



*** COMPOST STUDY FACT SHEET ***

**Kennedy Krieger Institute & Johns Hopkins Bloomberg
School of Public Health Summary of Biosolids Compost
Study to Reduce Lead Hazards**

For Immediate Release: April 21, 2008

[Read abstract of Science of the Total Environment](#)

Recent media coverage has reported that researchers spread “sludge” or “human and industrial waste” on the lawns in neighborhoods in East Baltimore. What is referenced in these stories is in reality Eckology/Orgro Class A compost that is a commercially available from the Baltimore City Composting Facility. The product is used by topsoil manufacturers, nurserymen, contractors, landscapers, golf courses, and commercial growers throughout Maryland, the District of Columbia, Virginia, West Virginia, Pennsylvania and New York. Unlike the forms of “sludge” referenced as causing harm in many of these articles, Class A compost is tested every two months to ensure it meets MDE requirements for low levels of metals like lead. This composting process also kills germs in Eckology/Orgro.

This exact same product is used on President’s lawn at the White House, the grounds of the Naval Observatory where the Vice President resides, sport stadiums, golf courses, as well as the lawns and gardens in private residences.

Further, the neighborhoods focused on in the study were those that were known due to lead levels reported to the city and state. This study was in direct response to those communities that were most heavily impacted by lead poisoning and was trying to give the community a means to reduce one source of lead exposure.

The following are some of the key questions and issues that have been raised by various individuals and organizations:

1. What problem did the study address?

Soil on the property associated with approximately 7 percent of U.S. housing has lead concentrations above U.S. EPA and HUD standards. Most of these cases of lead contamination are clustered in urban areas such as Baltimore City. One source of lead that causes intoxication is the soil around homes. The compost study sought to address this epidemic of lead poisoning among children in our surrounding community. The compost study tried to find effective ways to prevent lead poisoning. Treating the soil with compost had been shown to be effective in industrial towns but not in urban residential settings. Urban soils are commonly contaminated with lead from multiple sources, principally automotive emissions, exterior paint, and stack emissions. No government programs exist to remediate lead in such soils unless an industrial source caused the contamination. A copy of the abstract of the article on the study is attached.

2. Why not have the contaminated soil removed?

Although it is possible to remove all contaminated soil, governmental agencies and landowners have generally decided the cost of soil replacement is prohibitive in all but the most grossly contaminated cases. Only properties

adjacent to Superfund sites have been recommended by EPA and HUD for soil replacement.

3. What was the study?

Compost can reduce the likelihood that lead will be digested and absorbed by the bloodstream, i.e., previous research had shown that biosolids compost can reduce the bio-availability and bio-accessibility of lead in the soil. Researchers at the Kennedy Krieger Institute (KKI) received funding from the U.S. Department of Agriculture and U.S. Department of Housing and Urban Development to conduct a field study (abstract attached) to better understand how the use of the biosolids could reduce lead levels in residential yards in a community where there was high level of lead in the soil. The idea for the study is that trapping the lead in the soil would reduce lead exposure to children.

4. When was the study conducted?

The Johns Hopkins University (JHU) Institutional Review Board (IRB) reviewed and approved the study in 1999 and the compost was applied between June and September 2000. The study results were published in *Science of the Total Environment*, Vol. 340, 2005.

5. What was the study design?

Working with local community organizations (Middle East [Baltimore] Community Organization and Historic East Baltimore Community Action Coalition) and residents during the study design, 25 residential yards in the East Baltimore Empowerment Zone were reviewed for inclusion in the study. Based on the study design, nine of these yards met selection criteria of moderate to high levels of lead in the soil.

6. What community organizations were involved in the study?

The published study in *Science of the Total Environment* (2005) acknowledged the involvement of various community leaders and partners including Lucille Gorham (Middle East [Baltimore] Community Organization); Bea Gaddy (Bea Gaddy's Women and Children's Center); Jeff Thompson (Historic East Baltimore Community Action Coalition); Leon Pernel (The Men's Center); and Justine Bonner (Open Space Committee, Sandtown-Winchester Community Building in Partnership).

