

The intersection of water, societal, & human health disciplines

MISSION: to prevent waterborne diseases through educating, training, and empowering resource-limited communities to produce and distribute an innovative point-of-use water treatment technology.

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1. PureMadi 5 Recap

Charlottesville, VA, February 5, 2016 – PureMadi and its generous donors proudly celebrated its five-year anniversary at our fifth annual fundraiser last February! Everyone returned to UVa’s Alumni Hall for a night of music, mingling, and merriment as we celebrated half a decade of water filtration. Hoos in Treble and 180 rocked the ballroom while everyone bid on our assortment of silent auction items. The filter game – a fundraiser favorite – also contributed to some healthy competition and our total funds raised.

PureMadi happily welcomed Zain Halle to join in the festivities. Zain is the lead contact from Khulisa Social Solutions, our primary partner organization in South Africa. He captivated the crowd during the technical program, sharing his firsthand experiences working with PureMadi to build the Hammanskraal site from the ground up. Zain has been an irreplaceable resource for PureMadi and we are incredibly thankful for his partnership and commitment to our mission.

PureMadi is also thankful to all of our donors who have made our annual celebration a bigger success each year! Check out our growth below! We can’t wait for PureMadi 6 and hope to see you there!



Announcing PureMadi 6! The event returns to Alumni Hall on February 3rd, 2017.

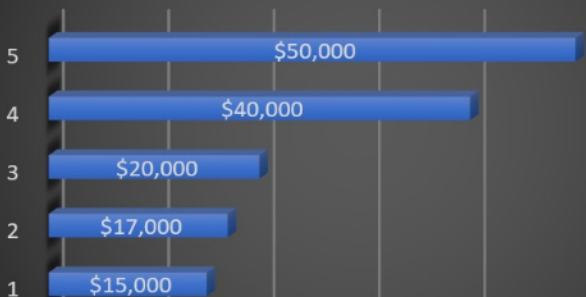


2. Student Summer Update

Summer 2016 marked the third year of the partnership between PureMadi and Khulisa Social Solutions to open a second ceramic water filter facility in Hammanskraal, located in the Gauteng Province of South Africa. Fundamental elements of the facility were constructed by last year’s Jefferson Public Citizen team including Matthew Smith, Alice Burgess, Max Barab, Anna Wallace, and graduate student mentor Katie Nunnelley under guidance of Khulisa Senior Project Manager, Zain Halle. ... Continued on Page 2.



PureMadi Celebrations





...Student Summer Update Continued.

During the summer of 2016, J.C. Panagides (SEAS '18), Helena Gallagher (CLAS '18), Derek Meyers (CLAS '17), Damaris Paris (CLAS '17), and graduate mentor Charles Burgis (CEE) worked to complete PureMadi's second filter facility and train local members of the community (including Grace, Paulina, and Nkosi Ndebele, the newly appointed factory manager) to efficiently produce silver nanoparticle-impregnated ceramic water filters. Their first goal upon arriving in June 2016 was to ensure the safety and security of facility resources. Mr. Halle helped coordinate the welding and installation of steel muntin bars to ensure that the silver nanoparticles housed inside a locking cabinet inside the facility office were properly protected. Abbiot Tsepo, a colleague of Mr. Halle, was hired to stay in the facility overnight and help with the welding. Concurrent with this work, four new filter racks were built. The cement floor within the factory wall was also replaced with a higher quality concrete and a floor was laid under most of the metal awning to facilitate the permanent installation of expensive facility equipment. They were also able to move a hammer mill (for grinding clay) onto the facility premises and coordinate the delivery of a filter press from the University of Venda. To improve the visibility of the facility from the main road, the outside of the building was painted and PureMadi signs were affixed onto the most visible sides of the structure. In the weeks before their departure, the team was able to negotiate an understanding with the local government that allows PureMadi to withdraw clay from a pre-approved site along the River Tshwane riverbed. Most recently, Ms. Ndebele has overseen the installation of an electrical transformer to provide electricity to the borehole, water pump, kiln, and hammer mill.

Needless to say, we are very excited about the accomplishments of this summer and look forward to staying in touch with Ms. Ndebele and Mr. Halle to continuously improve the Hammanskraal facility!



