CONTENTS

		Page
1	INTRODUCTION	1
	1.1 Scope of review	1
	1.2 Microwave and radiofrequency radiation	1
2	MECHANISMS OF INTERACTION	2
3	HUMAN STUDIES	5
	3.1 Perception	5
	3.2 Thermophysiological considerations	10
4	ANIMAL STUDIES	15
	4.1 Ocular studies	15
	4.2 Haematology and immunology	20
	4.3 Cardiovascular system	28
	4.4 Endocrine system	30
	4.5 Nervous system	34
	4.6 Behaviour	41
	4.7 Reproduction and development	51
	4.8 Genetic effects	57
	4.9 Cancer-related studies	60
5	IN VITRO STUDIES	67
	5.1 Effects on cell membranes	67
	5.2 Haemopoietic and immunological studies	69
	5.3 Chromosomal and mutagenic effects	72
	5.4 Cancer-related studies	74
	5.5 Ion exchange in brain tissue	77
	5.6 Studies on the heart and on peripheral nervous tissue	78
6	OVERALL SUMMARY AND CONCLUSIONS	80
	6.1 Summary	80
	6.2 Conclusions	90
7	ACKNOWLEDGEMENTS	92
8	REFERENCES	93

TABLES

1	Relationship between SAR and temperature rise	122
2	Thresholds for physiological and behavioural thermoregulation	123
3	Behavioural response thresholds	124
4	Developmental effects	125
5	Summary: Incidence of neoplastic lesions in rats following life-time exposure to 2.45 GHz radiation	126
6	Summary: Incidence of benign and primary malignant lesions at death in rats following life-time exposure to 2.45 GHz radiation	127

7 Summary: Approximate thresholds for thermal effects of microwave and RF radiation exposure in animals 128

8 Summary: Putative thresholds for effects of pulsed RF and microwave radiation 129

9 Summary: Reported effects of amplitude-modulated RF and microwave radiation 130

FIGURES

1 Electromagnetic spectrum 131

2 Thresholds for the cutaneous perception of radiation 132

3 Thermoregulatory profile of a generalised primate 133

4 Cardiovascular adjustments in volunteers heated to the limits of thermal tolerance 134

5 Body temperature and heart rate changes in a volunteer during exposure to RF magnetic fields 135

6 Threshold for cataract formation in animals exposed to 2.45 GHz microwaves 136

7 Changes in neutrophil and lymphocyte counts in mice after repeated exposure to RF radiation 137

8 Number of lung tumours in mice exposed to 2.45 GHz microwaves or non-specific stress 138

9 Cumulative survival of rats exposed to 2.45 GHz microwaves at up to 0.4 W kg^{-1} 139

10 Dose–response relationship for neoplastic transformation in C3H10T½ cells exposed to amplitude-modulated microwaves 140