The Scheme:
Overview of Round I and plans for Round II

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Water, Sanitation, Hygiene and Health

International Scheme to Evaluate Household Water Treatment Technologies
Webinar
30 June 2015
Presentation overview

- Introduction
  - Background of the Scheme and basis
  - Scheme objectives and performance criteria

- Overview of Round I
  - Products evaluated
  - Overview of results

- Lessons learned, plans for Round II
  - Challenges from Round I, solutions for Round II

- Conclusions
  - Impact to date
  - Further information
WHO International Scheme to Evaluate Household Water Treatment Technologies

WHY?

- HWT is an important health intervention; the primary benefit it carries is health
- As a health intervention, it must meet health-based standards
- Many HWT products on the market do not meet health standards, yet countries do not have the capacity to evaluate their performance
- Demand for a global Scheme high
  - Governments, international agencies, donors
  - Manufacturers; 79 demonstrated interest in having their products evaluated under the Scheme

Maggie Montgomery, WHO
Scheme objectives

• Promote and coordinate independent and consistent evaluation of HWT products based on WHO criteria

• Support national governments in a number of evaluation-related functions including
  - Educate and train officials in risk-based evaluations, and field testing of HWT
  - Strengthen national regulation of HWT, including certification processes
  - Support enabling environments to maximize health impact of HWT
## HWT performance criteria

| Performance classification | Bacteria *Escherichia coli*  
|                           | (Log$_{10}$ reduction required) | Viruses MS-2 and phiX-174  
|                           |                                  | (Log$_{10}$ reduction required) | Protozoa *Cryptosporidium parvum*  
|                           |                                  |                               | (Log$_{10}$ reduction required) |
| Tier 1                    | Comprehensive protection          | ≥ 4                             | ≥ 5                             | ≥ 4                             |
| (10$^6$ DALYs/ P/yr)      |                                  |                                 |                                 |                                 |
| Tier 2                    | Targeted protection               | ≥ 2                             | ≥ 3                             | ≥ 2                             |
| (10$^4$ DALYs/ P/yr)      |                                  |                                 |                                 |                                 |
| Tier 3                    | (must be supported by health evidence) | Meets at least Tier 2 criteria for two classes of pathogens |                                 |                                 |
If you had 1,000 viruses in a sample of water and had a device that removed 3 log, how many would remain?
Scheme Evaluation Procedure

Review of product dossier
WHO and Independent Advisory Committee conduct an assessment of HWT product data and information on safety, performance and field testing

Performance testing
Products tested at WHO designated testing laboratories according to WHO harmonized testing protocols

Listing of results
- WHO and Independent Advisory Committee review test results and assign performance classification.
- Summary results are listed on WHO webpage
Round I: Expressions of Interest

Expressions of Interest

- Total EOIs received: 29 products from 26 manufacturers

Inclusion criteria

- **HWT technology**: used in households or similar settings to remove microbiological water contaminants that may pose health risks (bacteria, viruses, protozoan cysts)

- **Priority products for testing**
  - Low-cost
  - Appropriate for developing country settings
  - Generally “free standing” products
  - Serve a limited number of individuals each day (40L)
  - Demonstrated uptake / user acceptance

- Filtration: 52%
- Chemical: 31%
- Solar: 10%
- UV: 7%
# Round I: Products evaluated

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>Product trademark</th>
<th>Treatment technology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aqua Research LLC</td>
<td>H2gO Purifier</td>
<td>Electrolytic chlorine generator</td>
</tr>
<tr>
<td>Helioz GmbH</td>
<td>WADI</td>
<td>UV indicator</td>
</tr>
<tr>
<td>LifeStraw SA (part of Vestergaard Group)</td>
<td>LifeStraw Family 1.0, LifeStraw Family 2.0, LifeStraw Community</td>
<td>Ultrafiltration membrane device</td>
</tr>
<tr>
<td>Medentech Limited</td>
<td>Aquatabs</td>
<td>Chlorine disinfectant</td>
</tr>
<tr>
<td>Qingdao Waterlogic Manufacturing Company</td>
<td>Waterlogic Hybrid / Waterlogic Edge</td>
<td>UV disinfectant</td>
</tr>
<tr>
<td>The Procter &amp; Gamble Company</td>
<td>P&amp;G Purifier of Water</td>
<td>Flocculant-disinfectant</td>
</tr>
<tr>
<td>Upendo Women’s Group MSABI</td>
<td>TEMBO Filter Pot</td>
<td>Ceramic pot filter</td>
</tr>
<tr>
<td>World Health Alliance International Inc.</td>
<td>Silverdyne</td>
<td>Colloidal silver disinfectant</td>
</tr>
</tbody>
</table>
Round I: Overview of results

<table>
<thead>
<tr>
<th>Tier 1</th>
<th>Tier 2</th>
<th>Tier 3</th>
<th>Does not meet</th>
<th>Undertermined</th>
<th>Under evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of products evaluated</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Performance classification</td>
<td>Comprehensive protection</td>
<td>Targeted protection</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Round I: Selected findings

- Products do not perform as well as is widely thought.
  - Forthcoming publication on Round I results; products are NOT as good as assumed (tip of the ice berg?)