7. What was Kennedy Krieger and Johns Hopkins involvement in the study?

The principal investigator in the study had a joint appointment at Kennedy Krieger Institute and the Johns Hopkins University School of Public Health. In addition, the Johns Hopkins University IRB reviewed and approved the study in 1999. The co-authors of the article reporting on the study included staff from the U.S. Department of Agriculture and the U.S. Department of Housing and Urban Development (see abstract attached).

8. What was the result of the study?

The study showed significant reductions in the lead level in the treated yards, providing a safer environment from the lead hazard for the families who participated in the study.

9. What is the biosolid compost that was used in the study?

The study selected Eckology/Orgro High Organic Compost (Orgro). To create Eckology/Orgro, municipal biosolid from a

Baltimore City wastewater treatment plant is composted with woodchips and sawdust. The compost is "cured" for several months to assure that pathogens are reduced to non-detectable levels. The Maryland Department of the Environment and US EPA regulations require testing of the stabilized compost to ensure it meets quality parameters, such as pathogen control to ensure disease-causing organisms are at a safe level and heavy metals contained in the compost are below maximum allowable concentrations.

10. Where is Eckology/Orgro obtained?

Eckology/Orgro is sold in bulk to topsoil manufacturers, nurserymen, contractors, landscapers, golf courses, and commercial growers throughout Maryland, the District of Columbia, Virginia, West Virginia, Pennsylvania and New York. ECKOLOGY/ORGRO is available from the Baltimore City Composting Facility. The Baltimore City Composting Facility began operations in 1988 and produces approximately 75,000 cubic yards of compost per year.

11. Are there legal or regulatory limits to Eckology/Orgro use?

No. Eckology/Orgro is approved by the U.S. EPA and the Maryland Department of the Environment for unlimited use in lawns and gardens as a soil conditioner/fertilizer. During the 1990s, more than 350,000 cubic yards of Eckology/Orgro were sold for commercial and home use in the Baltimore region. It remains widely available today. It should be noted that the Greening Committee of the Historic East Baltimore Community Action Coalition has applied biosolid compost to yards and gardens as part of local beautification efforts prior to this study.

12. Did you provide information about the compost to the families in the study?

The consent form that was signed by all study participants included great detail on the compost utilized in the study. The consent form for those having compost added to their yards contained the following statement: "Eckology/Orgro compost is made from sterilized Baltimore sewage sludge mixed and composted with wood chips and saw dust. Eckology/Orgro compost is licensed and approved by the Maryland Department of the Environment for distribution to the general public. Eckology/Orgro compost is tested every month to ensure that it meets MDE requirements for low levels of metals like lead. The composting process used to make Eckology/Orgro kills germs." It should also be noted that the compost is currently approved as safe for use by the EPA and the Maryland Department of the Environment. And the vast preponderance of scientific opinion shows that Eckology/Orgro Class A compost did not then and does not now pose a known threat to human health.

13. Do you feel that the use of Eckology/Orgro exposed the families and their children to added risk?

No. The product was, and currently is, approved as safe for use by the EPA and the Maryland Department of the Environment. As science-based organizations, KKI and JHU understand that new questions frequently arise about old studies. If there is credible evidence that the compost in question poses a health problem, that certainly is worthy of study by experts in the field of bio solids. This study was not designed to conduct assessments of any risk of using the compost as this commonly used product is approved for commercial and home use. Previous studies had demonstrated that the compost used in the study was

effective in reducing lead dust levels and studies on rodents and pigs had also demonstrated its safety. The purpose of the KKI study was to assess by how much and how efficiently the product could help reduce lead dust in soil around homes and it ultimately proved highly effective in this regard.

14. Why did you not disclose the potential hazards of the exposure to the compost?

We didn't disclose potential hazards to the Ecklogy/Orgro Class A compost, because at that time (and now) there were no known hazards.

