

Rosa Mari Darbra (Prof. PhD)

Scientific and academic resume

R.M. Darbra obtained her Environmental Science degree with a **final extraordinary award** in November of 2000. After that, in February of 2005 she got her **PhD degree by the Universitat Politècnica de Catalunya**, with the qualification of Cum Laude and the European recognition. She developed her PhD research in the framework of the **ECOPORTS project** (2002-2005). The methodology developed in her thesis aimed at evaluating the environmental impacts in ports. Currently, this tool is still being used by European ports. R.M. Darbra received the **Young Professional Award** (ECOPORTS Foundation, 2005) for her outstanding contribution to this project. She also was accredited as an **environmental auditor** by Lloyd's. During the pre-doctoral period, she was awarded with a **FPU grant** (Ministry of Education) and the possibility of doing abroad stages in prestigious universities: **Cardiff University (U.K.)** and **World Maritime University (Sweden)**.

Once finished her PhD, the candidate worked in several research centres outside Spain, a fact that allowed her not only to acquire new scientific knowledge, but also to integrate in international working groups. Firstly, she stayed as a postdoc researcher at the **Politecnico di Torino** (Italy). Then, she worked at **Wollogong University** (Australia) as a lecturer and chief researcher of an international project between Australia and New Zealand. Her last stage abroad was as a professional in the **Port of Amsterdam**, where she worked as a manager of European projects in the field of environmental monitoring in ports and as an environmental adviser.

In March of 2007, R.M. Darbra came back to Barcelona to join to the research group of Prof. Damià Barceló at the Spanish National Research Council (**CSIC**), with a contract from the Ministry of Education and Science (**Juan de la Cierva**). Her main research line was the environmental risk analysis in aquatic organisms and rivers using fuzzy logic. In this line, she participated in several European research projects (**RISKBASE**, **AQUATERRA**, and **PROMOTE**) and she applied for one related with chemical risk within the Seventh Framework Programme. This project was granted and, lately, she was its responsible at UPC (**RISKCYCLE** (2009-2011)).

Finally, in July of 2008, the candidate applied for a lecturer position in the **Universitat Politècnica de Catalunya** and she gained it. After that, in 2011 she became **Associate Professor** at the Chemical Engineering Department and in 2022 she got the **Full Professor category**. Nowadays, she teaches in the industrial engineering bachelor degree and master degree, however, she has taught in **11 different degrees** a total of **18 different subjects**.

At the same time, she leads a research line focussed on the analysis of the environmental risk in ports. In this framework, she has been the responsible at UPC for several international projects, such as **BROMACUA** (Fundació BBVA), **RISKCYCLE** (European Commission) and **PERSEUS** (EU). Following the research done in her thesis, she also coordinated the project **SIMDESPORTS**, to evaluate environmental indicators in ports (funded by **AGAUR**), followed by the coordination at UPC of the European project

PORTOPIA, related with the environmental impact in ports. Nowadays she works in two National funded projects.

At the UPC, R.M. Darbra also has worked as an evaluator of safety studies for the Generalitat de Catalunya. Currently she is the responsible for sustainability in the Chemical Engineering Department (Barcelona section) and coordinator of the chemical studies within the industrial engineering degree. Finally, she also participates in the supervision of several final degree projects, master thesis and doctoral thesis.

During her first years as a lecturer, she was trained in pedagogy and she cursred the PROFÍ course (lecturers course by Educational Science Institute), assisting to a wide number of courses, conferences and workshops focused on improving the lecturers' skills.

The scientific production up to now has been **42 publications** in JRC international scientific journals (13 of them as first author) and 9 in other journals, **60 contributions in congresses** and **20 in workshops**, **20 chapters** of books, **1 book**, a PhD thesis and **editor of 3 books**. She has participated in **17 international projects (11 of them European)** and **11 national**, being the **coordinator at UPC** of a total of 7 and one in Australia.