4. Spotlight: THY NGUYEN

Thy Nguyen is excited to serve as the Secretary for PureMadi, and to return to this organization that works to empower communities and address the global water crisis. Thy graduated from the University of Virginia (Class of 2014) with a B.A. in Biology and a Specialization in Environmental and Biological Conservation. With an interest in increasing access to potable water and preventing waterborne illness, Thy joined PureMadi during her third year at UVA. She worked with a Jefferson Public Citizens team to test the efficacy of the ceramic filters and the MadiDrop in Limpopo, South Africa during the summer of 2013. When researching in South Africa, she witness first-hand the consequences of contaminated drinking water and enteric illness. At that moment, her interest in human health manifested. Impacted by her experience with PureMadi, she desires to study medicine, especially in the field of maternal and population health. She is currently working as a medical assistant at an OB/GYN clinic in Austin, Texas, and is working towards applying to post-baccalaureate programs for medical school. She wishes to intersect medicine, global health, and advocacy, and aspires to pursue a Master's in Public Health as a complement to her medical education.

3. Sneed Donation

PureMadi is excited to announce that we received a donation of \$50,000 from the Sara Sneed Charitable Trust. Ms. Sneed's wish was to "provide help for children in Africa, female or male, and without regard to race, religion or color, even if the benefit (such as good water) also helps adult family members of such children and/or also helps the community of which such children are a part." In keeping with the spirit of Ms. Sneed's donation, PureMadi has decided to put this money towards working with schools in the villages of Mashamba and Hammanskraal. Globally, 1/3 of all schools lack access to clean water and sanitation. Lack of access to safe drinking water can lead to missed school due to illness, cognitive and physical impairment, and chronic malnutrition. We intend to change these outcomes in the villages we work in by donating filters to the classrooms of the schools near the filter facilities as well as developing lesson plans to educate students about the importance of water and health. Boas Thangoane and Nkosi Ndebele, managers of the Mukondeni and Hammanskraal facilities respectively, will lead the efforts to work with the schools and conduct lessons. We also plan to help the schools put on events where they can sell filters to parents and community members. PureMadi is putting a student team together to travel to Mashamba and Hammanskraal this summer to further assist in our education and marketing efforts.





5. Spotlight: NKOSINOBUBELO NDEBELE

PureMadi's newest employee is Nkosinobubelo Ndebele! "Nkosi" was born and raised in Bulawayo, Zimbabwe. Nkosi studied Environmental Science and Health at the National University of Science and Technology (2010-2014) in Zimbabwe. Growing up in a third world country facing socioeconomic challenges, she was taken by the need to be involved in a career path that is people and community oriented. During her 3rd year, she was employed as an intern at Dabane Trust, a local nonprofit organization which endeavors to alleviate water quality and scarcity problems affecting communities in arid and semi-arid rural areas of Zimbabwe. This is where she gained experience and developed a passion for water- and health-related issues. In 2016, Nkosi relocated to Hammanskraal, South Africa, where she has been employed as a Manager at PureMadi's Hammanskraal filter facility. Since then she has been part of the PureMadi team working on developing ceramic water filters for Hammanskraal, a community which is also strongly affected by the shortage of clean drinking water. Being part of PureMadi has helped develop her passion further. Moreover, PureMadi keeps her in touch with the community and the people that are often marginalized. Due to her strong interests in the development of adaptive techniques and appropriate water purification technologies, Nkosi hopes to enroll for a part-time Masters Degree in Environmental Engineering (2017).

6. UVA Team Testing Human Health Benefits of PureMadi Filters

Researchers at the University of Virginia and the University of Venda launched a randomized-controlled trial this past summer to test the health benefits of clean water treated with the PureMadi ceramic water filter and MadiDrop silver-based technology. This trial focuses on the health benefits to children, specifically, physical stunting. Community health workers enrolled over 400 households that have a child under the age of three years of age. The community health workers will measure the children's height and weight for at least 18 months. Community health workers will also obtain stool samples from the children to measure the prevalence of pathogens by measuring known pathogen's genes in the stool. Stunting is one manifestation of environmental enteropathy, a condition of persistent inflammation of the intestines that significantly reduces the body's ability to absorb nutrients.

