

EVALUATING HOUSEHOLD WATER TREATMENT OPTIONS:

Health-based targets and
microbiological performance
specifications



**World Health
Organization**

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TABLE OF CONTENTS

Acknowledgements	iv
List of acronyms and abbreviations	v
1. Introduction	1
2. Health-based performance targets	2
2.1 Target pathogens	3
2.2 Derivation of targets	3
2.3 Tiered approach	3
3. Establishing health-based performance targets	6
3.1 General approach and principles	6
3.2 Default health-based microbiological performance targets	6
3.3 Testing protocols	7
References	9
Appendix 1. Derivation of microbiological performance targets	15
Appendix 2. Technology-specific testing protocols for evaluation of household water treatment performance.....	21
Appendix 3. Additional factors to consider in national environmental technology verification programmes	54
Appendix 4. Basis for use of QMRA	58

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LIST OF ACRONYMS AND ABBREVIATIONS

AIDS	acquired immunodeficiency syndrome
ANSI	American National Standards Institute
DALY	disability-adjusted life year
DNA	deoxyribonucleic acid
EAWAG	Swiss Federal Institute of Aquatic Science and Technology
EPA	Environmental Protection Agency (USA)
ETV	environmental technology verification
GDWQ	<i>Guidelines for drinking-water quality</i>
HIV	human immunodeficiency syndrome
HWT	household water treatment
MPN	most probable number
NSF	NSF International
NTU	nephelometric turbidity unit
pI	isoelectric point
QMRA	quantitative microbial risk assessment
RNA	ribonucleic acid
SODIS	solar disinfection
TSC	tryptose-sulfite-cycloserine
USA	United States of America
USEPA	United States Environmental Protection Agency
UV	ultraviolet
WHO	World Health Organization
YLD	years of life lived with disability due to illness
YLL	years of life lost due to mortality

1. INTRODUCTION

Household water treatment (HWT) interventions may play an important role in protecting public health where existing water sources, including those delivered via a piped network or other improved sources, are untreated, are not treated properly or become contaminated during distribution or storage (UNICEF & WHO, 2009).

HWT applications are any of a range of technologies, devices or methods employed for the purposes of treating water at the household level or at the point of use in other settings, such as schools, health-care facilities and other community locations. Point-of-use water treatment is another term used for HWT. Proper household storage, including use of closed or narrow-necked containers to prevent contact with contaminated hands, is an essential component of household water management, but is not the focus of this document.

Properly formulated and locally relevant performance specifications are needed to protect users and inform decision-making regarding selection of technologies or approaches. This document provides a basis by which to evaluate the microbiological performance of HWT options by:

- establishing a series of health-based microbiological performance targets, ranging from an interim target to highly protective, to encourage incremental improvements in water safety (sections 2 and 3 and Appendix 1); and
- providing guidance to inform the development of new HWT testing protocols or supplement existing protocols (Appendix 2).

It also describes additional factors, including:

- those pertaining to national-level technology evaluation or verification programmes (Appendix 3); and
- justification for use of quantitative microbial risk assessment (QMRA) and performance targets for three classes of pathogens (Appendix 4).

These microbiological performance targets and testing protocols are intended to inform implementers, protect users and encourage technology development by providing a risk-based framework to assess the performance of HWT interventions.

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