LifeStraw

Evidence Dossier

For LifeStraw **Community**

CONTAMINANT REMOVAL BY PRODUCT

		Water filters (membrane pore size: 0.2 microns)			**Water purifiers (membrane pore size: 0.02 microns)**		
		LifeStraw	LifeStraw Go, Play, Universal, Steel	LifeStraw Flex	LifeStraw Mission	LifeStraw Family	LifeStraw Community
BACTERIA (Removes 99.999999%)	Brucella melitensis	✓	✓	✓	✓	✓	✓
	Campylobacter jejuni	✓	✓	✓	✓	✓	✓
	pasteurella tularensis	✓	✓	✓	✓	✓	✓
	Pseudomonas aeruginosa	✓	✓	✓	✓	✓	✓
	Shigella	✓	✓	✓	✓	✓	✓
	Staphylococcus Aureus	✓	✓	✓	✓	✓	✓
	Vibrio Cholera	✓	✓	✓	✓	✓	✓
	Vibrio parahaemolyticus	✓	✓	✓	✓	✓	✓
	Yersinia enterocolitica	✓	✓	✓	✓	✓	✓
	Yersinia pestis	✓	✓	✓	✓	✓	✓
	Enteropathogenic E.coli	✓	✓	✓	✓	✓	✓
	Haemophilus influenzae	✓	✓	✓	✓	✓	✓
	Klebsielia pneumoniae	✓	✓	✓	✓	✓	✓
	Legionella pneumophia	✓	✓	✓	✓	✓	✓
	Mycobacterium Tuberculosis	✓	✓	✓	✓	✓	✓
	Mycoplasma pneumoniae	✓	✓	✓	✓	✓	✓
	Pseudomonas pseudomallei	✓	✓	✓	✓	✓	✓
	Salmonella hirschefeldii	✓	✓	✓	✓	✓	✓
	Salmonella typhimurium	✓	✓	✓	✓	✓	✓
	Salmonella typhosa	✓	✓	✓	✓	✓	✓
	Shigella dysenteriae	✓	✓	✓	✓	✓	✓
	Streptococcus pneumoniae	✓	✓	✓	✓	✓	✓
	Streptococcus pyogenes	✓	✓	✓	✓	✓	✓
	Leptospirosis				✓	✓	✓
PARASITES (Removes 99.999%)	Ascario lumbricoides	✓	✓	✓	✓	✓	✓
	Cryptosporidium	✓	✓	✓	✓	✓	✓
	Entamoeba	✓	✓	✓	✓	✓	✓
	Giadia Lamblia	✓	✓	✓	✓	✓	✓
	naegleria gruberi	✓	✓	✓	✓	✓	✓
	schistosoma mansoni	✓	✓	✓	✓	✓	✓
	taenis saginata	✓	✓	✓	✓	✓	✓
VIRUS (Removes 99.999%)	Adenoviridae virus				✓	✓	✓
	Astrovirus				✓	✓	✓
	Calicivirus virus				✓	✓	✓
	Enterovirus				✓	✓	✓
	Hepatitis A virus				✓	✓	✓
	Hepatovirus				✓	✓	✓
	Influenza				✓	✓	✓
	Norovirus				✓	✓	✓
	Parainfluenza				✓	✓	✓
	Paramyxovirus				✓	✓	✓
	Parvovirus B19				✓	✓	✓
	Rhinorvirus				✓	✓	✓
	Rotavirus				✓	✓	✓
	Togavirus				✓	✓	✓
CHEMICALS	Chlorine		✓	✓			
	Organic chemical matter		✓	✓			
	Pesticides and herbicides		✓	✓			
	Lead			✓			
	Heavy metals			✓			

This list is intended as complementary information. All LifeStraw products are tested under standard laboratory conditions using ISO / IEC 17025 accredited methods. For specific laboratory results, please refer to the Certificate of Analysis document, provided at www.lifestraw.com

LifeStraw Community

Internal Lab Reports

Study Report

PHÒNG THÍ NGHIỆM NƯỚC
Water Laboratory

MICROBIAL EFFICACY OF LIFESTRAW®COMMUNITY PRODUCTS

Study Number: LSF.12.1001.15

Attention to:	Date of issuance: 24th Sep 2014
Issued by: Yen Ha/ Chung Nguyen	Approved by: Anh Pham/Le Cao

Purpose

Evaluating microbial efficacy of LifeStraw® Community products (LSC)

Samples and Material

- Sample: LSC units – Production batch code LSCPR2G – Received in Oct 2012
- Number of replicates: 05 units

Figure 1. LifeStraw® Community products

Procedure/ Testing methods

- The procedure of testing microbial efficacy follows the USEPA Guide standard and protocol for testing Microbiological Water Purifiers, 1987, which is rewritten as the internal challenging SOP (code: WL.SOP.036).
- The microbial challenging test was performed at first draw (25L) and after 6,000L aging with 300 NTU water. The aging of LifeStraw® Community filters was performed following the internal accelerated aging procedure (AAP) with 300NTU aging water (Standard Operating Procedure code: WL.SOP.024).

