

# Baltimore Sludge Pilot Project Puts Children at Additional Risk

*To the Editor:*—A recent Associated Press article<sup>1</sup> described a federally-funded pilot project by the Kennedy Krieger Institute and the Johns Hopkins University Bloomberg School of Public Health, carried out on nine residential yards in low-income, primarily African-American Baltimore neighborhoods.<sup>2</sup> The project consisted of mixing the yards' lead-contaminated soil with large amounts of Class A sewage sludge compost called ORGRO, which is high in iron and phosphate. Previous animal tests indicated that when this contaminated mixture was ingested, some of the lead is not absorbed. Following animal studies, the researchers wanted to experiment "in a real neighborhood"<sup>3</sup> where children lived and played.

The experiment raises a number of important scientific, legal, and ethical questions. Is a child ingesting lead-contaminated soil mixed with Class A sewage sludge compost significantly protected from lead poisoning? Should non-therapeutic lead-abatement experiments be carried out in residential neighborhoods? Most important, were the families given the correct information about this project before they signed the consent forms? It appears they were not. In fact, participating families were misled by being assured the sludge compost was completely safe, free of germs and manufactured from "sterilized Baltimore sewage sludge."<sup>4</sup> In a letter to the Assistant Attorney General of the state of Georgia, attorney F. Edwin Hallman correctly points out that although Class A sludge compost is treated to reduce indicator pathogens, such as *E. coli* and

*Salmonella*, to undetectable levels; other more robust sludge pathogens requiring high-level disinfection<sup>5</sup> or sterilization can survive the treatment process and multiply in this nutrient-rich material when mixed with moist soils. The families were further misled by being assured that Class A sludge composts contain low levels of metals. Testing is only required for nine regulated metals, and ORGRO was tested for only seven metals.<sup>2</sup> Yet sludges contain other highly toxic metals, such as thallium, as well as "thousands of organic pollutants found in hazardous wastes that industries dispose into sewer systems and which are concentrated in sewage sludge to be processed and given away to farmers and sold in stores."<sup>6</sup> Hallman also states that the researchers falsely claimed that Class A sludge compost "presented no known risks" to public health. His letter refers to last year's episode in Milwaukee where Class A sludge was contaminated with such high levels of cancer-causing PCBs that it had to be removed from twenty-five athletic fields and taken to hazardous waste sites.

Our focus is on the experiment itself. We believe that this pilot project may have subjected the children living in the houses adjacent to the test sites to serious health risks. The sludge compost was used to establish a grass cover on what the researchers called, "previously bare soil," to prevent soil particles from being tracked into the houses. However, Figure 1a. and 1b., as well as Figure 2 in their paper did not indicate that the soil in these yards was bare.<sup>2</sup> Instead, the top layer of

soil appeared to be compacted and held together by a variety of plants, preventing erosion and minimizing soil particles from blowing about.

To prepare the soil for seeding, workers were instructed to till this partially vegetated top layer with a high power rototiller. In fact, the test sites were tilled twice: first, to loosen the contaminated soil, and then, again, to mix it with Class A sludge compost. Figure 1 shows that the yards were tilled right up to the basement windows of the buildings. The workers appear to be working without any protective equipment, even though they were tilling and raking soil with total lead levels as high as 2400 mg/kg.<sup>2</sup>

During this entire operation, "the yards were not fenced or otherwise blocked off."<sup>2</sup> So for many weeks, these newly tilled and seeded areas exposed children and pets to hazardous conditions. Dry and windy weather would blow contaminated dust off site. If, on the other hand, the sludge compost treated sites were wetted down for dust prevention, pathogens in the sludge compost could re-grow and cause infections. In either case, children living in these houses were undoubtedly exposed to high levels of lead-contaminated soil mixed with unknown levels of sludge contaminants. Exposure was likely through ingestion, inhalation and dermal contact.

While their yards were being treated with sludge compost, how many children living in these houses experienced asthma attacks? Skin rashes? Flu-like symptoms? Sinus infections? We will never know. The families were

given no health questionnaires nor were there any follow-up studies of the children.

This research project was supposed to help protect children from lead poisoning. Instead, the children living in the test area were put at even greater risk, while their families were assured that a magical fertilizer, called ORGRO—High Organic Compost, would make their yards safer.

In a *Baltimore Sun* editorial,<sup>3</sup> Gary W. Goldstein, president of the Kennedy Krieger Institute and Michael J. Klag, dean of the Johns Hopkins University Bloomberg School of Public Health defended their project. “It worked beautifully,” they wrote. The study showed a reduction in the amount of bioaccessible lead in the treated soil. Without any kind of health study, and fully cognizant of the potential problems of using Class A sludge composts, they nevertheless are recommending this low-cost lead abate-

ment method “to policymakers and communities around the country—and around the world.”

African-American and low-income families living in rural areas are already unfairly targeted by sludge farming because many land application sites are located in their neighborhoods. If this low-cost remediation method is widely adopted, urban children will continue to be exposed not only to lead-contaminated soil, but also to unknown levels of unregulated sludge pollutants.

“Given that the lands were unsafe for occupation, why did the government not move these families or clean up the high levels of lead? Why did the government instead entice the families to stay and participate in an experiment?”<sup>6</sup>

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## References

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3. Goldstein GW, Klag MJ. Johns Hopkins hands clean: ‘sludge’ accusation unfair to researchers who used compost to fight lead poisoning. [editorial]. *Baltimore Sun*; 2008, April 28.
4. Kennedy Krieger Institute. Compost Fact Sheet. April 21, 2008.
5. Cf. Gattie DK, Lewis DL. A high-level disinfection standard for land-applied sewage sludge (biosolids). *Environmental Health Perspectives*. 2004; 112: 126-31.
6. Hallman FE Jr Esq. to Anderson JB Esq. Assistant Attorney General for the State of Georgia [letter], April 23, 2008.