems of rivers in developing regions. Project funded by chemical industry.

Development and validation of models and concept for the ecological risk assessment of pesticides to support the registration process in Europe. Funded by the Dutch Ministry of Economic Affairs.

### ***Experience in Third countries***

Paul has a long term cooperation and/or projects with counterparts in Europe, Canada, Costa Rica, Brazil, Ghana, Zambia, South Africa, Ethiopia, Uzbekistan, Bangladesh, Thailand, Vietnam and China.

### ***Conferences, Training and Lecturing***

#### International conferences

On average 3 - 5 times a year a platform presentation at (SETAC) conferences, for which he is often invited. He also served many times as (co-)chair. He also was a member of the scientific committee of several SETAC conferences and of the local organising committee of the SETAC Europe meeting in The Hague in 2006.

#### Keynote and invited presentations

Van den Brink, P.J. (2015). Diagnosis of field impacts of chemicals from monitoring and experimental data. SASAQs (The Southern African Society of Aquatic Scientists) 2015 Conference, Drakensberg, South Africa.

Van den Brink, P.J. (2013). Assessing aquatic population and community level risks of pesticides. SETAC Europe 2013 meeting, Glasgow, UK.

Van den Brink, P.J. (2010). Risk assessment of effects of agrochemicals on irrigation water quality. 28<sup>th</sup> International Horticultural Congress, Lisbon, Portugal.

Van den Brink, P.J. (2010). The effects of climate change on the pesticide sensitivity and recovery potential of aquatic ecosystems. 12<sup>th</sup> IUPAC International Congress of Pesticide Chemistry, Melbourne, Australia.

Van den Brink, P.J. (2009). 'Putting the eco into ecotoxicology': a lesson from J. Cairns Jr. from 1988 is still contemporary in 2009. 30<sup>th</sup> annual meeting of SETAC North America, New Orleans, USA.

Van den Brink, P.J. (2009). Ecological Risk Assessment: From Book-Keeping to Chemical Stress Ecology. 2<sup>nd</sup> CSTS (Cameroon Society for Toxicological Sciences) international conference, Dschang, Cameroon.

- Van den Brink, P.J. (2009). Trait based Ecological Risk Assessment of chemicals, does taxonomy matters? SASAQs (The Southern African Society of Aquatic Scientists) 2009 Conference, Magaliesberg, South Africa.
- Van den Brink, P.J. (2009). Patterns, socio-economic issues and effects of pesticide use in Asia, South-Africa and South-America. 19<sup>th</sup> annual meeting of SETAC Europe, Göteborg, Sweden.
- Van den Brink, P.J. (2009). Career talk at the Young Environmental Scientists Meeting of SETAC Europe. 1<sup>st</sup> SETAC Young Environmental Scientists meeting, Landau, Germany.
- Van den Brink, P.J. (2006). Assessing ecosystem health and impairment by species traits and their relation to stressors. International Conference on Pesticide Use in Developing Countries, Arusha, Tanzania.
- Van den Brink, P.J. (2002). Multivariate Techniques: an Advanced Group of Methods to Link Biological and Chemical Data. Interact2002 meeting, Sydney, Australia.
- Van den Brink, P.J. (2001). Effects of remediation on sediment contaminant composition, sediment toxicity and benthic community structure in the delta of the rivers Rhine and Meuse. 6<sup>th</sup> international conference of the Aquatic Ecosystem Health and Management Society (AEHMS), Amsterdam, The Netherlands

#### Courses and trainings lectured

Paul is the coordinator and examiner of the course “Chemical Stress Ecology” (6 credits) and a lecturer and examiner in the “Environmental Risk Assessment of Chemicals” (6 credits) thought at Wageningen University. The “Chemical Stress Ecology” course has been evaluated by the students as very good (4.2 out of 5) and the contribution of Paul as excellent (4.6 out of 5). The “Environmental Risk Assessment of Chemicals” course runs since 2016. Since 1998 he has taught over 30 courses mainly on the ecological risk assessment of chemicals and the use of multivariate statistical methods for the analysis of ecotoxicological data sets. Most of these courses were tailor made and were held in Europe, Canada, USA, Costa Rica, Cameroon, Tanzania, South Africa, Vietnam, Australia and New Zealand. He was also teaching for several years in the Erasmus Intensive Program “Pollution in Europe”.