No	Test microorganisms/materials	Analyze method
1	Bacteria *Escherichia coli (*ATCC 25922)	APHA 9222B
2	Virus MS2 (ATCC 15597-B1)	USEPA 1602
3	3 micron polystyrene sphere (from Polysciences. Inc.) as protozoan cyst alternative	USEPA DWCTR 9205

Results and discussions

Table 1. Microbial removal efficacy of LSC products after 1st drawn and after 6000L aging with AAP water (300 NTU water)

Challenging point (L)	Sample code	Log_{10} reduction		
		E.coli	MS2	sphere
25 L	LS.12.002.1	8.6	6.6	4.3
	LS.12.002.2	8.6	6.2	4.3
	LS.12.002.5	8.3	5.9	4.3
	LS.12.003.1	8.3	5.9	-
	LS.12.003.2	8.3	5.2	-
	Average	8.4	5.9	4.3
6000 L	LS.12.002.1	7.7	5.9	-
	LS.12.002.2	8.1	6.5	-
	LS.12.002.5	8.1	5.7	-
	LS.12.003.1	7.6	5.2	5.1
	LS.12.003.2	7.8	5.1	4.4
	Average	7.9	5.7	4.8

Summary/ Conclusions

Life Straw® Community product shows a good and stable microbial efficacy along 6,000L aging with AAP water (300NTU water) which is equivalent to ca. 120,000L of 15 NTU water. Average Log_{10} reduction to bacteria, viruses and protozoan cysts of LSC product is higher than 7.9, 5.7 and 4.3 respectively, which exceed USEPA and WHO “highly protective category” requirements for water purifiers.

Study Report

PHÒNG THÍ NGHIỆM NƯỚC
Water Laboratory

LONGEVITY PERFORMANCE OF LIFESTRAW® COMMUNITY PRODUCTS

Study Number: LSF.12.1001.18

Attention to:	Date of issuance: 24th Sep 2014
Issued by: Yen Ha/ Chung Nguyen	Approved by: Anh Pham/Le Cao

Purpose

Evaluating longevity performance of LifeStraw® Community products (LSC)

Samples and Material

- Sample: LSC units – Production April 2013
- Number of replicates: 02 units

Figure 1. LifeStraw® Community products

Procedure/ Testing methods

- The accelerated aging test procedure (AAP – 300 NTU turbidity test water) following the internal standard operating procedure WL.SOP.024.v1 was applied. The result of this test is then converted into longevity performance of LSC in normal aging procedure (NAP – 15 NTU turbidity test water) which meets requirement of *USEPA Guide standard and protocol for testing Microbiological Water Purifiers*, 1987.

- Unclogging process with chlorinated water following internal standard operating procedure WL.SOP.904 was applied once when the filtration flow-rate decreased to 6 L/h.

Results and discussions

Longevity performance of LSC in accelerated aging test

Table 1. AAP Longevity performance of LSC products

Samples	AAP Aging volume (L)	Flow-rate(*) of new filter (L/h)	Flow-rate(*) after 9800 L AAP (L/h)	Filter cleaning frequency (per 50L)	Pre-filter cleaning Frequency (per 50L)	Dirty tank cleaning frequency (per 50L)
LSC-F2	9865	27.3	12.3	2.5	0.7	0.2
LSC-F3	9765	27.0	8.1	2.5	0.8	0.3
Average	9815	27.2	10.2	2.5	0.7	0.2

(*) Flow rate was measured when the dirty water tank was full

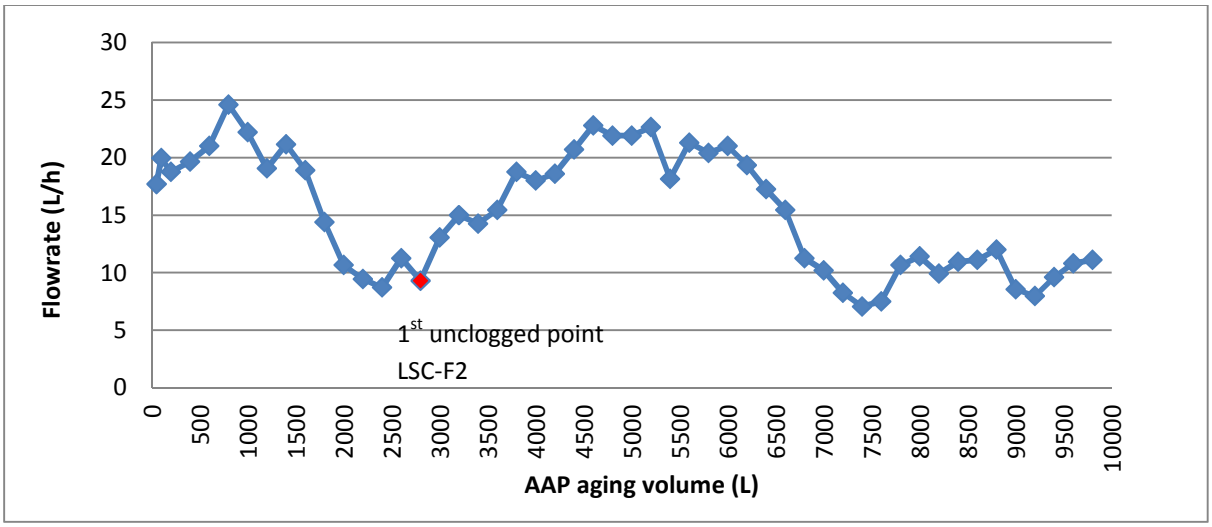

Figure 2. Flow-rate vs AAP aging volume

LSC products worked well along about 9800L AAP with flow rate of 27 L/h when the filters were new and 6 L/h at clogged point of product..

