

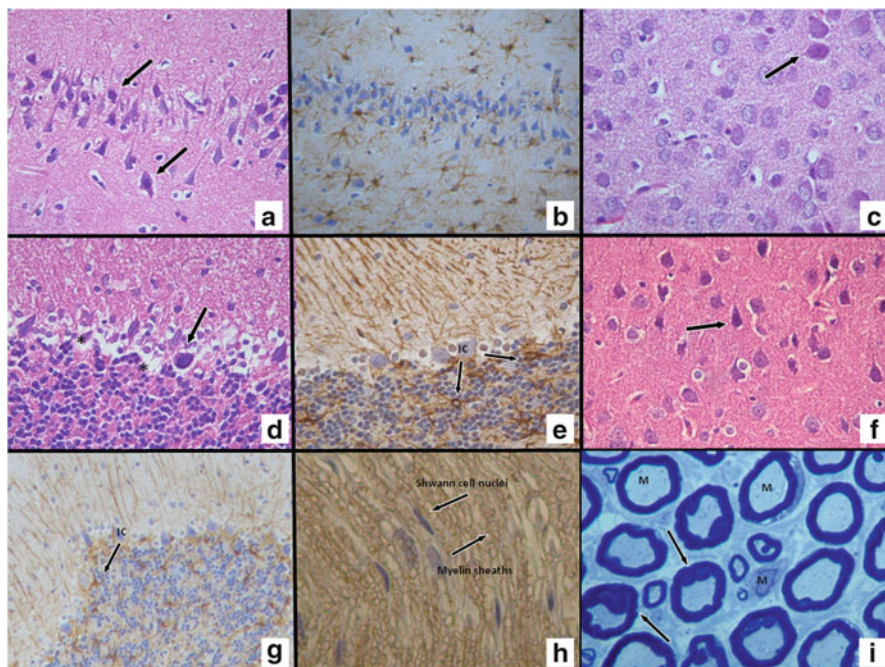
# Preface

*It has become appallingly obvious that our technology has exceeded our humanity.  
Intellectuals solve problems, geniuses prevent them.*

Albert Einstein

Pollution has no borders. This popular 1970s saying from early ecologists is surprisingly still true nowadays despite overwhelming scientific evidence and public awareness of the occurrence of artificial toxic substances in water, food, air, living organisms – including humans – and the environment. On the positive side, considerable efforts have been made by most governments, environmental agencies, industries and individuals to reduce the release of pollutants in the environment. So why are we still breathing, eating and drinking man-made toxicals? What is the real problem? In the wise quotes above, Albert Einstein clearly foresaw the profound grounds of technological side effects. The progressive separation of physical sciences from humanities during the last century has indeed favoured the design of advanced technologies without taking into account possible hazardous consequences. In other words, today we accept paradoxically both the benefits and drawbacks of technology, the later being measured in thousands of deaths caused by pollutants. So what is the solution?

The solution is very simple: since humanities and other social sciences have been historically split up within universities and research bodies, we should gather them again and make them really work together to design both innovative and safe technology. A such reunification of sciences into nexialism – the science of all sciences – has been imagined by the science fiction author Alfred Elton van Vogt in his novel *The Voyage of the Space Beagle*. Trained in integrated science and thought, the novel's hero was able to see the connection between many aspects of a problem that other specialists could not see because of their narrow training. The story provides an uncanny allegory for the situation we face aboard our planetary 'spaceship'.



**Fig. 1** Effect of lead (Pb) on rat brain showing cell death, oedema, dendritic breakdown and myelin damage (Source: Nava-Ruíz and Méndez-Armenta. This book)

This book presents advanced reviews on pollutant occurrence, transfer, toxicity and remediation. The chapter on school air quality by Dambruoso et al. highlights the overlooked health issue of airborne pollutants in buildings. Children are particularly threatened because they spend 90 % of their time indoors, even in summer. The chapter on industrial wastewater pollutants by Dsikowitzky and Schwarzbauer reviews pollutants from textile, petrochemical, paper, tire, chemical and pharmaceutical plants. The authors describe advanced analytical methods and ecotoxicity tests. Industrial pollutants such as dioxins and furans are also reviewed in the chapter by Mudhoo et al. The chapter on fly ash by Gianoncelli et al. presents many techniques to treat fly ash and, in turn, decrease pollutant concentrations. The authors also explain that fly ash can be recycled in agriculture, buildings and geopolymers. The chapter on antifouling paints used for ship protection, by Sousa et al., highlights the occurrence of toxic organotins in human organs such as heart, liver and breast milk. The chapter on surfactants by Rebello et al. focuses on safety concerns for humans and the ecosystems. Remediation techniques and green surfactants are presented. The chapters on toxic metals by Nava-Ruíz and

Méndez-Armenta, and Abarikwu and Ristić et al. describe sources, monitoring and diseases induced by lead, mercury, cadmium and thallium (Fig. 1). The chapter on carcinogenic nitrosamines by Li et al. presents techniques and materials such as zeolites to remediate liquids and smoke containing nitrosamines.

Thanks for reading

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*Founders of the journal Environmental Chemistry Letters and of the European Association of Environmental Chemistry*

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