- Existing evaluations not rigorous
  - Under ideal conditions; e.g. very high doses of disinfectant, or long exposure times
  - Evaluations do not address all three pathogen classes
  - Products not tested with different types of water nor during the entire lifetime of performance
  - Independence and impartiality of testing facilities questionable

- Unclear use instructions
  - Confusing to users – correct and consistent use..?
Lessons learned from Round I, solutions implemented for Round II
<table>
<thead>
<tr>
<th>Round 1 challenge / lesson</th>
<th>Round II solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>😞 Complicated protocols resulting in delays in testing</td>
<td>✓ Simplified protocols which still maintain scientific rigour</td>
</tr>
<tr>
<td>😞 High perceived cost of testing</td>
<td>✓ Simplified protocols and increased subsidies to manufacturers; increased communication of benefit of testing</td>
</tr>
<tr>
<td>😞 Lack of knowledge of the Scheme and importance of HWT performance more generally</td>
<td>✓ Development of communication strategy and specific products including Round I report and general brochure.</td>
</tr>
<tr>
<td>Round 1 challenge / lesson</td>
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</tr>
<tr>
<td>---------------------------</td>
<td>-------------------</td>
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<tr>
<td>😞 Lack of national regulation structures</td>
<td>✓ Working in specific countries to support strengthening regulation and document “proof of concept”</td>
</tr>
<tr>
<td>😊 Importance of linking with wider HWT enabling environment efforts</td>
<td>✓ Discussions with implementers including those engaged in the WHO/UNICEF International Network on HWTS</td>
</tr>
</tbody>
</table>
The most noticeable change of all - what is the difference in the classification of performance?
## QUIZ

### WHO performance classification

<table>
<thead>
<tr>
<th>Target</th>
<th>Log(_{10}) reduction required: Bacteria</th>
<th>Log(_{10}) reduction required: Viruses</th>
<th>Log(_{10}) reduction required: Protozoa</th>
</tr>
</thead>
<tbody>
<tr>
<td>Highly protective</td>
<td>≥ 4</td>
<td>≥ 5</td>
<td>≥ 4</td>
</tr>
<tr>
<td>Protective</td>
<td>≥ 2</td>
<td>≥ 3</td>
<td>≥ 2</td>
</tr>
<tr>
<td>Interim*</td>
<td>Achieves “protective” target for two classes of pathogens and results in health gains</td>
<td></td>
<td></td>
</tr>
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</table>

### WHO performance targets

<table>
<thead>
<tr>
<th>Tier</th>
<th>Comprehensive protection</th>
<th>Bacteria: <em>Escherichia coli</em> (log(_{10}) reduction required)</th>
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<td>Targeted protection</td>
<td>Meets at least Tier 2 criteria for two classes of pathogens</td>
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Round II: Take home messages

- Simplified testing protocols
- Higher subsidies

= Reduced testing fee!!!
3 reasons why should have your HWT product evaluated under the Scheme

- **International reach:** Results of the product testing are used to guide national governments and procuring agencies in the selection of HWT products, and are listed on the WHO website.

- **Fast-tracked national certification:** WHO is working with national regulatory authorities to ensure that products that are evaluated under the Scheme are fast-tracked for certification.

- **Consumer confidence:** WHO is working with national regulatory authorities to communicate results of testing, product labelling and certifications for products evaluated under the Scheme to ensure consumers understand the protection provided by HWT products and can make informed choices.
Impact

- Government requests to WHO headquarters on how to decipher manufacturer claims
- Rejected underperforming products included in Ebola "innovative technologies" list
- Products evaluated reach ≈ 5 million households, resulting in ≈ 15 billion liters of water treated per year
http://www.who.int/household_water/scheme/en/

- Expression of Interest
- Procedure for evaluation, testing protocols
- Products under evaluation

International Network on Household Water Treatment and Safe Storage

- Regular newsletter on events, research, activities related to HWTS and the Scheme
- Email: hhwater@who.int

**Online course: Introduction to Household Water Treatment and Safe Storage**

- www.coursera.org/course/hwts
- Sign up - it’s free..! 😊
Acknowledgements

- The Scheme Independent Advisory Committee
- KWR Watercycle Research Institute and NSF International
- Manufacturers who participated in Round I: patience is a virtue!