Unclogging procedure was applied at 1st clog point (at 3,200L). After unclogging, flow-rate of clogged cartridge has been recovered and the products continue to filter until 9,800L. It has been proven in another internal study LSF.13.1004.2 that repeated unclogging whenever the cartridge reaches to its clogged point can extend the lifetime of product 6 times.

The longevity of 9,800L when aging follows accelerated aging procedure (AAP with 300NTU water) is corresponding to lifetime of 196,000L when aging follows normal aging procedure (NAP with 15 NTU water) (According to good correlation between accelerated aging procedure and normal aging procedure of LifeStraw® product - Study LSF.11.1012.2).

Turbidity of filtrated water

Table 2. Turbidity of filtrated water during 9800L aging AAP

Samples	Turbidity (NTU)
LSC-F2	< 0.5
LSC-F3	< 0.5
Average	< 0.5

Turbidity of filtrated water was always less than 0.5 NTU during the 9,800L aging AAP, which meets requirement of NSF International Standard/American National Standard.

Summary/ Conclusions

LSC products work well along 9,800L aging with accelerated aging water of 300 NTU turbidity, which is corresponding to 196,000L aging with normal aging water of 15 NTU turbidity which meets requirement of USEPA for aging water.

Turbidity of filtrated water is always less than 0.5 NTU which meets requirement of NSF International Standard/American National Standard.

Supplier / Manufacturer

LifeStraw® by VESTERGAARD

LifeStraw S.A.
Place Saint Francois 1,
CH – 1003, Lausanne,
Switzerland.

Date of issue: 05.02.2016

Validity: 2 years after date of issue

Declaration of Compliance

We hereby confirm that our product
LifeStraw® Community – High Volume microbiological water purifier unit for community use.
Complies with the legal regulations laid down in the US FDA 21 CFR 177.1520, CFR 177.1680, CFR 177.2440, CFR 177.2600 and CFR 181.32

When used as specified, the overall migration as well as the specific migration does not exceed the legal limits. The testing was performed according to Regulations as per provided above.

The materials and raw materials used comply with Plastic Regulation and regulations for substances that come in contact with food; the following substances subject to limitations and/or specification have been used in the above mentioned product.

Test	Result
Amount of Extractives	PASS
BPA	PASS
Density	PASS
Total Extractives	PASS
Melting Point	PASS
Soluble fraction	PASS
Residual Acrylonitrile	PASS

Specification of the intended use or restrictions:

- Type of types of food or processes for which the material is suitable:
  - Water
- Type or types of food or processes for which the material is not suitable:
  - Not suitable for other liquid items
- Test conditions: Xylene 50°C for 2 hours / Distilled water at 7 hrs. At standard room temperature.
- Ratio of food contact surface area to volume used to determine the compliance of the material or article

This declaration is valid for the product described and delivered by us. The verification of compliance was performed based on the rules set out in US FDA 177 and US FDA 181 standards for materials that come in contact with food; according to which the product complies with the legal requirements subject to adherence to the stated conditions for the contact with food. In case of deviating food contact conditions, it is up to the user to verify the suitability.

Place / Date:

Lausanne, 5 Feb 2016.

Signature:

Jean-Luc Madier
Head of Research and Development

World Health Organization

World Health Organization

Results of Round I

of the WHO International Scheme to Evaluate Household Water Treatment Technologies

WHO Library Cataloguing-in-Publication Data

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Executive summary

Globally, an estimated 1.9 billion people use either an unimproved water source or an improved source[1] that is faecally-contaminated. Furthermore, 502,000 diarrhoeal deaths in low- and middle-income countries can be attributed to insufficient and unsafe drinking-water (WHO, 2014a). The vast majority of these deaths occur in Africa and South-East Asia, mainly among vulnerable populations, including young children, the malnourished and people living with the human immunodeficiency virus.

The 2030 Sustainable Development Agenda agreed by United Nations (UN) Member States in 2015 calls for universal access to safe drinking water, and the proposed indicator of 'safely managed drinking-water services' will require direct measurement of drinking-water quality (WHO/UNICEF, 2015a). Improved protection and management of drinking-water supplies, including at the household level, will therefore gain increasing importance for achieving the new Sustainable Development Goal targets. Long-term, this can be achieved through increased use of risk management approaches like Water Safety Planning, but in the short and medium term household water treatment (HWT) and safe storage can play an important role.

1 Unimproved sources of drinking-water include surface water, unprotected springs and unprotected dug wells. Full definitions of improved and unimproved sources can be found at: http://www.wssinfo.org/definitions-methods/watsan-categories/

TABLE 1

Performance classification of products found to meet WHO performance criteria in Round I

Technology	Product	Manufacturer	Performance target met	Performance classification (assuming correct and consistent use)
Membrane ultrafiltration	LifeStraw Family 1.0	LifeStraw SA	★★★	Comprehensive protection: *very high removal of bacteria, viruses and protozoa*
Membrane ultrafiltration	LifeStraw Community	LifeStraw SA	★★★	
Membrane ultrafiltration	LifeStraw Family 2.0	LifeStraw SA	★★	Comprehensive protection: *high removal of bacteria, viruses and protozoa*
Flocculation-disinfection	P&G Purifier of Water	The Procter & Gamble Company	★★	
UV disinfection	Waterlogic Hybrid / Edge Purifier	Qingdao Waterlogic Manufacturing Company	★★	
Chemical disinfection	Aquatabs	Medentech Limited	★	Targeted protection: *removal of bacteria and viruses only*
Chemical disinfection	H2gO Purifier	Aqua Research LLC	★	
Solar disinfection	WADI	Helioz GmbH	★	Targeted protection: *removal bacteria and protozoa only*

