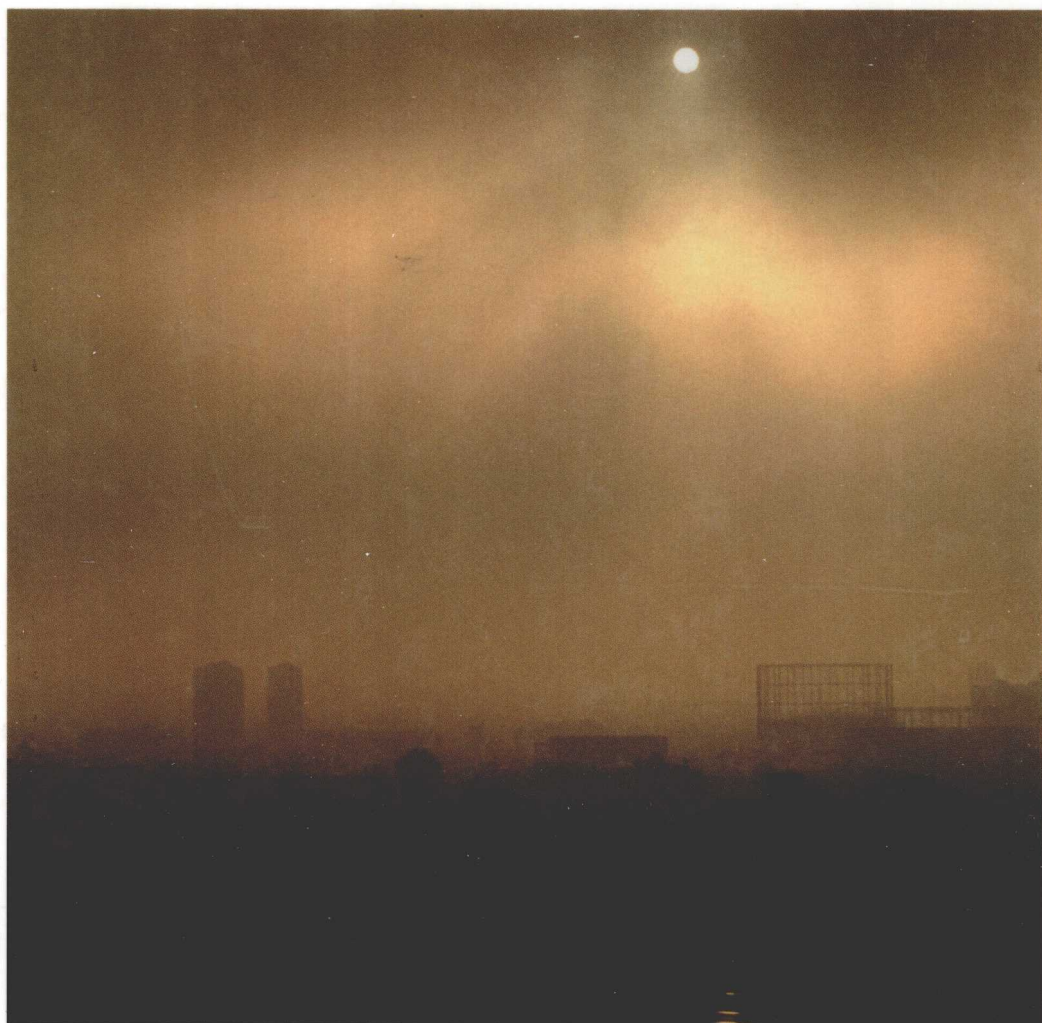


Issues in Toxicology

Edited by Bernard Weiss

# Aging and Vulnerability to Environmental Chemicals

Age-related Disorders and their Origins in Environmental Exposures



RSC Publishing

# ***Aging and Vulnerability to Environmental Chemicals***

## ***Age-related Disorders and their Origins in Environmental Exposures***

Edited by

**Bernard Weiss**

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# *Preface*

Aging. We all do it from the moment we are born and it could be likened to the finest wine reaching its prime. It sure looked like aging was on our side in the beginning. We liked it. Think back to all the things you looked forward to as a child or a teenager, like reaching “driving age” and then “drinking age”. We could not wait until we got “old enough”. But while all that took place aging kept plodding on in its phantom-like manner. For some, acknowledging aging has not been easy as they sought surgical options to cover it on the surface. But even with or without wrinkles and sags, reality soon sets in when we realize that aging is no longer an asset. And near the end when more and more of our diverse body systems let us down, un-relentlessly limiting our bounds, that is when we really understand what aging is all about.