Even though these water treatment technologies have been proven to work in the laboratory, such tests do not measure actual household use. The key characteristic of a randomized-controlled trial is that the study population is

divided into intervention groups. One quarter of the enrolled households were given a PureMadi ceramic water filter in a bucket (Group A), one quarter were given a MadiDrop silver-based technology in a bucket (Group B), one quarter were given a bucket like the other groups to safely store water but provides no other treatment (Group C), and one quarter was not given any intervention at all (Group D). All participants will receive all of the technologies, or new ones, at the conclusion of the trial. The four groups allow researchers to make a fair comparison between the treatments and current water practices.

As the community health workers for the study obtained baseline information from the households, students from the University of Virginia and the University of Venda measured one common bacteria in the source water and treated water from a subset of households. The households that had PureMadi filters or MadiDrops had water from which the tested bacteria could not be detected (except for one which is solely responsible for the elevated mean in group A).

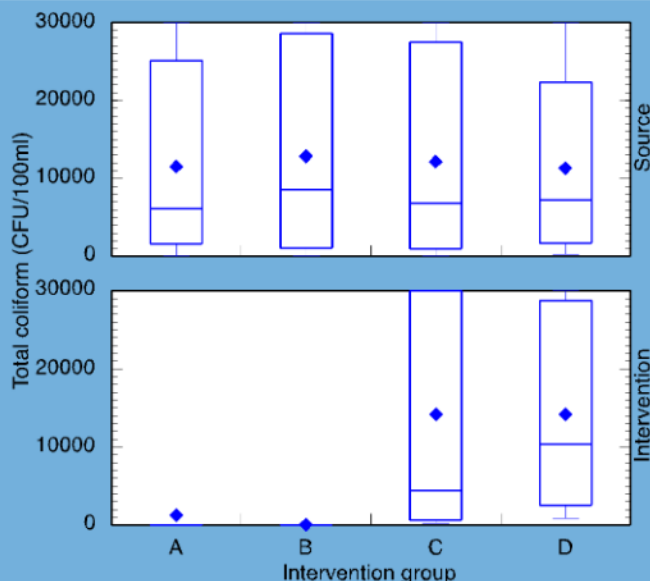


Figure 1: box-and-whisker plots (minimum, first quartile, median, third quartile, maximum) with the mean (diamond) of the household water testing taken within four days of the baseline visit (which was the time of intervention installation). Randomized group (shown on the x-axis) indicates the intervention installed in the household. Supply water (top plots) was sampled from wherever the household stores water at the house. Treated water (bottom plots) was sampled from the intervention bucket, or wherever the household retrieves drinking water for D-households. In cases where D-households store and retrieve water from the same source, the sole measurement was used in both graphs (n=2).

7. Pure Madi Timeline

PureMadi was born, we broke ground on the Mukondeni Filter Factory in Mashamba, South Africa in conjunction with the Mukondeni Pottery Cooperative.



We reorganized PureMadi to align with our business outlook by creating a Board of Directors and appointing Officers. We received final approval on a grant from Rotary International and delivered our first shipment of filters to the villages of Tshapasha and Tshibvumo.



We broke ground on our second filter production facility in Hammanskraal, South Africa.



2010

We conducted surveys in the villages of Tshapasha and Tshibvumo to find out if ceramic water filters were the correct point-of-use water purification technology for the area, and if such technology was needed.



2011

We focused on perfecting the manufacturing process and on training the potters to create filters that met our quality standards. Our first long-term on-ground presence was Rachel Schmidt, who spent 9 months in Mashamba as part of a Fulbright Fellowship.



2012

2013

We hired Boas Thangoane as our Mukondeni Filter Factory Liaison. We also saw signed a memorandum of understanding with Khulisa Social Solutions as our partner for our second filter facility in Hammanskraal.

2014



2015

The Mukondeni Filter Factory is continuing to produce filters that meet our quality standards and has recently started shipping filters to other areas of the country. We hired a Facility Manager, Nkosi Ndebele, in Hammanskraal.

2016

Contact Us!

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To Donate to PureMadi:

Please visit www.PureMadi.org and click on our "Donate" link. All donations are fully tax deductible. PureMadi is operating as a 501(3)(c) not-for-profit organization under the umbrella of the UVA Fund managed by the University of Virginia Alumni Association. All donations go to PureMadi's activities in South Africa.

