

Andrea C. Gore (ed): Endocrine-disrupting Chemicals: From Basic Research to Clinical Practice

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Approximately 15 years ago, the hypothesis that hormonally active compounds in the environment [i.e., endocrine disrupting chemicals (EDCs)] can have a significant impact on human health and wildlife species captured the public's attention like no other toxicity concern since the publication of Rachel Carson's *Silent Spring* 1962. In the early 1990s, Theo Colborn and others began raising concern about the potential impacts of endocrine-mediated toxicity in the scientific literature (Colborn and Clement, 1992) and the popular press. The impact of these efforts has been far reaching on academic research, government regulatory authorities, and industry. What we have learned from laboratory studies is that the *potential* for EDCs to adversely affect human reproductive development, human health, neurological and immune function, and disease is certainly present. As the list of chemicals that interfere with hormone function continues to increase, and as we gain further insight into the myriad of mechanisms that may be involved in xenobiotic-induced endocrine disruption, the concern for adverse effects on the human endocrine axes has become even more pronounced. Coupled with the basic research findings, there are reported instances where it is clear that accidental exposures to endocrine disrupting chemicals can impact the human physiology. Importantly, however, it must be stressed that, to date, there is a paucity of evidence to indicate that ambient concentrations of EDCs adversely affect the health of humans. Thus, for the moment we do have reassurance that ambient concentrations of these compounds have not reached hazardous levels at this time.

Another reason for such intense interest in EDCs is that the issue highlights all the very concerns that our environment can be harmful. Thus, much of what we hear and read about EDC exposure is that it is ubiquitous and there are reports of low-dose (i.e., within the range of environmental exposure) effects in test species. Furthermore, many EDCs affect endocrine mechanisms known to be important for normal development, thus raising a fear that such toxicants affect the fetus and neonate. In addition, EDCs can interfere with normal endocrine function through many cellular mechanisms, and many classes of chemicals appear to possess some sort of endocrine activity. Such observations beg the question of whether or not our testing guidelines adequately evaluate the potential endocrine disrupting effects during product registration and whether or not the regulatory agencies have the appropriate information concerning the potential risk of pesticides and toxics.

For these reasons, this edited book "Endocrine Disrupting Chemicals" is timely. There has not been a synthesis of the literature on this topic since it emerged as an issue of importance. In this regard, the different chapters provide a useful and needed summary of what we have learned in the last 15 years. The book is divided into three distinct sections addressing the basic biology of endocrine disruptors, the biology of EDCs in the human, and implications and mitigation. Each section is comprised of chapters by authors who are well-known in their own area. The depth and the breadth of the chapters are appropriate for this undertaking, and the material within the chapters not only characterizes the scope of the problem, but also does so with information that is up-to-date. Equally important, there is a fair amount of depth in each chapter to provide the reader with the basic tools to understand the potential impact of this issue to human health. If one was to offer a criticism, it would be to point out that some of the

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conclusions presented in the different chapters remain rather contentious, and in many cases there is a need for further research before resolution can be achieved. However, in spite of this, the amount of material covered provides a useful reference for both newcomers to the area,

and the more seasoned researcher. This edited volume could serve as a text for a graduate-level course on the subject as the material in many of the chapters would serve to provide the basis for more in-depth discussions of a variety of issues.