#### ***International workshops (2005 – present)***

- Workshop on Terrestrial Environmental Risk Assessment of Plant Protection Products: Non-target Arthropods (NTAs) and Soil Invertebrates. 12 – 14 February 2018, Barcelona, Spain. Workshop rapporteur.
- Multiple Stressor Workshop 2 (MSW2): Making Aquatic Ecosystems Great Again (MAEGA)! 18 – 21 September 2017, Wageningen, The Netherlands. Member of the steering committee.
- FAO Working group on ground- and surface water risk assessment. 8 – 10 December 2015, Rome, Italy.
- CARES (Chemicals: Assessment of Risks to Ecosystem Services) workshop. 15 – 16 July 2015, Brussels, Belgium
- SETAC Global Horizon Scanning workshop. 6-7 May 2015, Barcelona, Spain. Member of the steering committee.
- Ecotoxicology for B-EF research: designing novel multi-trophic B-EF experiments (sEcoToxDiv) sDiv Workshop 2.11. 15 – 18 December 2014, Leipzig, Germany. Member of the steering committee.
- New diagnostics for multiply-stressed marine and freshwater ecosystems: integrating models, ecoinformatics and Big Data. 10 – 12 September 2014, Sydney, Australia. Member of the steering committee.



FAO Working group on pesticide registration by analogy. 26 – 28 March 2014, Rome, Italy.

IUPAC workshop on Nanopesticides. 17 – 18 May 2013, York, UK.

EU Workshop on how to use ecological effect models to link ecotoxicological tests to protection goals (second MODELINK workshop). 22 – 25 April 2013, Monschau, Germany.

EcoFINDERS traits workshop. 17 – 18 February 2013, Flörsheim, Germany.

EU Workshop on how to use ecological effect models to link ecotoxicological tests to protection goals (first MODELINK workshop). 22 - 25 October 2012, Le Croisic, France.

Latin American Aquatic Risk Assessment of Pesticides (LATARAP). 10 – 13 October 2012, Buenos Aires, Argentina. Member of the steering committee.

Environmental Contaminants and Long-Term Change in Tropical Forests. 24 – 26 February 2012, La Selva Biological Station, Costa Rica.

Influence of global climate change on the scientific foundation and application of environmental toxicology and chemistry. 16 – 21 July 2011, Racine, USA.

Pesticides, rice and wetlands. Ramsar Convention. 3 - 4 March 2011, Singapore.

Environmental assessment of down-the-drain chemicals in China. Unilever. 14 – 15 December 2010, Shanghai, China.

Future Impacts of Agricultural Contaminants on Ecosystem Services in South Asia. 22 – 25 November 2010, TERI, New Delhi, India.

TERA workshop: Trait-based Ecological Risk Assessment (TERA): Realising the potential of ecoinformatics approaches in ecotoxicology. 7 – 11 September 2009, Burlington, Ontario, Canada. Member of the steering committee.

PERAS workshop: Semi-field Methods for the Environmental Risk Assessment of Pesticides in Soil. 8 – 10 October 2007, Coimbra, Portugal. Workshop rapporteur.

2<sup>nd</sup> ELINK-Workshop Linking Aquatic Exposure and Effects in the Registration Procedure of Plant Protection Products. 19 – 21 September 2007. Wageningen, The Netherlands.

LEMTOX workshop: Ecological models in support of regulatory risk assessments of pesticides: Developing a strategy for the future. 9 – 12 September 2007, Leipzig, Germany. Member of the steering committee.

