

CONCEPT PAPER: Detroit as a water reuse appliance industry center

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ATTACHED: 1) White paper on water use appliances produced by Laura Shankar
2) NSF International Wastewater Technology Joint Committee agenda
3) NCSU/NEHA/CDC-Atlanta Decentralized Water Reuse project
4) Hoover C.V.

In discussions with one of my colleagues, Laura Shenkar, who is a business development specialist, we have both come to the conclusion that there is substantial untapped technical, knowledge and people resource in the Detroit, Michigan area that could be targeted to a new national and international environmental (and business development, of course) agenda. The idea is to ferment research and development, construction, distribution, servicing and management of a new type of technology that does not exist today in North America ---- the "water reuse appliance".

I have been working hard in this particular arena starting in part with leading development of an informal "International Decentralized Water and Wastewater Reuse Think Tank" group last January. My personal goal in doing this is helping people safely put water reuse technology to use to help their lives and the environment. My rationale is that local reuse of water and wastewater (for non-potable uses --- eg toilet flushing, laundry use, irrigation, water cooling towers, etc.) near the point of generation makes more financially efficient and environmental sense than the centralized approach of providing (water supply) pipes to a city for its drinking water supply, a second set of (now sewer) pipes for collection of the "used" waters and then on top of all that, a third set of pipes for distribution of "reclaimed water" back to the same neighborhoods for non-potable (non drinking water) uses as described above. Note that 19% of the energy production in California is used for water and wastewater production and pumping this water/wastewater in communities. My motivation comes from watching people who wanted to do the right thing environmentally NOT be able to access "decentralized" non-potable waters during the past two droughts and during the New Orleans Katrina and Rita hurricanes disasters. Their only choices, in either situation, were to use bottled water or high-value (and energy intensive) drinking water to flush their toilets, irrigate their landscapes, wash sheets in laundries at hotels, etc. This was (and still is) a fact whether at the single-family home scale, at the commercial (hotel, business, industry) site scale or neighborhood scale. I intend to do whatever it is I can do in the next 3-5 years to appropriately break down barriers and address this issue with establishment of national

standards, development of needed targeted research-based information as well as its implementation through professional training and public education.

Specifically, it is this idea coming out of my discussions with a colleague to revitalize Detroit and its lost industry base via establishing a production center for "on-site water reuse appliances" as a replacement for some of the production capacity lost with the shrinking car industry.

Hence, I am asking to set up a meeting next week in Michigan (while there for the NSF International Wastewater Technology Joint Committee meeting that I chair) with you or an associate with the Michigan Lt. Governors office (and MI Economic Development group). It relates to putting people in Michigan back to work. But to be sure, I see it as also having an NC flavor as well. It will entail a transformation of unused industrial capacity (left over from un-needed car production capacity) within Detroit and its environs into a water appliance industry center (for decentralized w/ww reuse on-site systems). Laura and I think that the price level (10-40K), and industry specifications (materials like plastics, fiberglass, metal and plastic forming skills needed, etc) for our vision of what on-site water appliances can be (ie those used at homes and commercial businesses for decentralized reuse systems that treat and then bring non-potable water back into the home or business) is similar to that needed for low end vehicle production.

If we have the chance to meet I will be suggesting collaboration between MI and NC. If you think similarly to us about the idea it will require some high level discussions and local university support here at NCSU. I certainly see it and cast it as a joint effort between MI and NC, both industries and universities (NCSU, MSU, MTU).

I know this idea seems a bit strange and unusual, but its actually right in line with what I have been doing and trying to achieve in my career, particularly during my few remaining years.

- 1) Developing national standards (via NSF) that can facilitate technology development and make valuable increased investment in R&D and development of new technology.
- 2) Advancing the on-site technology to the point that the technology becomes more available (and affordable) to the normal person.
- 3) Enhancing and invigorating the training program including our efforts at our hands-on on-site water and wastewater training center in Raleigh --- since none of this will be doable without well-trained designers and "mechanics" (ie installers and operators). So having the training aspects covered is a first step to this new technology implementation even being possible and the hands-on knowledge expected to be gained at this site will be of value to those involved the decision-making process for assessing this idea.
- 4) Assuring safety --- ie the public health protection aspects of reuse technology use --- this directly relates to our current CDC/NEHA project Dr. Pradhan is implementing on decentralized reuse technology performance and assessing public health impacts, if any.
- 5) Bringing on-site/decentralized water and wastewater reuse into the mainstream (the "on-site water reuse appliance" approach) before I retire.

6) Growing the NC economy as well --- we in the Research Triangle in NC would logically be a big part of the technology R&D centerpiece and here at NCSU have a substantial role in the training aspects if this proceeds.

I have attached fyi a copy of my C.V. so you can start to get a little bit of idea about who I am and what my professional efforts have included during my career. I believe Laura Shenkar may have sent you a message about this last week. I do look forward to hearing from you about your potential interest about exploring this concept in a more serious way next week. Thank you.