But that’s normal aging. In this book Dr. Bernard Weiss tackles a serious health problem that has long been ignored, rapid aging, by bridging numerous disciplines and leaning on the most eminent scientists in the field of public health for their perspective. In so doing he opens the door for discussion on how could this have happened? And, why, since the 1950s, accelerated aging has become more prevalent and over the same time period many chronic endocrine related disorders have reached pandemic level, at a tremendous cost to society?

This book could not be more timely. Globally, over the past several decades, hundreds of professional society and government meetings have been devoted to rapid aging and endocrine disruption to the point where it appears that it may be impossible to reverse the trend unless something is done immediately. The technology that has provided this information is based on entirely new laboratory protocols that test genes, molecules, cells, and tissue at realistic concentrations encountered each day in the environment. You might call it a bottom up approach. It is rich in its discoveries and the use of new words

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creating a whole new vocabulary and a whole new generation of multi-disciplinary researchers. Despite this wealth of knowledge governments have not changed how they test chemicals for their safety. Currently we are at an impasse because the use of toxicological standards based on risk analysis is deeply embedded in the language of federal regulations. While millions have been increasingly succumbing to early onset of chronic disorders, and early mortality, this new language has not been translated into policy for regulatory purposes. For those doing the research who understand the overarching principles of endocrinology it is as though no one has been listening.

Looking back might help understand how this could have happened. Rachel Carson quoted in her 1962 book, *Silent Spring* “A change at one point, in one molecule even, may reverberate throughout the entire system to initiate changes in seemingly unrelated organs and tissues. This concept, familiar in physics, is gaining validity in all fields of biology and medicine.” Then she went on to write how difficult it is to demonstrate cause and effect where the ultimate effect may not be expressed for a long time after the initial change in a molecule, or cell, or tissue. Amazingly, she was describing endocrine disruption.

Carson’s citations in *Silent Spring* reveal that she had been reading about the changes that were taking place in medical research in the 1950s. I expect that she was looking for clues about cancer, specifically because of her own condition and trying to determine its etiology. She read about the work that was being done in 50s with the adrenal hormones, cortisol and aldosterone, and the anterior pituitary and ACTH. And it was about that time that hormone replacement therapy was being explored and estrogen had caught the interest of the pharmaceutical industry.

I am certain that if Rachel Carson had lived only a few more years she would have discovered the phenomenon called endocrine disruption and I’ll just bet that she would have found a better name for it. And perhaps many of the endocrine disorders such as diabetes, obesity, autism, ADHD, fertility problems, Parkinsons, Alzheimers, and the cancers of the sex organs would never have reached current epidemic proportions. There was a big push in the 50s for fundamental research to understand the living organism in order to provide better diagnosis and treatment — and the need to expand on the concept of medicine as a life science and to include biology (Carson’s love). Although some advances along these lines have taken place they were not enough to slow down rapid aging.

But there is another reason why it has taken endocrine disruption with its proclivity for rapid aging so long to become accepted as a major threat to humankind. The same trade associations, other industry funded institutions, and corporations that attacked Rachel Carson are still out there 50 years later protecting their products and padding their bottom lines using some of the largest public relations firms in the world to marginalize the science and vilify those doing this 21<sup>st</sup> century research. And when one takes into consideration that practically every endocrine disrupting chemical in use today was derived from the toxic by-products from coal, oil, and natural gas it becomes even more evident why today, federal health regulations are still based on the odds of

getting cancer at one in million or a thousand, not on the most unthinkable odds like diabetes where today one out of every third child born — and if you are among a minority group — every other child born will suffer the disease.

Humankind is in the midst of a dire health crisis that requires immediate intensive care to survive. The paradigm upon which current government policies and regulations have evolved has failed to protect us. A new level of discourse is needed immediately between science and decision makers creating a toxic chemicals platform or framework using a disease-driven approach that employs the principles of endocrinology. This entity should over-see the creation of an entirely new set of 21st century public health rules that would enable governments to reverse the current crisis. This could happen by making possible the merging of the dialogue between the most brilliant statespersons with a record of independence and integrity and the brilliant spokes persons within the community of scientists who understand the endocrine system. I see this book providing the first major break through in that dialogue and contributing to an urgently needed paradigm shift in how governments protect public health.

