



# Transport and transformation processes of contaminants in aquatic systems: nutrient and carbon biogeochemical process and fate of pollutants.

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**Valerie McCarthy, Ph.D.**

*Dublin City University*



## Abstract

The fate and transport of contaminants in natural systems is determined by a range of physical, chemical and biological processes which impact water quality and ecosystem health. Understanding these processes is critical for developing effective strategies for protecting aquatic water resources. This seminar will explore the integrated hydrological, chemical and biological processes that govern the transport and fate of contaminants in aquatic systems with a particular focus on nutrients such as phosphorus, nitrogen and carbon as key biogeochemical parameters. The discussion will cover mechanisms of nitrogen, phosphorus and carbon cycling examining how these key elements are mobilised, transformed and retained within aquatic systems and their interactions with biological communities. There will be a focus on processes of nutrient uptake, release and degradation and the impact on primary productivity, oxygen availability and overall ecosystem health. In addition, the role of modelling frameworks as decision-support tools for predicting contaminant concentrations in response to land use and climate change will be examined, emphasising its potential to advance the capacity to support strategies for proactive decision making in aquatic water resource management.

## Short Bio

Valerie McCarthy is a Freshwater Ecologist and Assistant Professor in Ecology and Biodiversity in the School of History and Geography in Dublin City University and is Programme Chair of the BA in Climate and Environmental Sustainability. Her research interests encompass biogeochemistry and ecosystem ecology in freshwater systems, investigating the linkages between aquatic systems and their catchments.