★★★: removes at least 4 $\log_{10}$ of bacteria, at least 5 $\log_{10}$ of viruses and at least 4 $\log_{10}$ of protozoa
★★: removes at least 2 $\log_{10}$ of bacteria, at least 3 $\log_{10}$ of viruses and at least 2 $\log_{10}$ of protozoa
★: meets the performance targets for at least 2-star (★★) for *only two* classes of pathogens

HWT and safe storage is an important public health intervention to improve the quality of drinking-water and prevent waterborne disease. However, achieving health gains associated with HWT relies on two important factors. HWT technologies need to sufficiently reduce pathogens to protect health and also to be used correctly and consistently by those who are exposed to contaminated water. The first of these conditions – microbiological performance – is critical, and is the primary focus of this report.

The International Scheme to Evaluate Household Water Treatment Technologies (the Scheme) was established by the World Health Organization (WHO) in 2014 to evaluate the microbiological performance of HWT technologies against WHO health-based criteria. The results of the Scheme evaluation are intended to guide HWT product selection by Member States and procuring UN agencies. In this regard, the Scheme fills an important global and national need for independent health-based evaluation of HWT, especially considering the large number of product manufacturers and product claims, and the limited capacity of low-income countries to conduct testing to verify these claims.

This *Round I Report* of the Scheme is the first ever global assessment of HWT performance, and details the results from a range of HWT technologies including solar, chemical, filtration and ultraviolet (UV). In addition, the report draws on the findings from a rapid assessment of the HWT product market and enabling environment in Africa and South-East Asia. The report:

- highlights that performance is a fundamental criterion in HWT product selection, and a number of products are available that were found to meet WHO recommended performance targets;
- draws attention to the fact that, despite the significant need for effective HWT solutions among vulnerable populations, product evaluation and regulation is generally weak; and
- recommends specific actions at the national level needed to ensure that health gains from HWT are realized; these include strengthening product regulation and enabling environments for HWT, understanding market development and user needs and motivations for sustained use.

The report is divided into two main sections. Section 1 summarizes the results of *Round I* of the Scheme evaluations, performed in 2014/2015, with data on the performance of ten HWT products. 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 results of the performance testing and review of existing data and product information highlight that:

- **A variety of HWT products are available that were found to meet WHO recommended performance targets.** Of the ten products evaluated, five were found to provide comprehensive protection against all three classes of pathogens (3-star or 2-star), while three were found to provide targeted protection against two of the three classes of pathogens (1-star). The eight products found to meet WHO recommended performance targets are listed in Table 1.

- **Some products fail to meet the Scheme's minimum standard of health protection.** Two of the products evaluated do not meet the Scheme's minimum microbiological performance criteria. Identifying such products is crucial to inform appropriate HWT product selection and procurement and to promote use of better performing alternatives. Information on these products is provided in Section 1.3.1 of this report.

- **Awareness of the key considerations in HWT performance evaluation is limited.** Three main findings arising from the review of existing testing data and discussions with HWT stakeholders are that:
  - **Performance is often overlooked in selecting products.** Both products that did not meet the performance criteria were being distributed or sold on the market at the time of testing. While WHO recognizes that microbiological performance is only one of many factors to consider, this performance is a prerequisite for health gains.
  - **Testing conducted outside the Scheme is undertaken with varying methods and often under "ideal" conditions** such as using non-turbid water, high doses and long contact times, and only against a limited set of parameters. This results in data which only reflect "part of" HWT performance, rather than comprehensive data under all conditions, thus rendering interpretation of tests difficult and comparability between tests even more so.
  - **Product information, including use instructions and labelling can be unclear**, and deciphering information that is pertinent to product performance is difficult. Without sufficient product information, the ability of users to correctly and consistently use HWT and ultimately achieve health gains is compromised.

Section 2 outlines the main findings from the rapid market assessment of HWT in Africa and Asia, and discusses key scaling up efforts required to better monitor, target and understand the use of quality HWT. While the limited scope of the assessment precludes making definitive statements about the HWT market in these regions, the available data from selected countries provide some useful insights on the HWT environment. The findings highlight that:

- **There is a strong growth in filter markets in parts of Asia.** While boiling remains the most commonly reported method of HWT (Box 1), filtration is increasingly common in Asia. Findings from India, Viet Nam, China and South Korea highlight that the growth in the filter markets is likely attributed to growing consumer awareness of a number of factors, including the quality of supplied water, the potential health gains from using HWT, the wide availability of HWT products and also the ability of middle-income households to pay.

BOX 1

Boiling remains the most commonly reported method of household water treatment

Boiling is reported by approximately one fifth of households in low- and middle-income countries. It is very effective in inactivating waterborne pathogens, including bacteria, viruses and protozoa. However, an important limitation is that the treated water may be susceptible to recontamination due to unsafe storage and handling after boiling (WHO, 2015a). In addition, use of certain fuels and stoves has adverse environmental consequences, including contributing to climate change. As with other household water treatment methods, actual use of boiling may be lower than self-reported use, and consequently its health impact may be limited in practice (Brown and Sobsey, 2012; Rosa et al., 2014).