List of Publications

Articles in JCR journals

- Ramírez, R. Vicenç, M., Darbra, R.M. Environmental Risk Assessment of Silver Nanoparticles in Aquatic Ecosystems Using Fuzzy Logic. *Water*, 14, 1885. 2022.
- Puig, M, Azarkamand, S., Wooldridge, C., Selén, V., Darbra, R.M. Insights on the environmental management system of the European port sector. *Science of the Total Environment*, 806, 150550. 2022.
- Oriol Gibert, César Valderrama, María M. Martínez, Rosa Mari Darbra, Josep Oliva Moncunill, Vicenç Martí. Hydroxyapatite Coatings on Calcite Powder for the Removal of Heavy Metals from Contaminated Water. *Water*, 13,1493. 2021.
- Puig, M, Raptis, S., Wooldridge, C., Darbra, R.M. Performance trends of environmental management in European ports. *Marine Pollution Bulletin*, 160, 111686. 2020.
- Arzakamand, S., Balbaa, A., Wooldridge, C., Darbra, R.M. Climate Change—Challenges and Response Options for the Port Sector. *Sustainability*, 12, 6941. 2020.
- Azarkamand, S., Wooldridge, C., Darbra, R.M. Review of Initiatives and Methodologies to Reduce CO₂ Emissions and Climate Change Effects in Ports. *International Journal of Environmental Research and Public Health*, 17, 3858. 2020.
- Azarkamand, S., Ferré, G., Darbra, R.M. Calculating the Carbon Footprint in ports by using a standardized tool. *Science of the Total Environment*, 734 139407. 2020.

- Lecue, M. & Darbra, R. M. Accidents in European ports involving chemical substances: Characteristics and trends. *Safety Science*, 115:278-284. 2019.
- Puig, M., Michail, A., Wooldridge, C., Darbra, R.M. Benchmark dynamics in the environmental performance of ports. *Marine Pollution Bulletin*, 121: 111-119. 2017.
- Puig, M., Pla, A., Seguí, X., Darbra, R.M. Tool for the identification and implementation of Environmental Indicators in Ports (TEIP). *Ocean and Coastal Management*, 140: 34-45. 2017.
- González, J.R., Arnaldos, J., Darbra, R.M. Introduction of the human factor in the estimation of accident frequencies through fuzzy logic. *Safety Science*, 97: 134-143. 2017.
- Seguí, X., Puig, M., Quintieri, E., Wooldridge, C. & Darbra, R.M. New environmental performance baseline for inland ports: A benchmark for the European inland port sector. *Environmental Science & Policy*. 58: 29–40. 2016.
- Antão, P., Calderón, M., Puig, M., Michail, A., Wooldridge, C. & Darbra, R.M. Identification of Occupational Health, Safety, Security (OHSS) and Environmental Performance Indicators in port areas. *Safety Science*. 85: 266–275. 2016.
- González, J.R., Guix, A., Martí, V., Arnaldos, J., Darbra, R.M. Monte Carlo simulation as a tool to show the influence of the human factor into the quantitative risk assessment. *Process Safety and Environmental Protection*, 102: 441-449. 2016.
- Puig, M., Wooldridge, C., Casal, J. & Darbra, R.M. Tool for the identification and assessment of Environmental Aspects in Ports (TEAP). *Ocean & Coastal Management*. 113: 8-17. 2015.
- Puig, M., Wooldridge, C., Michail, A. & Darbra, R.M. Current status and trends of the environmental performance in European ports. *Environmental Science and Policy*. 48: 57-66. 2015.
- González, J.R., Darbra, R.M. Reduction of the uncertainty in the frequency calculation in port accidents through fuzzy logic. *Fresenius Environmental Bulletin*. Vol. 23, nº 11, pp. 2840-2846. 2014.
- Seguí, X., Darbra, R.M., Vilchez, J.A., Arnaldos, J. Methodology for the quantification of toxic dispersions originated in warehouses fires and its application to the QRA in Catalonia (Spain). *Journal of Loss Prevention in the Process Industries*, 32, 404-414. 2014.
- Puig, M., Wooldridge, C. & Darbra, R.M. Identification and selection of Environmental Performance Indicators for sustainable port development. *Marine Pollution Bulletin*. 81: 124–130. 2014.
- Hemmatian, B., Abdolhamidzaheh, B., Darbra, R.M., Casal, J. The significance of domino effect in chemical accidents. *Journal of Loss Prevention in the Process Industries*, 29, 30-38. 2014.
- Planas, E., Arnaldos, J., Darbra, R.M., Muñoz, M., Pastor, E., Vilchez, J.A.. Historical evolution of process safety and major accident hazards prevention in Spain. Contribution of

the pioneer Joaquim Casal. *Journal of Loss Prevention in the Process Industries*, 28, 109-117. 2014.