AMPERE workshop: Aquatic Mesocosms in Pesticide Registration in Europe: Recent Experiences. 24 – 25 April 2007, Leipzig, Germany.

1<sup>st</sup> ELINK-Workshop Linking Aquatic Exposure and Effects in the Registration Procedure of Plant Protection Products. 14– 16 March 2007. Bari, Italy.

Integrated analysis of the health, ecological and economic impacts of current pesticide use and management in the Red River Delta of Vietnam. WOTRO Workshop. 19 and 20 December 2005. Hanoi, Vietnam. Member of the steering committee.

New Improvements in the Aquatic Ecological Risk Assessment of Fungicidal Pesticides and Biocides. SETAC - ESF LESC Exploratory Workshop. 6 – 9 November 2005. Wageningen, The Netherlands. Member of the steering committee.

Towards a European framework for probabilistic assessment of the ecological risks of plant protection products. First end-user workshop of the EUFRAM project. 7 – 10 March 2005. Brussels, Belgium.

### **Models**

ERA-AQUA ([www.era-aqua.wur.nl](http://www.era-aqua.wur.nl)) is a decision support system that is developed to estimate risks of veterinary medicinal products applied in pond aquaculture for the targeted produce, surrounding aquatic ecosystems, consumers and trade. The ERA-AQUA can be used to perform risk assessments in a wide range of aquaculture scenarios based on information on environmental characteristics, aquaculture management practices and physico-chemical and toxicological properties of the compound under study.

PERPEST ([www.perpest.wur.nl](http://www.perpest.wur.nl)) is an information model designed to Predict the Ecological Risks of PESTicides. The underlying concept of this is Case-Based Reasoning. In the model, the Case-Base comprises results from microcosm and mesocosm experiments. Previous experiences (results of field experiments) have been stored in the memory and used to predict direct effects in new situations or with other compounds. The model output shows the direct effects of eight groups of endpoints simultaneously.

PRIMET ([www.primet.wur.nl](http://www.primet.wur.nl)) is a decision support system for assessing Pesticide Risks in the tropics to Man, Environment and Trade that is based on risk assessment procedures used in the European Union. The DSS is able to estimate the risks of pesticide application to 1) aquatic life, 2) terrestrial life, 3) the use of groundwater as drinking water and 4) dietary exposure via the consumption of groundwater, vegetables, fish and macrophytes. The risks are assessed at the household level, i.e. actual pesticide application data on a farmer's level is needed as input parameters. The risk assessment is expressed in Exposure Toxicity Ratio's which are calculated by dividing the exposure by the safe concentration.

MASTEP ([www.mastep.wur.nl](http://www.mastep.wur.nl)) is a Metapopulation model for Assessing Spatial and Temporal Effects of Pesticides and describes the decline and subsequent recovery of invertebrate populations after a periodic exposure to pesticides. The modelled landscape for MASTEP is represented as a lattice of connected cells, which have a dimension of 1 by 1 metre. The MASTEP model is an Individual Based Model (IBM) that includes processes of natural mortality, pesticide induced mortality, reproduction and movement between cells. It takes into account density dependence in population regulation and, in case of the stream scenario, medium-distance transport of invertebrates due to water flow. The model is currently parameterised for aquatic populations of *Asellus aquaticus*, *Gammarus pulex*, *Chironomus* sp. and univoltine and multivoltine mayflies, but more species will be added.