- **Behavioural interventions and understanding of consumer preferences are necessary to realize sustained use of HWT.**
  The vast majority of those without improved water sources live in sub-Saharan Africa, and an estimated 53% of the population in the region are exposed to water that is faecally-contaminated (WHO, 2014a). Yet, reported HWT use in the region remains relatively low (20 %, on average). Implementation of HWT is largely project-based and is often focused on emergency relief efforts or cholera outbreaks, highlighting the need for approaches that promote more sustained, ongoing use and develop the mechanisms and systems to ensure availability, user support and effective supply chains.

- **Regulation of HWT is weak and fragmented.**
  Findings from Ethiopia, Ghana and Viet Nam highlight that regulatory frameworks for HWT products are weak, and often fragmented. Overall, few countries regulate HWT products based on their microbiological performance, and among those that do, such regulation is often limited to chemical disinfectants and performance testing, at best, only includes faecal indicator bacteria, rather than all three classes of pathogens.

The section concludes with three main priorities to support scaling up of quality assured HWT products. These priorities are:

- **Strengthening the regulatory capacity of national governments**, through increasing awareness of the WHO HWT performance criteria, and strengthening the capacity of national regulatory institutions to conduct complimentary evaluations of HWT and evaluate product efficacy data and certifications.

- **Strengthening local manufacturing of quality HWT products,** by supporting implementation of best manufacturing practices tools. This includes developing a better understanding of the key variants affecting performance of locally manufactured HWT products, and strengthening quality assurance and quality control at local manufacturing plants through implementation of best manufacturing practices tools.

- **Strengthening implementation of HWT** to ensure that effective HWT products reach, and are used correctly and consistently by, those most at risk of waterborne disease. This requires effective targeting of market development, understanding of consumer preferences, behavioural interventions and monitoring and evaluating ongoing use and smarter HWT implementation for better health impact.

LifeStraw Community

External Lab Reports

Bachema AG
Analytische Laboratorien

Object : **Reduction tests of microorganisms with LSC (SA, SB, SC)**

Customer: LifeStraw SA
Bachema order number : 20156484

CERTIFICATE OF ANALYSIS

Date: August 12, 2015

Applicant / ref.: LifeStraw SA, Place Saint-François 1,
CH – 1003 Lausanne, Switzerland
Product description: Brand name: LifeStraw® Community, **instant microbiological water purifier.**
Total Quantity: 3 filter units, 3 testing days, 9 tests in total
Testing date: From 28 July to 31 July 2015
Testing results: Refer to full report of Bachema order number 20156484 of **12 August 2015**

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Chemisches und mikrobiologisches Labor für die Prüfung von Umweltproben (Wasser, Boden, Abfall) Akkreditiert nach ISO 17025/STS Nr.064

TEST SUMARY

The filter units were tested according to the Harmonized Testing Protocol to Evaluate Household Water Treatment Technologies, WHO, 2014. (For test condition and detailed procedure, refer to full testing report.)

Test organism	**Test method**	**Microorganism concentration reduction requirements in log_{10} reduction (or %)**		**Result in log_{10} reduction (or %)**	**Assessment**
Escherichia coli	ISO 16649-1	WHO – highly protective category	≥ 4 (or ≥ 99.99%)	> 8.0	passed
MS2 bacteriophage	US-EPA 1602:2001	WHO – highly protective category	≥ 5 (or ≥ 99.999%)	min.: 5.1 max.: >7.6 mean: 6.0	passed
PhiX174 bacteriophage	US-EPA 1602:2001	WHO – highly protective category	≥ 5 (or ≥ 99.999%)	> 6.0	passed

Conclusion: The 3 tested LifeStraw® Community filters, operated according to LifeStraw instruction manual, exceed the required performance of WHO criteria for highly protective microbial water purifiers.

Bachema AG

bachema
Bachema AG
Analytische Laboratorien
Rütistrasse 22
CH-8952 Schlieren

Annette Rust
Dr. sc nat / Dipl. Umwelt-Natw. ETH

Report Ref: KEBS/TES/3172/M/13

Date: 14 June 2013

1. Description of Sample: **Water Purifier**
2. Sample Submitted by: **VESTERGAAD AFRICA LTD**
3. Customer Contact: **Steve Otieno**
4. Customer's Ref. No:
5. Customer's Address: **P. O. BOX 66889 -00800, NAIROBI KENYA**
6. KEBS Sample Ref.No: **BS/11688/13**
7. Date of Receipt : **22 May 2013**
8. Date Analysis Started: **23 May 2013**
9. Sample Submission Form No **77881**

10. Additional information provided by the customer:
Lifestraw Community

11. Acceptance criteria-title and number of specification against which it is tested:
Manufacturer's Specification

12. Parameters tested and Method(s) of test: as listed in the report below

LABORATORY TEST REPORT

No.	Parameters		Results	Requirements	Test Method No	LOD
1 . Microbial efficacy						
I	Efficacy against Aspergillus brasiliensis (Mould)	%	100	99.9999% minimum	Customer Method	
II	Efficacy against Coliforms	%	100	99.9999% minimum	Customer Method	
III	Efficacy against E.coli	%	100	99.9999% minimum	Customer Method	
IV	Efficacy against Legionella	%	100	99.9999% minimum	Customer Method	
V	Efficacy against Pseudomonas auregionosa	%	100	99.9999% minimum	Customer Method	

Please note that tests marked with an * are covered by our current UKAS accreditation scope.

