

TABLE OF CONTENTS

PREFACE.....	viii
PROCESS FOR DEVELOPMENT OF THE TOOLKIT.....	x
ACKNOWLEDGEMENTS.....	xiii
LIST OF ACRONYMS AND ABBREVIATIONS	xiv
1. INTRODUCTION	1
1.1 Purpose and intended audience.....	1
1.2 Scope of the Toolkit.....	2
2. DESCRIPTION OF HUMAN HEALTH RISK ASSESSMENT OF CHEMICALS	4
2.1 Definition of risk assessment	4
2.2 Uses of human health risk assessments of chemicals	5
3. DESCRIPTION OF THE TOOLKIT	7
3.1 The Toolkit as a road map	7
3.2 Tiered assessments in the Toolkit	10
3.3 Generic road maps	12
3.3.1 Hazard identification	12
3.3.1.1 Chemical identity	12
3.3.1.2 Hazardous properties	14
3.3.2 Hazard characterization/guidance or guideline value identification	15
3.3.2.1 Health-based guidance values derived by international organizations	18
3.3.2.2 Media-specific guideline values (“quality guideline values”) derived by international organizations	21
3.3.2.3 Evaluating the appropriateness of available guidance or guideline values for a specific problem.....	22
3.3.3 Exposure assessment	22
3.3.3.1 Routes and pathways of exposure	23
3.3.3.2 Estimating exposures: modelling or measurement approaches.....	23
3.3.3.3 Duration of exposure	26
3.3.3.4 Concentration and rate of exposure.....	27
3.3.3.5 Biomarkers of exposure	28
3.3.4 Risk characterization	28
3.3.4.1 Comparison with a guidance or guideline value	28
3.3.4.2 Estimation of cancer risk	30
4. INTERNATIONAL RISK ASSESSMENT RESOURCES	31
4.1 Introduction.....	31
4.2 Organization.....	31
4.3 Directories of resources	32
4.4 General resources on risk assessment.....	32
4.4.1 Resources on risk assessment methodology	33
4.4.2 Resources on susceptible populations	33

4.5 Chemical-specific resources	34
4.5.1 JMPR monographs	34
4.5.2 JECFA monographs	34
4.5.3 EHC monographs	35
4.5.4 CICADs	35
4.5.5 Drinking-water quality background documents	35
4.6 Hazard identification resources.....	35
4.6.1 International Chemical Safety Cards.....	36
4.6.2 Screening Information Datasets for High Production Volume Chemicals	36
4.6.3 WHO Recommended Classification of Pesticides by Hazard.....	36
4.6.4 UN Recommendations for the Transport of Dangerous Goods	37
4.6.5 IARC monographs.....	37
4.6.6 Hazardous Substances Data Bank	37
4.6.7 European Chemical Substances Information System.....	37
4.6.8 EU Classification and Labelling System.....	38
4.6.9 International Chemical Control Toolkit	38
4.7 Hazard characterization/guidance or guideline value resources	38
4.7.1 Guidance values for exposure rates.....	39
4.7.1.1 Pesticides	39
4.7.1.2 Food additives and contaminants, naturally occurring toxicants and residues of veterinary drugs in food	39
4.7.2 Guideline values for exposure concentrations.....	39
4.7.2.1 WHO drinking-water guidelines	39
4.7.2.2 WHO air quality guidelines.....	39
4.7.3 Guidance and guideline values from chemical-specific monographs	40
4.7.4 International Toxicity Estimates for Risk (ITER) database	40
4.7.5 Occupational exposure limits (OELs)	40
4.8 Exposure assessment resources.....	40
4.8.1 General guidance on exposure assessment.....	41
4.8.2 Emission sources and scenarios	41
4.8.3 Emission rates.....	42
4.8.4 Transport and fate.....	43
4.8.5 Exposure concentrations.....	44
4.8.6 Exposure factors	45
4.9 Risk characterization resources.....	45
 5. DRINKING-WATER CASE-STUDY	46
5.1 Objective	46
5.2 Statement of the problem	46
5.3 Hazard identification.....	47
5.4 Hazard characterization/guidance or guideline value identification	49
5.5 Exposure assessment.....	50
5.6 Risk characterization.....	55
5.7 Summary	57
 6. RESPIRABLE PARTICULATE MATTER (PM ₁₀) CASE-STUDY.....	58
6.1 Objective	58
6.2 Statement of the problem	58
6.3 Hazard identification.....	59
6.4 Hazard characterization/guidance or guideline value identification.....	59

6.5 Exposure assessment.....	62
6.6 Risk characterization.....	65
6.7 Summary	66
 7. PESTICIDE CASE-STUDY	 67
7.1 Objective.....	67
7.2 Statement of the problem	67
7.3 Hazard identification.....	67
7.4 Hazard characterization/guidance or guideline value identification.....	69
7.5 Exposure assessment.....	71
7.6 Risk characterization.....	75
7.7 Summary	77
 8. REFERENCES AND WEB LINKS	 79