15. Where were the homes located? Why did the study target those specific areas?

The compost study was a direct response to community needs. The homes were located in East Baltimore Empowerment Zone and the area was selected because they were known to have dangerous levels of lead in the bare soil around homes. Records from the city, state, and KKI's own lead clinic consistently showed that these were the neighborhoods where the highest incidences of elevated blood lead levels were being reported. It was the aim of the research to learn how much this risk could be reduced for these families. It is important to bear in mind that Baltimore City was in the midst of an epidemic of lead poisoning and the compost study was a successful response to this huge problem affecting our community.

16. Were these areas chosen because of planned redevelopment, which would relocate the inhabitants, thus making it more difficult to find them if questions were asked afterward?

Absolutely not. The residential areas were selected because they were known to have dangerous levels of lead in the bare soil around homes. The KKI clinic that treated children with lead poisoning was seeing about 1,000 children a year from the community. It was the aim of the research to learn by how much this risk could be reduced. Researchers could tell if the Orgo product worked in a few months by measuring how easily the lead in the soil came out. There was no need to follow the people who lived in the house to answer the research question.

17. What educational efforts were undertaken to alert the families of the potential risk of the lead dust levels in the surrounding soil?

The study included extensive educational materials for the participating families addressing lead prevention and reduction techniques for lead dust transmission from soil around their homes and for lead dust exposure in their homes. Additionally, letters that were mailed to families after the testing of their soil were explicit in explaining the level of risk that the lead dust their yards posed and provided numerous resources to help them address the problem.

18. Were the children living in the houses in the study tested?

At the time the study was designed, lead poisoning was a widespread threat that was well known to exist. Health departments in Baltimore and other cities, along with lead exposure clinics in hospitals, including KKI, were taking action. The focus of the study was the soil around houses and not the people who may have been living in the houses. Some of the houses may not have had any children living in them at all. All children in Baltimore get tested for lead levels by their primary care physicians. Their primary care physician is in the best position to make decisions about risks from lead

and need for any treatment. Any information from the study would not have made a difference in the decision about whether or not to treat a child for high levels of lead. Further, we didn't test children for any potential hazards related to the Ecklogy/Orgro Class A compost, because at that time (and now) there were no known hazards.

19. Why were the children living in the houses not tested?

The study involved the measurement and extent of the effectiveness of the compost in reducing lead dust in the soil. The compost proved to be an effective tool and provide healthy grass growth that further reduced soil from being tracked into nearby homes. KKI was aware that the study area was one where children with high lead levels lived and many children from this and surrounding areas were already being treated at KKI.

20. Why were the children not removed from the homes?

In Baltimore City and across the nation, it was recognized by public officials at all levels that it was not feasible to remove all persons from lead contaminated homes. In response, this study was designed to reduce one potential exposure to lead in the soil surrounding these homes. Ultimately, the study was successful in reducing the amount of lead dust in the soil. In addition, since this commonly used compost product was, and is, approved for commercial and residential use, there was no perceived risk from the Ecklogy/Orgro that would necessitate removal of these children from their homes.

21. The article concludes that compost can provide “a simple low-cost” technology for parents and communities “to reduce risk to their children.” Why, if it provided such a benefit, is it necessary to protect their identities?

The consent form describing the study protocol, which was signed by all participants, specifically promised to keep certain information confidential, including their identities, those of their families, and their addresses.

22. What sort of follow-up was done to determine whether there were any long-term health risks from exposure to the compost?

The use of this compost material was, and is, acceptable and even encouraged by prominent scientists in the field. As noted above, the study was not designed nor given the funds to determine long-term health risks of the compost or lead in the soil. This study did not test children or families, nor was it designed to conduct assessments of any risk of using the compost as this commonly used product is approved for commercial and home use.

23. Who explained the consent forms to the families?

As always in such studies, a qualified member of the study team reviews the consent form with all consenting parties to ensure their understanding of the study. Study participants were given the chance to ask any questions about the study and take as long as they wanted to make the decision.

24. Did the local community support the compost soil study?

At the April 12, 2000 Historic East Baltimore Community Action Coalition (HEBCAC) community meeting, Dr. Farfel briefed the community representatives on the study and distributed related materials. After several questions from community members, the HEBCAC Greening Committee formally approved the study.

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