COMMENTS/REMARKS:
The sample performed as shown

Clarkson Agembo - Manager, Microbiology Laboratory
FOR: MANAGING DIRECTOR

14 June 2013
Date of Issue

Report Ref: KEBS/TES/3172/M/13

Date: 14 June 2013

1. Description of Sample: **Water Purifier**
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9. Sample Submission Form No **77881**

10. Additional information provided by the customer:
Lifestraw Community

11. Acceptance criteria-title and number of specification against which it is tested:
Manufacturer's Specification

12. Parameters tested and Method(s) of test: as listed in the report below

LABORATORY TEST REPORT

No.	Parameters		Results	Requirements	Test Method No	LOD
VI	Efficacy against Saccharomyces cerevisiae (Yeast)	%	100	99.9999% minimum	Customer Method	
VII	Efficacy against Salmonella	%	100	99.9999% minimum	Customer Method	
VIII	Efficacy against Shigella	%	100	99.9999% minimum	Customer Method	
IX	Efficacy against Staphylococcus aureus	%	100	99.9999% minimum	Customer Method	
X	Microbial efficacy - General	%	100	99.9999% minimum	Customer Method	

Please note that tests marked with an * are covered by our current UKAS accreditation scope.

COMMENTS/REMARKS:
The sample performed as shown

Clarkson Agembo - Manager, Microbiology Laboratory
FOR: MANAGING DIRECTOR

14 June 2013
Date of Issue

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R.F.C. LFE810825C43

INFORME DE PRUEBAS

No. DE ORDEN:	No. DE LABORATORIO:	FOLIO:	FECHA DE EMISION:
287661	287661-1	654491	19/03/13

DATOS GENERALES

CLIENTE:	ANALISIS Y SOLUCIONES AMBIENTALES, S.A. DE C.V. (23731)
DIRECCION:	CALLE VERSALLES - 16
	JUAREZ
	CUAUHTEMOC , 06600
CONTACTO:	At'n: RODRIGO INCLAN GARZA

INFORMACION DE MUESTREO

IDENTIFICACIÓN DE LA MUESTRA:	TANQUE PURIFICADOR MICROBIOLOGICO "LIFESTRAW ® COMMUNITY"
FECHA Y HORA DE MUESTREO:	DESCONOCIDO
MUESTREADO POR:	NO PROPORCIONADO
MUESTREADOR:	NO PROPORCIONADO
MATRIZ:	Ver Observaciones de Recepción de Muestras

OBSERVACIONES DE MUESTREO:

NINGUNA

RECEPCION DE LA MUESTRA

FECHA Y HORA:	5 de Marzo del 2013 17:22
NO. DE ENVASES:	1
PRESERVACION ADECUADA:	NA

OBSERVACIONES DE RECEPCION DE LA MUESTRA:

SE RECIBE MUESTRA EN PRESENTACION COMERCIAL.
MATRIZ DE LA MUESTRA: FILTRO.

DESCRIPCION DE LA MUESTRA:
PRODUCTO: FILTRO
TIPO DE EMPAQUE: CAJA DE CARTON CERRADA.

En la 1a Columna se indica la clave del organismo de acreditación o dependencia que aprueba el método analítico utilizado (ver notas)

Jacarandas No. 15 Col. San Clemente
C.P. 01740 México, D.F.

