



Sally Brown

SAME DANCE, NEW PARTNER IN THE BIOSOLIDS BASH

HAVE more patience than I used to. This probably goes hand in hand with realizing that change can take years, rather than months or minutes, because change is part of a process. And most of the time, it is okay to observe this process, watching people come to understand the right thing or the right course of action. But some things make me regress and completely lose patience. This latest controversy about “spraying sewage sludge on poor people’s lawns” in Baltimore is one of them. And I am angry and frustrated.

This started with a reporter for the Associated Press writing a story about biosolids. He made a case about environmental injustice because some families in Baltimore, Maryland had their lawns amended with a Class A biosolids compost produced in the city. The compost has been shown to reduce lead availability in the soils. The reporter didn’t talk so much about the problems of urban soil lead and high blood lead in city kids. No, he focused on the terrible sludge. Now I am at a meeting of wastewater treatment folks in California. They are very upset, as Barbara Boxer, the California senator, is making a big deal of this as an example of the horrors of sludge. I got an email today that Barbara Mikulski, the Senator from Maryland who I used to like, is also incensed about this and will be calling for hearings.

Reacting in this manner — with high profile hearings — is a waste of time and a waste of a solution. And it points to a much larger question about why

the findings of peer-reviewed and widely accepted research aren’t utilized, especially in cases where biosolids comes out on the plus side of public health protection.

BIOSOLIDS ROOTS

People reading this may know of Sally Brown as the monthly columnist who talks about greenhouse gas implications of organic residuals. Well, before I knew anything about greenhouse gases, I was a graduate student at the University of Maryland working with Dr. Rufus Chaney, learning all about heavy metals. Dr. Chaney focused on

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the country. Even in Chicago. So I started working on how to clean up metal contaminated sites that were really dirty — as in listed on the US EPA Superfund list. These are sites that would give Erin Brockovich something to get excited about.

From there, we get to where this really started. I worked using biosolids and other residuals to reduce metal availability and restore ecosystems on these Superfund sites. I branched out from cadmium to zinc and lead. Lead is a problem because if you eat the soil, it can be absorbed into your system. Kids who play in the dirt will end up swallowing a good amount of soil. Even at low levels, lead can really interrupt the brain’s ability to function. It turns out that the current state of the art technology for cleaning up lead-contaminated soils is to dig them up and move them somewhere else. Not what you would call a well thought out, highly technical solution.

It also turns out that the big problem with high lead in soils is not on the Superfund sites, but in all of the cities in this country. Remember leaded gas and lead paint? All those old houses in the cities and all of that auto traffic have left their mark. If you start sampling soils in Oakland, Boston, Balti-



1) Biosolids compost being applied on Baltimore lawn with high lead in soils; 2) Rototilling to depth of 20 cm; 3) Emerging grass cover.

cadmium but was and is well versed on metal chemistry and bioavailability in soils, plants and ecosystems. I started with cadmium availability in biosolids amended soils and by the time I had my Masters, I was wondering what the fuss was about. There was basically no more cadmium in biosolids. Two order of magnitude decreases had resulted from pretreatment programs across

more and Brooklyn, you’ll find lead concentrations over the EPA threshold value (400 mg kg⁻¹) time and time again. Can you excavate Baltimore? So these soils have sat there.

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I did a study as a post-doc with Dr. Chaney and we showed that the compost from Baltimore biosolids reduced lead availability by about 38 percent. This was soil taken from a yard in Baltimore with total lead of 2000 mg kg⁻¹. It was on the high end but not exceptional. We used a lab test to verify this, one that is now part of the EPA toolkit. We also used rat-feeding studies. We tested this on a Superfund site in Missouri as well. Others went on to look at changes in lead mineralogy to explain the reduced availability. I even got on TV with this — in a positive way — talking about “finding a solution” rather than “spraying sludge.” This went on to a field trial in Baltimore where the compost not only reduced lead availability, it grew beautiful grass (see “Biosolids Compost Reduces Lead Bioavailability In Urban Soils,” *BioCycle* June 2003).

IF IT WORKS, “JUST DO IT”

So now, yet again, the sludge has hit the fan. And I am angry. I am angry that this is what the Senators are focusing on — the dangers of the sludge. What about the 30 years of research demonstrating the efficacy and safety of this practice? What about the EPA regulations and the National Academy of Sciences’ studies? The senators don’t trust their own regulatory agencies or scientific experts? What about the real problem — all of those yards with high lead in the soil that no one is doing anything about?