- Barón, E.; Gago, P.; Gorga, M.; Rudolph, I.; Mendoza, G.; Mauricio, A.; Diaz, S.; Barra, R.; Ocampo-Duque, W.; Páez, M.; Darbra, R.M.; Eljarrat, E.; Barceló, D. Occurrence of hydrophobic organic pollutants (BFRs and UV-filters) in sediments from South America. *Chemosphere*. 92 - 3, pp. 309 - 316. 2013.
- Seguí, X.; Pujolas, E.; Betró, S.; Àgueda, A.; Casal, J.; Ocampo-Duque, W.; Rudolph, I.; Barra, R.; Páez, M.; Barón, E.; Eljarrat, E.; Barceló, D.; Darbra, R.M. Fuzzy model for risk assessment of persistent organic pollutants in aquatic ecosystems. *Environmental pollution*. 178, pp. 23 - 32. 2013.
- Cabanillas, J.; Ginebreda, A.; Guillén, D.; Martínez, E.; Barceló, D.; Moragas, L.; Robusté, J.; Darbra, R.M. Fuzzy logic based risk assessment of effluents from waste-water treatment plants. *Science of the total environment*. 439, pp. 202 - 210. 2012.
- Darbra, R.M.; Casal, J.; Pastor, E.; Vilchez, J.A.; Arnaldos, J.; Planas, E. Risk analysis active learning through the investigation of real cases. *Process safety and environmental protection*. 90 - 5, pp. 430 - 435. 2012.
- Guillén, D.; Ginebreda, A.; Farre, M.; Darbra, R.M.; Petrovic, M.; Gross, M.; Barceló, D. Prioritization of chemicals in the aquatic environment based on risk assessment: Analytical, modeling and regulatory perspective. *Science of the total environment*. 440, pp. 236 - 252. 2012.
- Palacios, A.; Muñoz, M.; Darbra, R.M.; Casal, J. Thermal radiation from vertical jet fires. *Fire safety journal*. 51, pp. 93 - 101. 2012.
- Dunjón, J.; Fthenakis, V.; Darbra, R.M.; Vilchez, J.; Arnaldos, J. Conducting HAZOPs in continuous chemical processes: Part I. Criteria, tools and guidelines for selecting nodes. *Process safety and environmental protection*. 89 - 4, pp. 214 - 223. 2011.
- Dunjón, J.; Fthenakis, V.; Darbra, R.M.; Vilchez, J.; Arnaldos, J. Conducting HAZOPs in continuous chemical processes: Part II. A new model for estimating HAZOP time and a standardized approach for examining nodes. *Process safety and environmental protection*. 89 - 4, pp. 224 - 233. 2011.
- Billitewski, B.; Barceló, D.; Darbra, R.M.; Van der Voet, E.; Mohammed, B.; Benfenati, E.; Ginebreda, A.; Grundmann, V. Report on the 1st Workshop of the RISKCYCLE Coordination Action. Hanoi, Vietnam, 4-5 May 2010. *Environmental science and pollution research*. 18 - 5, pp. 827 - 828. 2011.
- Darbra, R.M.; Palacios, A.; Casal, J. Domino effect in chemical accidents: main features and accident sequences. *Journal of hazardous materials*. 183, pp. 565 - 573. 2010.
- Darbra, R.M.; Pittam, N.; Royston, K.; Darbra, J.P.; Journee, J. Survey on environmental monitoring requirements of European Ports. *Journal of environmental management*. 90 - 3, pp. 1396 - 1403. 2009.