Theo Colborn  
The Endocrine Disruption Exchange,  
Paonia, Colorado



# Contents

|   |          |
|---|----------|
| <b>Introduction</b>   | <b>1</b> |
| <i>Bernard Weiss</i>  |          |
| <br><b>Chapter 1 Exposure to Lead and Cognitive Dysfunction</b> | <b>5</b> |
| <i>Jennifer Weuve and Marc G. Weisskopf</i>                     |          |
| 1.1 Lead Exposure: Long at Hand and in Mind                     | 5        |
| 1.2 How Humans were and Continue to be Exposed to Lead          | 6        |
| 1.2.1 Historical Exposures                                      | 6        |
| 1.2.2 Contemporary Sources of Exposure                          | 9        |
| 1.3 Mechanisms of Neurotoxicity                                 | 11       |
| 1.4 Assessment of Lead Exposure                                 | 13       |
| 1.5 Cognitive Effects of Lead Exposures in Adults               | 14       |
| 1.5.1 Effects of High-Dose, Occupational Exposure               | 15       |
| 1.5.2 Effects of Low-Dose, Non-Occupational Exposure            | 17       |
| 1.5.3 Modification by Psychosocial Factors                      | 20       |
| 1.5.4 Modification by Genes                                     | 21       |
| 1.5.5 Does Exposure to Lead Contribute to Dementia Risk?        | 22       |
| 1.6 Closing Remarks: Shifting Exposures, Continuing Risks       | 22       |
| References  | 24       |

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Issues in Toxicology No. 16

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|                  |   |           |
|------------------|---|-----------|
| <b>Chapter 2</b> | <b>Cognitive Deterioration and Related Neuropathology in Older People with Alzheimer's Disease could Result from Life-Long Exposure to Aluminium Compounds</b>        | <b>31</b> |
|                  | <i>J. R. Walton</i>   |           |
| 2.1              | Introduction  | 31        |
| 2.2              | The Context for Aluminium in AD Causality   | 33        |
| 2.2.1            | Some Ingested Al is Absorbed into Blood and Taken up by the Brain   | 34        |
| 2.3              | Al Neurotoxicity  | 37        |
| 2.3.1            | Al Disrupts Cell Metabolism by Substituting for Essential Metal Ions in Key Regulatory Proteins   | 37        |
| 2.3.2            | Al Produces Oxidative Damage in Cells   | 37        |
| 2.3.3            | All Epidemiological Studies Evaluating the Al Exposure-AD Link have been Based on Crude Estimates of Single Sources of Al Exposure and are Rife with Confounders      | 38        |
| 2.3.4            | A Randomly Controlled Human Study of Total Chronic Al Exposure would be Impractical to Perform and Most Likely be Unethical   | 39        |
| 2.3.5            | Surrogate Animals are Required to Investigate the Effects of Chronic Exposure to the Al Neurotoxicant   | 40        |
| 2.4              | Evidence that Supports Al Causality of AD   | 41        |
| 2.4.1            | Cognitive Deterioration in Animals with Chronic Al Neurotoxicity and Humans with AD is Associated with More Efficient Al Absorption and Higher Serum/Plasma Al Levels | 41        |
| 2.4.2            | Certain Brain Regions Show More Damage than Others in AD and Chronic Al Neurotoxicity   | 41        |
| 2.4.3            | Cognitive Deterioration in AD and Chronic Al Neurotoxicity  | 43        |
| 2.4.4            | Cognitive Deterioration in AD and Chronic Al Neurotoxicity Occur from the Same Mechanism of Damage  | 44        |
| 2.4.5            | Calcium ( $\text{Ca}^{2+}$ ) Metabolism is Disrupted in AD and Chronic Al Neurotoxicity   | 48        |
| 2.4.6            | Iron Metabolism is Disrupted in AD and in Chronic Al Neurotoxicity  | 49        |
| 2.4.7            | Neurotransmitter Levels are Diminished in AD and Al Neurotoxicity   | 51        |
| 2.4.8            | AD and Chronic Al Neurotoxicity are Inflammatory Conditions   | 52        |