Conmutador (55) 5337 1160
laboratoriofermi@labfermi.com.mx - www.labfermi.com.mx

R.F.C. LFE810825C43

INFORME DE PRUEBAS

No. DE ORDEN: 287661	No. DE LABORATORIO: 287661-1	FOLIO: 654491	FECHA DE EMISION: 19/03/13

RESULTADOS ANALITICOS

AA	PARAMETRO	METODO ANALÍTICO	UNIDADES	RESULTADO	D	LDM	LPC	ANALIZADO	
								FECHA	AN
	EFICIENCIA DE REMOCIÓN BACTERIANA								
F,G	BACTERIAS MESOFILICAS AEROBIAS (AGAR CTA. STD A 35ºC/48H) 1	NOM-092-SSA1-1994	UFC/mL	5200	10	1	***	06/03/13	PGE
F,G	BACTERIAS MESOFILICAS AEROBIAS (AGAR CTA. STD A 35ºC/48H) 2	NOM-092-SSA1-1994	UFC/mL	6100	10	1	***	06/03/13	PGE
F,G	BACTERIAS MESOFILICAS AEROBIAS (AGAR CTA. STD A 35ºC/48H) 3	NOM-092-SSA1-1994	UFC/mL	5700	10	1	***	06/03/13	PGE
W	PROMEDIO BACTERIAS MESOFILICAS AEROBIAS (SIN TRATAMIENTO)	CALCULO	UFC/mL	5700	10	NA	NA	06/03/13	PGE
F,G	BACTERIAS MESOFILICAS AEROBIAS (AGAR CTA. STD A 35ºC/48H) 4	NOM-092-SSA1-1994	UFC/mL	< 1	1	1	***	06/03/13	PGE
F,G	BACTERIAS MESOFILICAS AEROBIAS (AGAR CTA. STD A 35ºC/48H) 5	NOM-092-SSA1-1994	UFC/mL	< 1	1	1	***	06/03/13	PGE
F,G	BACTERIAS MESOFILICAS AEROBIAS (AGAR CTA. STD A 35ºC/48H) 6	NOM-092-SSA1-1994	UFC/mL	< 1	1	1	***	06/03/13	PGE
W	PROMEDIO BACTERIAS MESOFILICAS AEROBIAS (TRATADA)	CALCULO	UFC/mL	<1	1	NA	NA	06/03/13	PGE
F,G	REDUCCION BACTERIANA MESOFILICOS AEROBIOS	NOM-244-SSA1-2008	%	100,00	1	NA	***	06/03/13	PGE
F,G	COLIFORMES TOTALES 1	NOM-112-SSA1-1994/ CCAYAC-M-004	NMP/100mL	>1600	10	1,8	***	06/03/13	PGE
F,G	COLIFORMES TOTALES 2	NOM-112-SSA1-1994/ CCAYAC-M-004	NMP/100mL	>1600	10	1,8	***	06/03/13	PGE
F,G	COLIFORMES TOTALES 3	NOM-112-SSA1-1994/ CCAYAC-M-004	NMP/100mL	>1600	10	1,8	***	06/03/13	PGE
W	PROMEDIO COLIFORMES TOTALES (SIN TRATAMIENTO)	CALCULO	NMP/100mL	>1600	10	NA	NA	06/03/13	PGE
F,G	COLIFORMES TOTALES 4	NOM-112-SSA1-1994/ CCAYAC-M-004	NMP/100mL	< 1,8	1	1,8	***	06/03/13	PGE
F,G	COLIFORMES TOTALES 5	NOM-112-SSA1-1994/ CCAYAC-M-004	NMP/100mL	< 1,8	1	1,8	***	06/03/13	PGE
F,G	COLIFORMES TOTALES 6	NOM-112-SSA1-1994/ CCAYAC-M-004	NMP/100mL	< 1,8	1	1,8	***	06/03/13	PGE
W	PROMEDIO COLIFORMES TOTALES (TRATADA)	CALCULO	NMP/100mL	<1,8	1	NA	NA	06/03/13	PGE
F,G	REDUCCION BACTERIANA COLIFORMES TOTALES	NOM-244-SSA1-2008	%	100,00	1	NA	***	06/03/13	PGE

OBSERVACIONES ANALITICAS:

NINGUNA

En la 1a Columna se indica la clave del organismo de acreditación o dependencia que aprueba el método analítico utilizado (ver notas)

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INFORME DE PRUEBAS

No. DE ORDEN: 287661	No. DE LABORATORIO: 287661-1	FOLIO: 654491	FECHA DE EMISION: 19/03/13

NOTAS

NE	Análisis No Efectuado	**AA**	Prueba Acreditada, Autorizada y/o Aprobada (ver Tabla siguiente)
ND	Analito No Detectado	**AN**	Clave del Analista que se realizó la prueba
D	Dilución efectuada a la Muestra	**NA**	No aplica

Para calcular la Cantidad Mínima Detectable en la muestra analizada, se debe multiplicar el LDM por la dilución efectuada (D)

Si el resultado es mayor que el Límite de Detección del Método (LDM) y menor que el Límite Práctico de Cuantificación (LPC) debe ser tomado como estimado.

*** El valor reportado en la columna del LDM corresponde a la Cantidad Mínima Detectable, ya que el LDM no aplica para este Método

Los valores de las Incertidumbres Expandidas de cada uno de los parámetros reportados en este informe se encuentran a su disposición previa solicitud.

Este informe de Pruebas no podrá ser reproducido parcialmente sin la autorización escrita y firmada por la Dirección General.

Este Informe de Pruebas solo afecta a la muestra sometida a prueba.

Cuando se utilizan Métodos Alternos autorizados por la dependencia correspondiente y de acuerdo al Art. 49 de la Ley Federal sobre Metrología y Normalización:
(I) Análisis realizado con el Método Alterno acreditado y autorizado. Método Fuente no acreditado, se reporta sólo con fines informativos.
(II) Análisis realizado con el Método Alterno autorizado. Ambos Métodos (Fuente y Alterno) se encuentran acreditados.

