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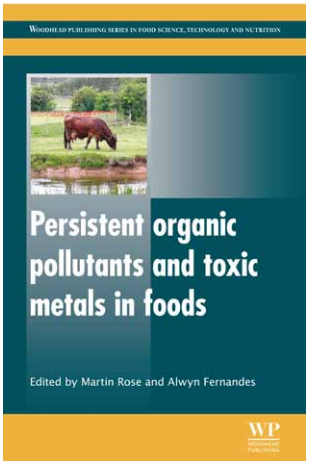
R.J.B. Peters

RIKILT Wageningen UR, Wageningen, the Netherlands

BOOK REVIEW



Persistent organic pollutants and toxic metals in foods

Edited by: M. Rose and A. Fernandes

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Nowadays, we are surrounded by a multitude of different materials and products that are part of our everyday life. As a consequence, there are various hazardous substances like dioxins, phthalates and flame retardants circulating in the environment. Some of these compounds have been around already for some time and since they have a persistent nature they will remain with us for some time. These pollutants persist in the environment, accumulate in food chains, have an impact on ecosystems, wildlife and possibly affect human health if ingested over certain levels or over prolonged periods. This book, 'Persistent organic pollutants and toxic metals in foods', explores the scientific and regulatory challenges faced by those responsible for ensuring that our food is safe to eat. The book consists of two parts.

Part I provides an overview of regulatory efforts to screen, monitor and control persistent organic pollutants and heavy metals in foods and includes case studies detailing regulatory responses to food contamination incidents. Part I illustrates how scientific information is used to formulate policy, introduce regulations, and how the improvement of analytical methods influences these policies and regulations. Good policy making requires sound, evidence-based legislation to ensure proportionality and practicality in regulatory control and monitoring. As an example, the speciation of contaminants and trace elements is expected to play a greater part in legislation, however, only after the development of robust methodology and improved toxicological understanding. Efficient monitoring requires screening as well as confirmatory methods. This duality, which nowadays is a typical practice in food safety monitoring, is illustrated in a number of chapters in more depth by using various examples such as the determination of dioxins and polychlorinated biphenyls and heavy metals. Interesting details are given in the chapters describing the uptake of potentially toxic elements by crops and the transfer and uptake of dioxins and PCBs by animals. Finally, Part I concludes with risk assessment of contaminants and residues in foods thereby bringing the reader back to the start of Part I were risk assessment in general was described as part of policy making and setting of regulatory limits.

Part II highlights particular contaminants, toxic metals and metalloids in foods, and starts off with one of the most notorious types of persistent organic pollutants, dioxins and PCBs. Properties, sources and presence in foods of these contaminants are discussed. It is interesting that a separate chapter describes the exposure to and the health hazards of non-dioxin like PCBs. While monitoring focusses primarily on dioxins and dioxin-like PCBs, this chapters makes it clear that while non-dioxin-like PCBs show effects different to dioxin-like PCBs, they also have a number of similarities. Major incidences of brominated flame retardants, polycyclic aromatic hydrocarbons and heavy metals in food are described. Some of the 'newer' contaminants in food such as phthalates, perfluorinated compounds and polychlorinated naphthalenes are discussed in several chapters. These include sources and occurrence in food as well as analytical methods. The latter is of special interest for phthalates and perfluorinated compounds since the widespread use of both has led to their occurrence as ubiquitous contaminants in the environment, in food, but also in solvents, reagents and laboratory materials.

Proper control of blank development in chemical analysis is therefore a prerequisite for successful analysis of these compounds. Polychlorinated naphthalenes have long been recognised as contaminants originating through releases from electrical equipment and industrial chemicals and processes. Only the advances in measurement techniques of recent years made it possible to characterise total polychlorinated naphthalenes occurrence in food and other products.

For risk assessment of the discussed persistent and other new, emerging contaminants, further studies are essential. It is here that some authors identify a kind of 'Catch-22' situation in relation to funding of such studies, as funding bodies tend to want evidence of exposure before funding work on toxicology, and evidence on toxicology before funding studies to assess exposure. While this book is of interest for analytical chemists, it is intended to address to an evenly great extend to regulators and policy makers since it gives a comprehensive view of current knowledge of the presence of known and emerging contaminants in our food and a firm background of analytical capabilities.