|                  |   |            |
|------------------|---|------------|
| 2.5              | Al and Neuropathological Hallmarks of AD  | 53         |
| 2.5.1            | Microtubules  | 53         |
| 2.5.2            | Cortical Atrophy in AD  | 56         |
| 2.5.3            | Hyperphosphorylated Tau and NFTs  | 56         |
| 2.5.4            | Hippocampal Granulovacuolar Degeneration (GVD)  | 59         |
| 2.5.5            | $\beta$ -Amyloid and Presenilins in AD and Al Neurotoxicity   | 60         |
| 2.5.6            | APOE-Dependent Neuroplasticity  | 63         |
| 2.6              | Aging Increases Human Vulnerability to AD and Chronic Al Neurotoxicity  | 65         |
| 2.6.1            | Kidney Aging and Functional Loss  | 65         |
| 2.6.2            | Bone Aging and Osteoporosis   | 66         |
| 2.6.3            | Brain Aging and Loss of Neuroplasticity   | 67         |
| 2.6.4            | Al-Containing Dietary Supplements Specifically Marketed for Older Individuals                                     | 68         |
| 2.7              | Conclusions   | 68         |
|                  | Declaration   | 70         |
|                  | Acknowledgments   | 70         |
|                  | References  | 70         |
| <b>Chapter 3</b> | <b>Do Polychlorinated Biphenyls and Associated Chemicals Exacerbate Aging-Related Declines in Brain Function?</b> | <b>83</b>  |
|                  | <i>R. F. Seegal</i>   |            |
| 3.1              | Introduction  | 83         |
| 3.2              | What are PCBs?  | 84         |
| 3.3              | Why are PCBs Still of Concern in the 21 <sup>st</sup> Century?  | 88         |
| 3.4              | Neurological Sequelae of High Level Occupational Exposure to PCBs in Adults                                       | 90         |
| 3.5              | Sequelae of High Level Non-Occupational Exposure to PCBs on Cognitive Function                                    | 91         |
| 3.6              | Effects of Environmental Exposure to PCBs on Motor and Cognitive Function in Adults                               | 93         |
| 3.7              | Are PCBs the only ‘Bad Actors’?   | 95         |
| 3.8              | PCBs as Etiologic Factors in Diabetes/Insulin Resistance  | 97         |
|                  | References  | 99         |
| <b>Chapter 4</b> | <b>Parkinson Disease</b>  | <b>104</b> |
|                  | <i>G. Nelson and B. A. Racette</i>  |            |
| 4.1              | Introduction  | 104        |

|                  |   |            |
|------------------|---|------------|
| 4.2              | Environmental Toxins  | 108        |
| 4.2.1            | Metals  | 108        |
| 4.2.2            | Pesticides  | 115        |
| 4.2.3            | Solvents  | 116        |
| 4.3              | Conclusion  | 117        |
|                  | Acknowledgements  | 118        |
|                  | References  | 118        |
| <b>Chapter 5</b> | <b>Mercury</b>  | <b>125</b> |
|                  | <i>Hiroshi Satoh</i>  |            |
| 5.1              | Mercury and its Compounds   | 125        |
| 5.1.1            | Classification of Mercury Compounds   | 125        |
| 5.2              | Mercury Vapor (Elemental Mercury)   | 126        |
| 5.2.1            | Physical and Chemical Properties  | 126        |
| 5.2.2            | Exposure and Metabolism   | 126        |
| 5.2.3            | Health Effects of Mercury Vapor   | 127        |
| 5.3              | Inorganic Mercury Compounds   | 127        |
| 5.3.1            | Mercuric and Mercurous Mercury Compounds  | 127        |
| 5.3.2            | Exposure and Metabolism   | 127        |
| 5.3.3            | Health Effects of Mercuric Mercury Compounds                                    | 128        |
| 5.4              | Organic Mercury Compounds (Methylmercury)                                       | 129        |
| 5.4.1            | Organic Mercury Described in this Section                                       | 129        |
| 5.4.2            | Exposure and Metabolism   | 129        |
| 5.4.3            | Health Effects of Methyl Mercury Compounds                                      | 131        |
| 5.5              | Developmental Toxicity of Mercury   | 132        |
| 5.5.1            | Fetal Minamata Disease Patients   | 132        |
| 5.6              | Behavioral Teratology Studies of Methylmercury                                  | 134        |
| 5.6.1            | Behavioral Teratology   | 134        |
| 5.6.2            | Postnatal Effects of Prenatal Exposure to Methylmercury in Experimental Animals | 134        |
| 5.6.3            | Effects of Fetal Methylmercury Exposure among Humans Under General Environment  | 135        |
| 5.7              | Aging and Toxicity of Mercury   | 138        |
| 5.7.1            | Minamata Disease Patients   | 138        |
| 5.7.2            | Residual or Remote Effects Among Workers Exposed to Mercury Vapor               | 139        |
| 5.7.3            | Age-Related Increase in Auditory Impairment                                     | 140        |
| 5.8              | Effects of Mercury Vapor Exposure During the Perinatal Period                   | 140        |
| 5.8.1            | Effects of Prenatal Mercury Vapor Exposure                                      | 141        |
| 5.8.2            | Effects of Neonatal Mercury Vapor Exposure                                      | 142        |
| 5.8.3            | Effects of Coexposure to Mercury Vapor and Methylmercury During Gestation       | 143        |