AA	ACREDITACIONES, AUTORIZACIONES Y APROBACIONES
F	Parámetro analizado por Laboratorio Fermi, S.A. de C.V., el cual se encuentra acreditado ante la Entidad Mexicana de Acreditación A.C. (ema a.c.) con Número de Acreditación A-0352-029/12 a partir de 2012-02-16 en la rama Alimentos.
1	Parámetro analizado por Laboratorios ABC Química Investigación y Análisis S.A. de C.V. el cual se encuentra acreditado ante la Entidad Mexicana de Acreditación A.C. (ema a.c.) Número de acreditación N° AG-096-029/11. Acreditado a partir de 2011-07-28 en la rama Agua. Número de acreditación N° A-027-001/11. Acreditado a partir de 2011-08-01 en la rama Alimentos. Número de acreditación N° FF-0102-016/11. Acreditado a partir de 2011-08-19 en la rama Fuentes Fijas. Número de acreditación N° R-0091-009/11. Acreditado a partir de 2011-07-28 en la rama Residuos. Acreditación otorgada bajo la Norma NMX-EC-17025-IMNC-2006 ISO/IEC 17025-2005. Requisitos generales para la competencia de laboratorios de ensayo y calibración.
A	Parámetro analizado por Laboratorios ABC Química Investigación y Análisis, S.A. de C.V. Sucursal Occidente el cual se encuentra acreditado ante la Entidad Mexicana de Acreditación A.C. (ema a.c.) Número de Acreditación N° AG-072-016/11. Acreditado a partir de 2011-08-09 en la rama Agua.
B	Parámetro analizado por Laboratorios ABC Química Investigación y Análisis S.A. de C.V., Sucursal Occidente, el cual se encuentra Aprobado por la Comisión Nacional del Agua con No. CNA-GCA-754.
G	Parámetro analizado por Laboratorio Fermi, S.A. de C.V. que se encuentra Autorizado por la Comisión Federal para la Protección Contra Riesgos Sanitarios (COFEPRIS) como Laboratorio de Prueba Tercero Autorizado Auxiliar en el Control Sanitario de la Secretaría de Salud con Número de Autorización TA-15-10, con vigencia del 09 de Septiembre de 2010 al 09 de Septiembre de 2012.
2	Parámetro analizado por Laboratorios ABC Química Investigación y Análisis S.A. de C.V. el cual se encuentra Aprobado por la Comisión Nacional del Agua (CNA) con No. Aprobación CNA-GCA-773.
3	Parámetro analizado por Laboratorios ABC Química Investigación y Análisis S.A. de C.V. el cual se encuentra registrado ante la Red de Laboratorios del Gobierno del Distrito Federal con No. Registro PADLA/DF/038/AGC/AAR/2012 para las Normas NOM 002 SEMARNAT 1996 y NOM 085 SEMARNAT 1994 y ante el Gobierno del Estado de México y el Gobierno del Estado de Querétaro con No. Registro MEX/QRO/REDLA60/AEA/MER/2012-2013 para las Normas NOM 085-SEMARNAT-1994 y NOM 081-SEMARNAT-1994.
4	Parámetro analizado por Laboratorios ABC Química Investigación y Análisis S.A. de C.V. el cual se encuentra Aprobado ante la Procuraduría Federal de Protección al Ambiente (PROFEPA) con No. de Aprobación PFPA-APR-LP-FF-004/09, PFPA-APR-LP-RE-004/08, PFPA-APR-LP-RE-012-09 y PFPA-APR-LP-RE-004/09.
6	Parámetro analizado por Laboratorios ABC Química Investigación y Análisis S.A. de C.V. el cual se encuentra Autorizado por la Comisión Federal para la Protección Contra Riesgos Sanitarios (COFEPRIS) como Laboratorio de Pruebas Tercero Autorizado Auxiliar en el Control Sanitario, de la Secretaría de Salud con número de Autorización TA-22-11 con vigencia del 10 de Junio de 2011 al 10 de Junio de 2013.
W	Parámetro analizado por Laboratorio Fermi, S.A. de C.V. Prueba no acreditada ni autorizada o aprobada por alguna institución o dependencia, sin embargo el análisis se realiza de acuerdo a los requerimientos marcados en nuestro sistema de calidad conforme a la Norma NMX-EC-17025-IMNC-2006.
Y	Parámetro analizado por Laboratorios ABC Química Investigación y Análisis S.A. de C.V. Prueba no acreditada ni autorizada o aprobada por alguna institución o dependencia, sin embargo el análisis se realiza de acuerdo a los requerimientos marcados en nuestro sistema de calidad conforme a la Norma NMX-EC-17025-IMNC-2006.
Z	Parámetro que por ser una preparación de muestra no requiere ser acreditado ni aprobado o autorizado de acuerdo con los procedimientos internos tanto de la ema a.c. como de las respectivas dependencias gubernamentales ya que dichas preparaciones fueron revisadas integralmente con los métodos acreditados y aprobados o autorizados.

Los resultados de las pruebas reportadas, fueron realizados con los métodos y procedimientos asentados.

ING. ALBERTO TABOADA SALAZAR
DIRECTOR CORPORATIVO DE OPERACIONES

LABORATORIOFERMI
CALIDAD, INOCUIDAD Y SEGURIDAD ALIMENTARIA

una empresa de GRUPO ANALITICO ABC

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No. DE LABORATORIO 287661-1

LifeStraw

Regulatory compliance

SGS

TEST REPORT

Report No. : GR:HL:4480002871 **DATE : 04th February, 2013**

VESTERGAARD ASIA PVT. LTD.
302 RECTANGLE ONE,D - 4,SAKET
NEW DELHI-110017
INDIA
CONTACT PERSON : JOHN VASANTHAN PAUL

THE FOLLOWING SAMPLE(S) WAS/WERE SUBMITTED AND IDENTIFIED BY/ON BEHALF OF THE CUSTOMER AS :

SAMPLE DESCRIPTION	WATER PURIFIER
STYLE NO.	LIFESTRAW COMMUNITY (LSC)
COUNTRY OF ORIGIN	INDIA

SUMMARY OF TEST REPORT:

TEST(S) METHOD / RESULT	PLEASE REFER TO NEXT PAGE(S).
CONCLUSION	WE HAVE TESTED THE FOLLOWING 22 NUMBER OF COMPONENTS OF LIFE STRAW COMMUNITY (LSC) FILTER/PURIFIERS MANUFACTURED & SUPPLIED BY VESTERGAARD FRANDSEN. AS PER SAMPLES PROVIDED TO US, ALL THE COMPONENTS OF LIFE STRAW COMMUNITY (LSC) ARE COMPLIANT WITH US FDA STANDARDS OF MIGRATION (EXTRACTIVES) TEST AS PER RELEVANT US FDA 21 CFR STANDARD.

Per Pro SGS India Pvt Ltd.

N.C.Manna
Asst. Manager
Email your Test Report Related Enquiries at Feedback.HLT@sgs.com

Sample as Received