

Implementation Projects

Chat

Hayley_PHLUSH: For Hokyong: Excellent project! Very impressive. Is anyone looking at the student response to using UD? Are they living in the building with UD? Do they have a choice? Is there an education component to the program?

Rich Earth: Nadège: In the case of the residential development in Germany, how does urine get collected from the many buildings?

Nadège de Chambrier (VunaNexus): @Rich Earth: in the case of hannover, there will be save! toilets installed as well as a urinoduct also!

Aurea Heusser, Eawag, (she/her): To Nadège: Great projects! Is the plan to sell the fertilizer locally at the different sites with partners or does it always travel back to Zurich?

Nadège de Chambrier (VunaNexus): The idea is to sell the fertilizer as locally as possible to reduce transport, this is also the reason why we need fertilizer permits in each country where we install the system.

Tatiana Schreiber/Rich Earth Institute: Hi Nadege.... can you share the general price range for this fertilizer?

Nadège de Chambrier (VunaNexus): Currently we sell the 500mL bottles at 12.-, because our production is still limited the price is considered quite high. In the future this should be the price per liter, and of course the price for bulk will be much lower. So we are at the same prices as similar products on the markets, with the added value of being completely natural and local.

Umakant Badeti: To Nadege: Interesting project! Were any specific measures taken to maintain the aurin fertilizer quality (for N,P etc) which is developed from a varying urine feed? Also, is there latest data available on the energy efficiency of the nitrification process?

Nadège de Chambrier (VunaNexus): @ Umakant: Measurements during distillation process allow to keep the same the nitrogen concentration in the product. This needs to be the case legally, based on the label.

Nadège de Chambrier (VunaNexus): The entire process requires about 0.1-0.15kWh per liter of urine treated, mainly linked to distillation/concentration.

Carol McCreary: Thanks, Valentin, for the compelling reminder that imagination has to precede design and implementation.

Carsten Beneker (him/he) | KWB: Julien, thank you. Very interesting approach! What carbon source do the Bacteria feed on?

Earle Barnhart: Julien how do you stabilize the urine in the tank

Julien Saludas - Toopi Organics: Urine is stabilized by acidification with the possibility to produce the acid also through our fermentation process

Laura Halminen - Saneseco (Spain) - she/her: Julien, thank you very much for the interesting presentation. Does Toopi have any plans to expand the activities to the Global South?

Hayley_PHLUSH: For Julien: Encouraging to see all the partnerships and UD in public spaces and events. What legal/code barriers did you work through before being able to install the urinals?

Carol McCreary: Question for Carsten: Plans for your covered compost treatment center look great. Will aeration pipes be installed beneath the rows?

Carsten Beneker (him/he) | KWB: Hi Carol, thanks for your Feedback! Online passive aeration in the second step of decomposition and recomposition. O₂-levels are monitored and trigger the mixing unit. Mixing and the triangular shape guarantee the O₂ supply

Carol McCreary: Thanks for the info, Carsten. Was asking because composting facility in our small city has pipes under rows. <https://cityofpt.us/publicworks/page/compost-facility>

Jeffrey Meilander: Question for Juliana or anyone using activated carbon to remove pharmaceuticals/other chemicals/etc. Maybe this is a better question for yesterday's BO session, but what happens to the activated carbon after filtration? Is it discarded into a landfill? Can it be recycled? And what about the chemicals that get filtered, are they just displaced to the landfill? Are they converted to another form? Are they still toxic to the environment? Thanks.

Nancy G Love: Hi Jeffrey: Activated carbon, at scale, can be regenerated with heat. The heat destroys the pharmaceuticals and regenerates new doses of activated carbon for reuse. This does take energy and has to be considered when evaluating the overall life cycle environmental impact of the process.

Jeffrey Meilander: Thanks @Nancy G. Does the heating process produce air contamination other than CO₂?

Nancy G Love: Jeffrey: If the temperature is high enough, I would not expect organic contaminants. Any heat process may produce other gases (nitrogen oxides, sulfur oxides) if such elements were sorbed to the activated carbon. There are well established methods for managing off gases from heat

regeneration processes to mitigate environmental impact. I think the biggest challenge is the energy involved with heat regeneration.

Carsten Beneker (him/he) | KWB: To Jeffrey: What Nancy says is absolutely Right. The use rate is approximately 20 g/l Urine. <https://pubmed.ncbi.nlm.nih.gov/34693239/>

Claire Krebs (she/her): Is anyone looking at contaminants like microplastics in urine?

Umakant Badeti: As Prof. Shon pointed out with the help of powdered activated carbon in the nitrification reactor all the micro pollutants will end up in the sludge wastage which would avoid the high energy requirement for the heat processes required for the activated carbon.

Marine Legrand / OCAPI (she): @Umakant, if the micropollutants end up in the sludge wastage, what happens to them afterwards ? Closing the loop implies that there is no "away". Here we need to deal with the complex equation between diminishing environment toxicity and regenerating circularity.

Marine Legrand / OCAPI (she): (This is not a moral statement, of course, only a material one)

Abe Noe-Hays -- Rich Earth (he/him): Julien: could you share references to the studies about the effects of fertilizer and the biostimulant on crop yield? Also, what makes urine a better substrate for biostimulant production than other possible media?

Julien Saludas - Toopi Organics: mainly alone but we have started trials with compost and biochar