

# Morphological abnormalities of diatom silica walls in relation to heavy metal contamination and artificial growth conditions

**Elisa Falasco<sup>1,3\*</sup>, Francesca Bona,<sup>1</sup> Marco Ginepro<sup>2</sup>, Daša Hlúbiková<sup>3</sup>, Lucien Hoffmann<sup>3</sup> and Luc Ector<sup>3</sup>**

*<sup>1</sup> DBAU, University of Turin, Via Accademia Albertina 13, I-10123 Turin, Italy*

*<sup>2</sup> Analytical Chemistry Department, University of Turin, Via P. Giuria 5, I-10125 Turin, Italy*

*<sup>3</sup> Department of Environment and Agro-biotechnologies (EVA), Public Research Center – Gabriel Lippmann, Rue du Brill 41, L-4422 Belvaux, Luxembourg*

## **Abstract**

Teratological forms of diatoms are non-adaptive phenotypic abnormalities caused by various environmental stresses. Heavy metal contamination and artificial growth conditions are the best known causes. In fact, the recording of abnormal cells in a diatom population or community can give both a temporal and quantitative indication of heavy metal contamination of water bodies. Moreover, long-term cultures generally present a high percentage of abnormal cells due to the scarcity of nutrients, presence of waste products and osmotic pressure. The aim of this paper is to classify and provide photographic documentation and descriptions of all known teratologies occurring in the most widespread freshwater diatom genera.

**Keywords:** aquatic ecosystem health, diatoms, teratological forms