|       |  |     |
|-------|--|-----|
| 5.9   | Conclusions  | 145 |
| 5.9.1 | Prenatal Methylmercury Exposure in Humans                      | 145 |
| 5.9.2 | Prenatal Methylmercury Exposure in Animal Experiments          | 145 |
| 5.9.3 | Mercury Vapor Exposure and Aging in Exposed Miners and Workers | 146 |
| 5.9.4 | Prenatal Mercury Vapor Exposure in Animal Experiments          | 146 |
|       | References   | 147 |

## **Chapter 6 Manganese** **151**

*Roberto G Lucchini, Donald R. Smith and  
Ronald B Tjalkens*

|       |   |     |
|-------|---|-----|
| 6.1   | Introduction  | 151 |
| 6.2   | Environmental Occurrence of Manganese and Exposure Sources  | 152 |
| 6.3   | Essential and Toxicological Roles of Manganese in Humans  | 153 |
| 6.4   | Manganese Toxicity in Adults and the Elderly  | 154 |
| 6.5   | Early Life Exposure to Manganese and Adult Disease  | 156 |
| 6.6   | Biological Markers of Manganese Exposure in Humans  | 157 |
| 6.7   | Animal Studies - Dosimetry  | 159 |
| 6.8   | Animal Studies - Early Life Manganese Exposure as a Determinant of Late Onset Disease                                     | 161 |
| 6.9   | Mechanisms of Manganese Toxicity  | 161 |
| 6.9.1 | Manganese Induces Oxidative Stress and Mitochondrial Dysfunction  | 162 |
| 6.9.2 | Manganese Causes Dysregulation of Cellular Iron Homeostasis   | 163 |
| 6.9.3 | Manganese Targets Dopaminergic and Glutamatergic Systems  | 164 |
| 6.9.4 | Glial Activation and Nitrosative Stress in Manganese Neurotoxicity  | 165 |
| 6.9.5 | Neuroinflammation may Link Between Early Life Exposure to Manganese and Susceptibility to Late Onset Neurological Disease | 165 |
| 6.10  | Conclusion  | 168 |
|       | References  | 169 |

|                  |  |            |
|------------------|--|------------|
| <b>Chapter 7</b> | <b>The Role of Persistent Organic Pollutants and Plastic-Associated Chemicals in Cardiovascular Disease and Metabolic Syndrome</b> | <b>182</b> |
|                  | <i>Lars Lind and P. Monica Lind</i>  |            |
| 7.1              | Introduction   | 182        |
| 7.2              | Metabolic Syndrome   | 184        |
| 7.3              | Cardiovascular Disease   | 190        |
| 7.4              | Atherosclerosis  | 192        |
| 7.5              | Mechanisms of Action   | 193        |
| 7.6              | Conclusions  | 193        |
|                  | References   | 194        |
| <br>             |  |            |
| <b>Chapter 8</b> | <b>Obesity and Diabetes: Role of Environmental Chemical Exposures</b>  | <b>201</b> |
|                  | <i>Thaddeus T. Schug, Sarah G. Howard, Kyla W. Taylor and Jerrold J. Heindel</i>   |            |
| 8.1              | Background   | 201        |
| 8.2              | Comorbidities and Complications  | 202        |
| 8.3              | Genetics and Obesity and Diabetes  | 203        |
| 8.4              | Endocrine Mechanisms Controlling Weight Gain   | 204        |
| 8.5              | Causes of Obesity  | 206        |
| 8.6              | Metabolic Programming, Epigenetics and Obesity   | 208        |
| 8.7              | The Obesogen Hypothesis  | 211        |
| 8.8              | Animal Studies   | 211        |
|                  | 8.8.1 Bisphenol A  | 211        |
|                  | 8.8.2 Organotins   | 212        |
|                  | 8.8.3 Cigarette Smoke/Nicotine   | 212        |
|                  | 8.8.4 Polyfluoroalkynes (PFOAs)  | 213        |
| 8.9              | Human Studies  | 213        |
|                  | 8.9.1 Maternal Smoking   | 213        |
|                  | 8.9.2 Persistent Organic Pollutants  | 215        |
| 8.10             | Type 2 diabetes  | 217        |
|                  | 8.10.1 Background  | 217        |
|                  | 8.10.2 Control of Blood Glucose Levels   | 219        |
|                  | 8.10.3 Developmental Programming, Environmental Exposures and Type 2 Diabetes  | 220        |
|                  | 8.10.4 Developmental Exposures in Humans   | 222        |
|                  | 8.10.5 Human Adult Exposures   | 222        |
|                  | 8.10.6 Exposure During Pregnancy   | 223        |
| 8.11             | Type 1 Diabetes  | 223        |
|                  | 8.11.1 Background  | 223        |
|                  | 8.11.2 Incidence   | 224        |

