WHO International Scheme to Evaluate Household Water Treatment Technologies

Question and Answer Guide

Background

The WHO International Scheme to Evaluate Household Water Treatment Technologies was established in 2014 to independently and consistently evaluate the performance of household water treatment (HWT) technologies according to WHO health-based criteria. Globally, an estimated 663 million people lack access to improved drinking-water supplies[1], and at least 1.9 billion rely on water supplies that are faecally-contaminated[2]. It is in these settings that HWT and safe storage can serve as an important interim measure to make drinking-water safer. Health gains from HWT and safe storage can only be achieved when technologies are **effective** in removing pathogens from drinking-water, and are used correctly and consistently.

1. Why is an international evaluation scheme for household water treatment needed?

HWT is a health intervention, and as such, should be evaluated according to health-based criteria. However, many low-income countries have neither the capacity nor the resources to evaluate HWT performance based on WHO criteria. Concurrently, these same governments, mainly located in sub-Saharan Africa, Southeast Asia and parts of Central and South America, are increasingly being approached by both local and international manufacturers to buy and/or allow the sale of their product within their respective countries. The actual performance of these promoted products varies widely, with some not providing any health benefit, and others providing comprehensive protection against microorganisms that cause diarrhoeal disease. Thus, the WHO International Scheme to Evaluate Household Water Treatment Technologies was established in 2014 to fill this growing need for rigorous and consistent health-based assessment of HWT technologies. The HWT Scheme follows the example of other WHO health-based global evaluation schemes including those on rapid diagnostic test for malaria, insecticide treated bed nets, and pharmaceuticals.

[1] WHO/UNICEF (2015). Progress on sanitation and drinking-water: 2015 update and MDG assessment. Geneva (http://www.who.int/water_sanitation_health/publications/jmp-2015-update/en/)
[2] WHO (2014). Preventing diarrhoea through better water, sanitation and hygiene: Exposures and impacts in low- and middle-income countries. Geneva: World Health Organization; (http://www.who.int/water_sanitation_health/gbd_poor_water/en/)

2. What products can be evaluated under the Scheme?

Faecal contamination of drinking-water is the cause of a large majority of the disease burden associated with unsafe drinking-water[3]. Thus, candidate products for evaluation under the Scheme are those intended to treat water for microbiological contaminants (bacteria, viruses, and protozoa) at the household level. In addition, products ought to be stand-alone and targeted at the most impoverished households in settings with high diarrhoeal disease burden. Products intended to remove anthropogenic or naturally occurring radiological or chemical drinking-water contaminants, including but not limited to pesticides, arsenic, fluoride, heavy metals, nitrate, excess salts, disinfection by-products, pharmaceuticals, are currently not evaluated under the Scheme.

3. What is the HWT Scheme structure?

The HWT Scheme is coordinated by the Water, Sanitation, Hygiene and Health Unit at the WHO. In this role, WHO reviews and designates testing laboratories, develops testing protocols and report templates, coordinates the testing of technologies, reviews testing results and communicates the test results to Member States. The Scheme works with an independent advisory committee (IAC) of experts in drinking-water treatment, microbiology and epidemiology, and designated testing laboratories to objectively evaluate the performance of submitted HWT products.

4. What are the criteria against which technologies are evaluated?

The performance of HWT products is classified as 3-star (★★★); 2-star (★★); and 1-star (★), denoting descending order of performance, based on $\log_{10}$ reductions of bacteria, viruses and protozoa from drinking-water. Performance that does not meet the minimum target is given no stars. The microbiological reductions required for the three categories of performance are shown below:

[3] WHO (2014). Preventing diarrhoea through better water, sanitation and hygiene: Exposures and impacts in low- and middle-income countries. Geneva: World Health Organization; (http://www.who.int/water_sanitation_health/gbd_poor_water/en/)

WHO microbiological performance criteria for HWT technology performance classification

Performance target	**Bacteria** (log_{10} reduction required)	**Viruses** (log_{10} reduction required)	**Protozoa** (log_{10} reduction required)	**Classification** (with correct and consistent use)
★★★	**≥ 4**	**≥ 5**	**≥ 4**	Comprehensive protection: very high pathogen removal
★★	**≥ 2**	**≥ 3**	**≥ 2**	Comprehensive protection: high pathogen removal
★	Meets at least 2-star (★★) criteria for two classes of pathogens			Targeted protection
–	Fails to meet criteria for 1-star (★)			Little or no protection

5. Where are the products tested?

There are currently two laboratories that have been designated to conduct testing. These are: KWR Watercycle Research Institute (KWR) in the Netherlands and NSF International (NSF) in the United States of America. The criteria applied in the selection of the testing laboratories can be found on the Scheme webpage.