- Díaz-Cruz, S.; Darbra, R.M.; Barceló, D. Europe aims to bridge science and water Management. *TrAC: trends in analytical chemistry*. 27 - 8, pp. 641 - 647. 2008.
- Darbra, R.M.; Eljarrat, E.; Barceló, D. How to measure uncertainties in environmental risk assessment. *TrAC: trends in analytical chemistry*. 27 - 4, pp. 377 - 385. 2008.
- Darbra, R.M.; Demichela, M.; Mure, S. Preliminary risk assessment of ecotoxic substances accidental releases in major risk installations through fuzzy logic. *Process safety and environmental protection*. 86 - 2, pp. 103 - 111. 2008.
- Darbra, R.M.; Díaz-Cruz, S.; Barceló, D. Monitoring and assessment of river pollutants: a step towards the implementation of risk based management plans. Case studies of Portuguese river basins. *TrAC: trends in analytical chemistry*. 26 - 7, pp. 650 - 658. 2007.
- Darbra, R.M.; Crawford, J.; Haley, C.W.; Morrison, R.J. Safety culture and hazard risk perception of Australian and New Zealand maritime pilots. *Marine policy*. 31 - 6, pp. 736 - 745. 2007.
- Oggero, A., Darbra, R.M.; Muñoz, M.; Planas, E.; Casal, J. A survey of accidents occurring during the transport of hazardous substances by road and rail. *Journal of hazardous materials*. A133, pp. 1 - 7. Elsevier, 2006.
- Darbra, R.M.; Ronza, A.; Casal, J.; Stojanovic, T.; Wooldridge, C. A procedure for identifying environmental significant aspects in ports. *Marine pollution bulletin*. 50 - 8, pp. 866 - 874. 2005.
- Darbra, R.M.; Ronza, A.; Casal, J.; Stojanovic, T.; Wooldridge, C. The Self Diagnosis Method - A New Methodology to Assess Environmental Management in Sea Ports. *Marine pollution bulletin*. 48 - 5-6, pp. 420 - 428. 2004.
- Darbra, R.M.; Casal, J. Historical analysis of accidents in sea ports. *Safety science*. 42 - 2, pp. 85 - 98. 2003.
- Ronza, A.; Félez, S.; Darbra, R.M.; Carol, S.; Vilchez, J.; Casal, J. Predicting the Frequency of Accidents in Port Areas by Developing Event Trees from Historical Analysis. *Journal of loss prevention in the process industries*. 16 - 6, pp. 551 - 560. 2003.

Articles in other journals

- Puig, M.; Wooldridge, C.; Quinteri, E.; Darbra, R.M.; Seguí, X. Top 10 environmental issues for EU inland ports. *Science for Environment Policy*, no. 456, pp. 1-2. 2016.
- Seguí, X.; Puig, M.; Darbra, R.M.; Wooldridge, C. Looking towards the hinterland for sustainable development. *GreenPort*, vol. Winter 2015, pp. 14-17. 2015
- Villafañe, D.; Darbra, R.M.; Casal, J. Main Features and mathematical modelling of flash fires. *Chemical engineering transactions*. 10, pp. 363 - 372. 2011.

- González Dan, R., Arnaldos, J., Darbra, R.M. Using fuzzy logic to introduce the human factor in the failure frequency estimation of storage vessels in chemical plants. *Chemical Engineering Transactions*, 32, Part 1, pp. 193-198. 2013.
- Clini, F.; Darbra, R.M.; Casal, J. Historical analysis of accidents involving domino effect. *Chemical engineering transactions*. 19, pp. 335 - 340. 2010.
- Darbra, R.M.; Casal, J. Environmental risk assessment of accidental releases in chemical plants through fuzzy logic. *Chemical engineering transactions*. 17, pp. 287 - 292. 2009.
- Darbra, R.M.; Royston, K. Environmental initiatives in European Ports. *Marine and Ports Review*. pp. 19 - 21. 2007.
- Darbra, R.M.; Ronza, A.; Casal, J.; Stojanovic, T.; Wooldridge, C. A survey of Accidents Occurred in Ports. *Loss prevention bulletin: articles and case histories from process industries throughout the world institution of chemical engineers*. 183, pp. 23 - 28. 2005.
- Azarkamand. S., Ferré, G, Darbra, R.M. “Development of a standardized tool to calculate carbon footprint in ports”. *Journal of Maritime Research*, vol. 17, n. 3, pp. 74-80. 2020.

Contact:

Email: rm.darbra@upc.edu

Telephone: +34 934010811