

There's no such place as away

by Ralph C. Martin

Is it possible that one of the greatest indicators of our current disconnect from Nature is that we flush our bodily evacuations, presumably 'away?' To see or smell this part of ourselves is an abomination. Let it be gone.

Yes, too much interaction, especially touching or ingesting our eliminated digested material, can cause disease. Thanks to modern toilets and sewage systems these causes of disease have been greatly reduced since the Middle Ages.

In 2007, the British Medical Journal polled experts and doctors to determine the greatest medical advance since 1840. Sanitation was at the top of the list, trumping antibiotics, anesthesia and vaccines. Yet even today, according to the UN Children's Fund and the World Health Organization, one in every three, or 2.4 billion people in the world, are still without sanitation facilities. Of these, 946 million people defecate in public areas or fields, without toilets.

Nevertheless, our valid response to avoiding disease may have caused us to focus so much on the immediate removal of pee and poop, that we imagine they are permanently gone. Biology works differently. As the singer, John Pitney, so melodically puts it, "Throw it away, throw it away? There's no such place as away."

My good friend and colleague, Ron Loucks, wryly notes that "we have a perfectly good resource in sewage and a perfectly good resource in water. Then in our cleverness we mix them, along with industrial effluents and create a pollutant."

How can we recycle nutrients from human sewage? A technology to extract phosphorus from human sewage in the form of struvite, can reduce phosphorus clogging in water treatment plants. Furthermore, struvite when applied to soil, can respond to crop demand in a slow release manner and prevent excess phosphorus build-up in the soil.

Other nutrients, in addition to phosphorus, can be recycled by managing human sewage. Increasingly, we cannot afford to let these nutrients pollute water, when they can be used for production of crops and trees. Sewage can also enhance soil carbon.

Surely we have an obligation to explore sewage technologies further. What would happen if we only used compost toilets in all new buildings and had a schedule to eventually replace all flush toilets with compost toilets in other buildings?

Sewage would no longer be mixed with industrial waste and we wouldn't require water and extensive underground infrastructure to move it. Maybe such sewage could be composted further in well-designed facilities until pathogens are reduced to safe levels (increasingly the science of composting is developing). As an added precaution, this composted material could be applied to non-food crops such as cover crops or bio-product crops. There could be a minimum time, after applying this human-sewage-derived compost, until feed and food crops are safely grown again, in a crop rotation.

Another aspect of our throw-it-away proclivity is to dump unused medications in the toilet. Regardless, many medications end up there after passing through us. This may be a challenge beyond composting capacity and requires research about how medications are designed and how they might be treated after elimination. For example, Ethinyl estradiol (EE2), an ingredient in birth control pills, has been linked to disrupting sexual differentiation and thus declining fish populations, with rising concerns about how humans are affected. These externalities demand our attention and pharmaceutical companies can justifiably be expected to pay for research, resulting in prevention of harm.

Sewage absorbed in water and land is, in the end, part of us. We (humans, nutrients, hormones, water, soil, microbes, plants, animals) are an integrated whole. Nutrient and carbon cycles in nature, if not short-circuited nor over-burdened, can mostly deal with how we return to ourselves. Industrial pollutants, persistent medications and other contaminants are detrimental in these cycles.

To be healthy and true to ourselves is to design to receive, when our 'waste' returns. The apparent one-way street to 'away,' curves and comes back.

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