6. What are the main steps in the evaluation procedure?

The main steps of the evaluation are outlined below. The full Procedure for Evaluation can be found on the Scheme webpage.

1. Submission and review of Expressions of Interest

WHO invites manufacturers to submit Expressions of Interest (EoIs) for evaluation of HWT products. These EoIs are reviewed by WHO and the IAC to recommend the evaluation procedure to be employed.

2. Product evaluation

Products are tested at designated testing laboratories according to WHO harmonized testing protocols.

3. Review of results

Test results are reviewed by WHO and the independent panel of experts to classify product performance, and results are shared with the manufacturer.

4. Listing of results

Summary results of products that are found to meet WHO performance criteria are listed on the WHO website.

5. How much does the evaluation cost?

The full cost of evaluation depends on the technology and evaluation protocol to be followed. As funds allow, WHO, with support from donors, subsidizes the actual cost to enable all interested manufacturers, including those from developing countries to participate.

6. How are the results of the evaluation communicated?

The summary results of the products that are found to meet WHO performance criteria are listed on the WHO website, and a comprehensive report of the results of each round of evaluation is published. WHO also disseminates this list and the summary report to Member States, procuring agencies and other stakeholders. In addition, WHO works with Member States to build national regulatory and evaluation capacity. This includes national systems of labelling and communicating product performance in a culturally appropriate manner.

7. Are manufacturers whose products have achieved one of the performance levels able to use the WHO logo?

Manufacturers whose products have been found to meet one of the WHO recommended performance criteria, may discreetly mention this in technical material relating to the product. However, the use of the WHO name and / or emblem for any commercial or promotional purposes is not permitted.

8. Do products that have been evaluated under the Scheme require certification elsewhere?

Evaluation under the Scheme does not constitute a certification, as WHO is not a certifying body; this is the prerogative of national regulatory authorities. Performance evaluation is a component of the product certification process, and through the Scheme, WHO carries out this service on behalf of countries that would otherwise not have the resources nor the capacity to rigorously evaluate HWT products. As such, the results of the Scheme evaluation form the basis on which national regulatory authorities can then certify or authorize products for sale or distribution within their countries. WHO is working with national governments to fast track the authorization of products that have been evaluated the Scheme.

9. What else is WHO doing to support uptake of these results at the national level?

WHO is working in several countries to promote and facilitate dialogue between water, health and regulatory officials on the importance of HWT performance in protecting health, and disseminate results of the Scheme. Additionally, WHO is working to strengthen and streamline regulations and standard setting on HWT in countries. This includes training national laboratories in HWT

performance evaluation, and exploring a variety of candidate microbes under different environmental conditions and technologies to support simple protocol development.

10. How is the Scheme linked to broader efforts to ensure effective targeting and use of HWT products?

Ensuring effective targeting and use of HWT and safe storage involves understanding where, by whom and how it is being used. WHO is engaging with partners within the WHO/UNICEF International Network on Household Water Treatment and Safe Storage to develop tools to help select HWT, and learn about how to segment the market to reach particular groups, when and where to provide subsidies, and how to better understand consumer needs and reflect this understanding through improved design, user support and communication of HWT benefits. In addition, WHO and UNICEF have developed a toolkit to support field monitoring and evaluation of HWT, and is working with Network partners to support use, and share results from the use of the toolkit.

WHO/UNICEF International Network on Household Water Treatment and Safe Storage: working to increase health gains from HWTS

The WHO/UNICEF International Network on Household Water Treatment and Safe Storage seeks to contribute to a significant reduction in water-borne and water-related vector-borne diseases, especially among vulnerable populations, by promoting household water treatment and safe storage as a key component of community-targeted environmental health programmes. The Network brings together over 140 implementing agencies, donors, academics and governmental organizations in working towards the common goal of protecting health through safe water. The four main areas of Network activity are policy/advocacy, research/knowledge management, implementation/scale-up and monitoring and evaluation. More information on the Network can be found at: http://www.who.int/household_water/network/en/