

Guidance for Industry
Guide to Minimize Microbial Food Safety Hazards
For Fresh Fruits And Vegetables

Table of Contents

Preface	
Introduction	3
I. Definitions	6
Water9
A. Microbial Hazard9
B. Control of Potential Hazards9
1.0 Agricultural Water	10
1.1 General considerations	
1.2 Microbial testing of agricultural water	
2.0 Processing Water	13
2.1 General Considerations	
2.2 Antimicrobial Chemicals	
2.3 Wash Water	
2.4 Cooling Operations	
III. Manure And Municipal Biosolids	19
A. Microbial Hazard19
B. Control of Potential Hazards19
1.0 Municipal Biosolids20
2.0 Good Agricultural Practices for Manure Management	20
2.1 Treatments to Reduce Pathogen Levels	
2.1.1 Passive treatments.	
2.1.2 Active treatments.	
2.2 Handling and Application	
2.2.1 Untreated Manure	
2.2.2 Treated Manure	
3.0 Animal Feces	24
IV Worker Health and Hygiene	26
A Microbial Hazards26

B. Control of Potential Hazards 26
1.0 Personal Health and Hygiene	27
2.0 Training	28
3.0 Customer-Pick Operations and Road-Side Produce Stands	29
V. Sanitary Facilities	29
A. Microbial Hazards	29
B. Control of Potential Hazards	29
1.0 Toilet Facilities and Handwashing Stations	30
2.0 Sewage Disposal	30
VI. Field Sanitation	31
A. Microbial Hazards.	31
B. Control of Potential Hazards	31
1.0 General Harvest Considerations	31
2.0 Equipment Maintenance	32
VII. Packing Facility Sanitation	32
A. Microbial Hazard.	32
B. Control of Potential Hazards	33
1.0 General Packing Considerations	33
2.0 General Considerations for Facility Maintenance	33
3.0 Pest Control	34
VIII Transportation	35
A. Microbial Hazard	35
B. Control of Potential Hazards	35
1.0 General Considerations	36
2.0 General Transport Considerations	36
IX Traceback.	37
X Conclusion	39
References	40
Appendix	4