### **Key Publications**

- Van den Brink, P.J. (2008). Ecological risk assessment: from book-keeping to chemical stress ecology. *Environ. Sci. Technol.* 42: 8999 – 9004.
- Rico, A. and P.J. Van den Brink (2015). Evaluating aquatic invertebrate vulnerability to insecticides based on intrinsic sensitivity, biological traits and toxic mode-of-action. *Environ. Toxicol. Chem.* 34: 1907–1917. Won the best paper award Environmental Toxicology and Chemistry for the year 2015.
- Van den Brink, P.J. et al. (Accepted). Towards sustainable environmental quality: priority research questions for Europe. *Environ. Toxicol. Chem.*
- Van den Brink, P.J. and C.J.F. Ter Braak (1999). Principal Response Curves: analysis of time-dependent multivariate responses of a biological community to stress. *Environ. Toxicol. Chem.* 18: 138-148. Won the SETAC best publication award on environmental research for the year 2000.
- De Laender, F., C. Melian, R. Bindler, P.J. Van den Brink, M. Daam, H. Roussel, J. Juselius, D. Verschuren and C.R. Janssen (2014). The contribution of intra- and interspecific tolerance variability to biodiversity changes along chemical gradients. *Ecology Letters* 17: 72–81

## **Publications (extended list)**

### **PhD Thesis**

- 1 Van den Brink, P.J. (1999). Ecological and statistical evaluation of effects of pesticides in freshwater model ecosystems. PhD Thesis Wageningen University, Wageningen, The Netherlands.

### **Peer reviewed papers**

- 218 Peng, F.-J., N.J. Diepens, C-G. Pan, G-G. Ying, D. Salvito, H. Selck and P.J. Van den Brink (Submitted). Response of sediment bacterial community to triclosan in subtropical freshwater benthic microcosms.
- 217 Sumon, K.A., M.F. Yesmin, P.J. Van den Brink, R.H. Bosma, E.T.H.M. Peeters and H. Rashid (Submitted). Effects of long-term chlorpyrifos exposure on mortality and reproductive tissues of Banded Gourami (*Trichogaster fasciata*).
- 216 Sumon, K.A., L.R. Bhowmik, M. Shahjahan, M.F. Kabir, P.J. Van den Brink and H. Rashid (Submitted). Developmental toxicity of diazinon on embryo and larvae of stinging catfish *Heteropneustes fossilis* (Bloch, 1794).
- 215 Peng, F.-J., G-G. Ying, C-G. Pan, H. Selck, D. Salvito and P.J. Van den Brink (Accepted). Bioaccumulation and biotransformation of triclosan and galaxolide in the freshwater oligochaete *Limnodrilus hoffmeisteri* in a water/sediment microcosm. Environmental Science and Technology.
- 214 Peng F.-J., N.J. Diepens, C-G. Pan, S.A. Bracewell, G-G. Ying, D. Salvito, H. Selck and P.J. Van den Brink (Accepted). Fate and effects of sediment-associated triclosan in subtropical freshwater microcosms. Aquatic Toxicology
- 213 Rico, A., M. Vighi, P.J. Van den Brink, M. ter Horst, A. Macken, A. Lillicrap, L. Falconer and T. Telfer (Accepted). Use of models for the environmental risk assessment of veterinary medicines in European aquaculture: current situation and future perspectives. Reviews in Aquaculture
- 212 Van den Brink, P.J., A.B.A. Boxall, L. Maltby, B.W. Brooks, M.A. Rudd, T. Backhaus, D. Spurgeon, V. Verougstraete, C. Ajao, G.T. Ankley, S.E. Apitz, K. Arnold, T. Brodin, M. Cañedo-Argüelles, J. Chapman, J. Corrales, M-A. Coutellec, T.F. Fernandes, J. Fick, A.T. Ford, G. Giménez Papiol, K.J. Groh, T.H. Hutchinson, H. Kruger, J.V.K. Kukkonen, S. Loutseti, S. Marshall, D. Muir, M.E. Ortiz-Santaliestra, K.B. Paul, A. Rico, I. Rodea-Palomares, J. Römbke, T. Rydberg, H. Segner, M. Smit, C.A.M. van Gestel, M. Vighi, I. Werner, E.I. Zimmer and J. van Wensem (Accepted). Towards sustainable environmental quality: priority research questions for Europe. Environ. Toxicol. Chem.
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