

Preface

The contamination of the global environment by persistent pollutants is one key feature of the “Chemical Anthropocene”. This is the time period starting around the 1950s, where the distribution of chemical substances in our environment reached global dimensions, i.e., chemical analysis could demonstrate that these substances accumulate in ecosystems far away from the locations of their production and usage. For an assessment of possible future changes it is imperative to understand how the “system environment” has responded to past pressures and changes induced by human activity. These human drivers include the input of chemical substances, metals and aerosols, but also policy action aiming at the regulation of the releases of harmful substances in order to reduce their impact on environmental health.

From past research it is evident that numerous factors are involved and influence the time frame in which pollution of the environment with a particular chemical substance reaches global dimensions. On the other hand, the response time of contaminated environments to political measures taken to reduce pollution is also strongly dependent on various physico-chemical and environmental parameters.

This book evolved from the Fifth School of Environmental Research entitled “Persistent Pollution – Past, Present and Future”, which has set a focus on persistent organic pollutants (POPs), heavy metals and aerosols. The Summer School was held from May 9 to 18, 2007 in the Göhrde Hunting Castle, about 50 km south of Hamburg, Germany. Thirty-six Ph.D. students and post-docs from 25 countries attended the school in the middle of a large northern German forest area.

Research topics covered by the Fifth School included the

- Reconstruction of past changes based on the scientific analysis of natural archives such as ice cores and peat deposits
- Evaluation of the present environmental state by the integration of measurements and modelling and the establishment of cause-effect-patterns
- Assessment of possible environmental future scenarios including emission- and climate change perspectives

Leading scientists in the field of marine and atmospheric chemistry, meteorology and modelling, environmental chemistry and physics, as well as environmental policy and management were invited lecturers at the Fifth School of Environmental

Research and a large number of them have prepared manuscripts published in this book. In order to complement some of the covered topics additional authors have been invited to contribute to the book in their special field of expertise.

The present book consists of 20 contributions prepared by more than 40 authors. The structure of the book has been outlined according to the topics addressed by the school and includes synthesis chapters which look into the history and reconstruction of environmental pollution, address emission questions, provide a closer look on selected persistent pollutants, deal with transport and modelling aspects, shed light on some health issues related to persistent pollutants, and discuss emerging contaminants in the atmospheric and marine environment.

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The editors, 31 July 2010

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