|        |   |     |
|--------|---|-----|
| 8.11.3 | Endocrine Role and Endocrine Disruption | 224 |
| 8.11.4 | Evidence from Human and Animal Studies  | 225 |
| 8.12   | Conclusion                              | 227 |
|        | References                              | 227 |

## **Chapter 9 Bisphenol A and Aging** **241**

*Laura N. Vandenberg*

|        |   |     |
|--------|---|-----|
| 9.1    | Introduction  | 241 |
| 9.2    | Mechanisms of BPA Action  | 241 |
| 9.3    | BPA Sources   | 243 |
| 9.4    | Human Exposures   | 244 |
| 9.5    | Overview of Animal Studies  | 245 |
| 9.5.1  | Determining what is a Low Dose Exposure to BPA                    | 246 |
| 9.5.2  | Dealing with Controversy & Conflicting Data in the BPA Literature | 246 |
| 9.6    | BPA & Mammary Cancer  | 247 |
| 9.7    | BPA & Prostate Cancer   | 248 |
| 9.8    | BPA & Metabolic syndrome, Liver Disease & Cardiovascular Disease  | 249 |
| 9.9    | BPA & Infertility   | 251 |
| 9.10   | Summary of Animal Studies   | 251 |
| 9.10.1 | Overview of Epidemiology Studies                                  | 252 |
| 9.10.2 | BPA & Cancer  | 253 |
| 9.10.3 | BPA, Metabolic Syndrome & Cardiovascular Disease                  | 253 |
| 9.10.4 | BPA & Male Reproduction   | 254 |
| 9.10.5 | BPA & Female Reproduction   | 255 |
| 9.11   | Summary & Conclusions   | 256 |
|        | References  | 256 |

## **Chapter 10 Male Reproductive Tract Disorders** **267**

*John D. Meeker and Kelly K. Ferguson*

|        |                                    |     |
|--------|------------------------------------|-----|
| 10.1   | Introduction                       | 267 |
| 10.2   | Semen Quality and Sperm DNA Damage | 268 |
| 10.3   | Persistent Organochlorines         | 268 |
| 10.4   | Non-Persistent Pesticides          | 270 |
| 10.5   | Heavy Metals                       | 271 |
| 10.6   | Phthalates                         | 272 |
| 10.7   | Other Environmental Chemicals      | 273 |
| 10.8   | Reproductive Hormones              | 275 |
| 10.8.1 | Persistent Organochlorines         | 275 |
| 10.8.2 | Non-Persistent Pesticides          | 276 |