I get mad at myself because maybe I should have promoted this more. I get mad at the different wastewater treatment agencies that didn’t run with this and improve inner cities, gaining acceptance and understanding for what they do in the process. I get mad at cities like Philadelphia that used to make a great high-iron compost that reduced lead availability like nobody’s business. They didn’t do a thing with this for inner city gardens. In fact, they just shut the compost facility down because it was close to the airport, and those flying in might have thought that it was ugly. If any of the municipalities that make compost had used this to improve soil quality in the inner cities, that AP reporter would have just been looked at like a fool. Why? Because the compost works so well (and adds carbon to the soil in the process, by the way).

If we let ourselves work in a reactionary fashion rather than a proactive fashion, this is the kind of stuff that happens. We do have to address concerns as they arise. But we can also simultaneously be promoting what we do, identifying and applying innovative solutions. The benefits of these types of solutions are so clear, so visible, so

hard to dispute that the more proactive we become, the less reactive we’ll have to be. Our industry’s tendency now is to say, “what a great research project,” but then carry on with business as usual. In the case of the Baltimore study,

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we should at least be on the 40th or 50th (or higher) full-scale project based on the research findings.

If you think that I’m ranting, just look at Tacoma, Washington. I have a student working to start community gardens in Tacoma using the city’s

Tagro biosolids product to help make this effort successful. In every garden that she’s worked in, all of the other gardeners have asked for and gotten some Tagro so their plants will be as pretty and prolific as hers. She was just asked to help with a Washington State University program to teach low-income kids about growing plants. She had loads of Tagro delivered to 20 schools in the region. These kids will learn about soils, about how their wastes can be turned into safe and valuable products that can help them to grow food. This is the lesson we should be funding and promoting. Think of the benefits for all. And finally, think of the waste of how we are spending our time and our biosolids now. ■

Sally Brown — Research Associate Professor at the University of Washington in Seattle — is a member of BioCycle’s Editorial Board, and is authoring this column on the connections of composting, organics recycling and renewable energy to climate change. Email Dr. Brown at slb@u.washington.edu.

COMPOST FROM BIOSOLIDS IS NOT SLUDGE

IN RESPONSE to the accusations of using sludge on low-income families’ lawns, organizations involved in the original study defend their research. Dr. Gary Goldstein, President and CEO of the Kennedy Krieger Institute (KKI), and Dr. Michael Klag, Dean of the Johns Hopkins University School Public Health, sent out press releases and wrote an editorial for the *Baltimore Sun*. They explain the purpose of the 2000 study, in which KKI received funding from the U.S. Department of Agriculture (USDA) and the Department of Housing and Urban Development (HUD) to conduct field tests of the use of composted biosolids for reducing lead contamination levels in residential soil, which is harmful to children.

Once biosolids are composted with wood chips and sawdust, it is labeled “Class A compost,” meeting the highest federal standards for compost. “When the process is done, it’s not sludge anymore,” Goldstein and Klag explain in the *Baltimore Sun*. “It’s compost. It’s a product that is used on lawns and gardens all over the region. It has been used at Camden Yards. It has been used at the White House.”

They add: “What has been lost in the furor over the use of this product is *why* it was used. Lead poisoning of children in Baltimore has been a problem of epidemic proportions ... At the height of the epidemic, physicians at KKI were treating thousands of East Baltimore children in their lead-poisoning clinic. Those doctors wanted not just to treat lead poisoning but also to help find ways to prevent it.”

The ability of iron and phosphorus in composted biosolids to bind lead is well documented, they continue, and the owners of the nine Baltimore properties, as well as local community groups, were well informed about the binding properties of compost — and also about where the compost came from and how it was made. “After all the preliminary work was properly completed, the researchers tilled the ground and mixed compost with the soil,” write Goldstein and Klag. “They also planted grass, so that less dirt would be tracked into people’s homes.” Bioaccessible lead levels were tested a year later, shown to be down by two-thirds, with results published in a scientific, peer-reviewed journal (*Science of the Total Environment*, Vol. 340, 2005).