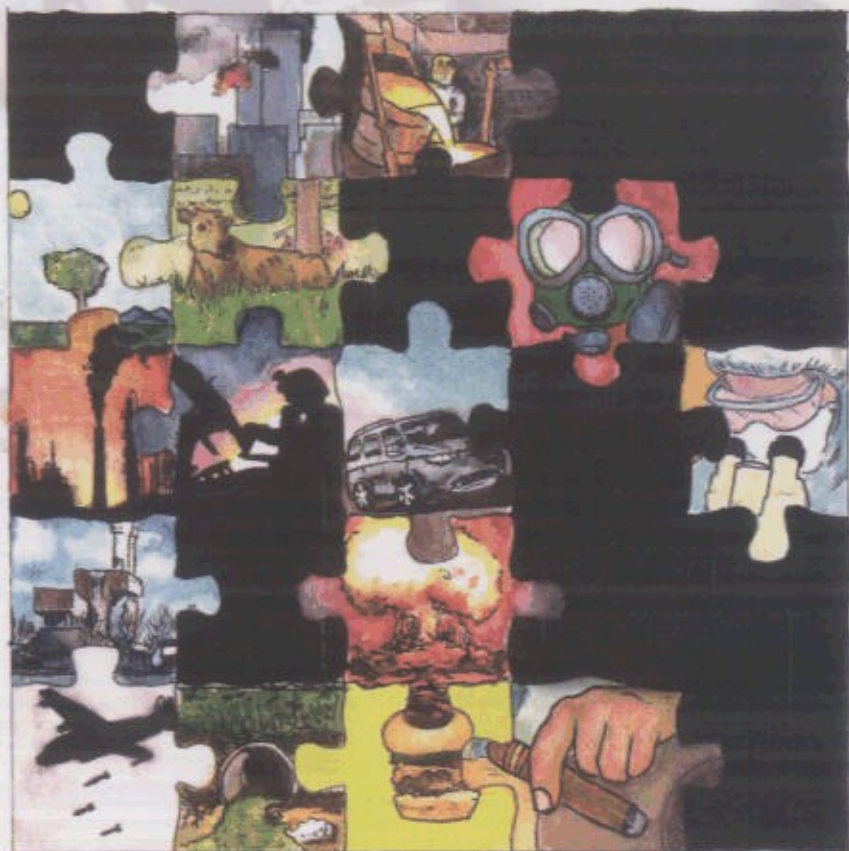


STEFANO MONTANARI



NANOPATHOLOGY

THE HEALTH IMPACT OF NANOPARTICLES



Contents

Acknowledgements	vii
Preface	ix
1. How the Whole Thing Began or the Logic Path Towards a Discovery	1
1.1 Introduction.....	6
1.2 Bibliography	10
2. <i>In-vitro</i> and <i>in-vivo</i> Biological Behaviour of Micro and Nanoparticles	11
2.1 Introduction.....	11
2.2 Nanoparticles and medical devices	13
2.2.1 Dentistry	13
2.2.2 Orthopaedics.....	14
2.2.3 Nanostructured surfaces	16
2.2.4 Drug delivery.....	17
2.2.5 Nanomedicine.....	19
2.3 The results of the nanopathology project	22
2.3.1 <i>In-vivo</i> experiments	28
2.4 Bibliography	33
3. Clinical Cases: Lung, Blood, Liver, Kidney, Digestive System, Vessels, Sperm	39
3.1 Introduction.....	39
3.2 Lung.....	42
3.3 Blood.....	70
3.4 Liver.....	80
3.5 Kidney and adrenal gland	95
3.6 Digestive system	102
3.7 Vessels	114
3.8 Sperm.....	115
3.9 A few considerations on reproduction	121
3.10 Bibliography	131
4. Six "Detective Stories"	135
4.1 The 1 st case.....	135
4.2 The 2 nd case.....	142
4.3 The 3 rd case	145
4.4 The 4 th case	148

4.5	The 5 th case	152
4.6	The 6 th case	155
5.	War and Nanoparticles	161
5.1	Civilians living around a firing ground	198
5.2	A few reflections	199
5.3	Bibliography	200
6.	Nanoparticles in the Environment and Working Places	203
6.1	Introduction	203
6.2	Chimneysweeps: a historical case	205
6.3	Welding metals	207
6.4	Toner	210
6.5	The particulate active filter or FAP	212
6.6	The environment around a foundry	215
6.7	The environment around a power plant	220
6.8	The case of a ship	227
6.9	Incinerators	228
6.10	Tobacco smoke	231
6.11	Bibliography	237
7.	Nanoparticles in Food, Cosmetics and Other Products	239
7.1	Bibliography	249
8.	New York 9/11	251
8.1	Bibliography	263
9.	The Future and Prevention Criteria	265
9.1	The state of the art	265
9.2	What is next?	267
9.3	The future	280
9.4	A few reflections	281
9.5	Bibliography	284
	Appendix	287
	Index	291