|                   |  |            |
|-------------------|--|------------|
| 10.8.3            | Heavy Metals   | 276        |
| 10.8.4            | Phthalates   | 277        |
| 10.8.5            | Other Environmental Chemicals  | 278        |
| 10.9              | Thyroid Hormones   | 279        |
| 10.9.1            | Persistent Organochlorines   | 279        |
| 10.9.2            | Non-Persistent Pesticides  | 280        |
| 10.9.3            | Heavy Metals and Other Environmental Chemicals   | 280        |
| 10.10             | Cancers of the Male Reproductive Tract   | 281        |
| 10.11             | Summary and Conclusion   | 282        |
|                   | Abbreviations  | 283        |
|                   | References   | 284        |
| <b>Chapter 11</b> | <b>Breast Cancer – Importance of Life Stage with Respect to Environmental Influences</b> | <b>293</b> |
|                   | <i>Sally S. White and Suzanne E. Fenton</i>  |            |
| 11.1              | Introduction   | 293        |
| 11.1.1            | Breast Cancer & Aging Overview   | 293        |
| 11.1.2            | Contemporary Breast Issues of Public Concern   | 295        |
| 11.2              | Breast Development   | 298        |
| 11.2.1            | Overview of Unique Developmental Features  | 298        |
| 11.2.2            | Human Breast Development Timing and Regulation   | 299        |
| 11.3              | Altered Breast Development   | 302        |
| 11.3.1            | Altered Development in Humans  | 302        |
| 11.3.2            | Altered Development in Rodent Studies  | 304        |
| 11.4              | Breast Cancer  | 305        |
| 11.4.1            | It's not all about Genetics  | 305        |
| 11.4.2            | Known/Accepted, Non-Genetic Risk Factors   | 305        |
| 11.4.3            | Possible Environmental Risk Factors  | 311        |
| 11.4.4            | Effect-Modifying Factors   | 312        |
| 11.5              | Conclusions  | 316        |
| 11.5.1            | Life-Stage Consideration is Crucial  | 316        |
| 11.5.2            | Prevention – a Primary Purpose or an Afterthought?                                       | 319        |
| 11.5.3            | Future Research – Age or Stage?  | 319        |
|                   | References   | 320        |
| <b>Chapter 12</b> | <b>Environmental Chemicals and Prostate Cancer Risk</b>                                  | <b>331</b> |
|                   | <i>Jaspreet S. Joneja, Wen-Yang Hu,<br/>Ricardo R. Rios and Gail S. Prins</i>            |            |
| 12.1              | Introduction   | 331        |



|        |   |     |
|--------|---|-----|
| 12.2   | Evidence and Mechanisms                                       | 332 |
| 12.2.1 | Farming and Pesticides  | 332 |
| 12.2.2 | Environmental Estrogens                                       | 334 |
| 12.2.3 | Anti-Androgens  | 337 |
| 12.2.4 | Dioxins   | 338 |
| 12.3   | Environmental Chemicals and Prostate<br>Stem/Progenitor Cells | 339 |
| 12.4   | Conclusion  | 341 |
|        | References  | 341 |

**Chapter 13 The Aging Kidney and Exposure to the Nephrotoxic Metals  
Cadmium and Mercury** **346**  
*Christy C. Bridges and Rudolfs K. Zalups*

|        |   |     |
|--------|---|-----|
| 13.1   | Introduction  | 346 |
| 13.2   | Aging and the Normal Kidneys                            | 347 |
| 13.2.1 | Structural Changes within the Glomerulus                | 347 |
| 13.2.2 | Structural Changes in Renal Tubules and<br>Interstitium | 350 |
| 13.2.3 | Physiologic Changes in the Kidney                       | 350 |
| 13.3   | Aging and Kidney Disease                                | 352 |
| 13.4   | Aging and Exposure to Toxic Metals                      | 353 |
| 13.4.1 | Cadmium   | 354 |
| 13.4.2 | Mercury   | 359 |
| 13.5   | Summary   | 364 |
|        | References  | 365 |

**Chapter 14 Age Related Effects of Cadmium and Possible Roles in  
Aging Processes** **376**  
*Bruce A Fowler*

|        |  |     |
|--------|--|-----|
| 14.1   | Introduction   | 376 |
| 14.1.1 | Cadmium Exposures  | 376 |
| 14.1.2 | Cadmium from Diet and Tobacco                                      | 377 |
| 14.2   | Cadmium Accumulation and Effects in Humans                         | 377 |
| 14.2.1 | Kidney and Skeletal Effects  | 377 |
| 14.2.2 | Effects on the Blood Vasculature                                   | 378 |
| 14.3   | Cadmium Accumulation and Effects in Experimental<br>Animal Studies | 379 |
| 14.3.1 | Rodent Studies   | 379 |
| 14.3.2 | Effects of <i>In Utero</i> Exposures                               | 380 |
| 14.4   | Molecular Mechanisms of Cadmium Toxicity                           | 381 |
| 14.4.1 | Roles of Cd-Induced Oxidative Stress and<br>Anti-Oxidant Systems   | 381 |
| 14.4.2 | Oxidative Stress, Protein Turnover and<br>Chromosomal Effects      | 382 |