

## #5 THE NITTY-GRITTY – THE SOURCE AND WHAT TO DO

The investigators suspected a common source of the children's lead exposure based on their calculations. They sent a team to the playground where the playgroup had been meeting twice a week for six months. The park is in an old section of the city near the Miami River. Its large shady trees make it a nice spot for the little ones and the mothers to meet. The play equipment was in good condition with no peeling paint. The surface under the play equipment was a newly installed black rubber surface. The investigators were puzzled.

The investigators re-interviewed the mothers about exactly how their children played during the playgroup meetings. One mother accompanied the investigators to the park and showed them a series of benches where the women often congregated with the younger kids. The benches were old, clearly much older than the play equipment. Behind the benches was a shallow storm drain that drained water away from the river. The mother pointed out the drain and the area of bare earth between the drain and the benches, noting that the more quiet kids often hung around there digging with sticks or putting leaves in the water. The mother noted that most kids liked that spot, sometimes making mud pies and when it was dry, hiding under the benches while the mothers talked. The investigators had their clue. A soil test of the bare earth under the benches tested at 1450 parts per million lead. Some flecks of old paint from the benches were visible in the dirt. The soil near the drain tested at 3500 parts per million. The drain water could not be tested since it was dry at the time, but the runoff water was also certainly contaminated.

The investigators walked along the storm drain noting it traveled along the edge of an abandoned lot. An interview of a nearby resident revealed that several years before the lot had served as an industrial storage area. Rusting metal drums were overgrown with vegetation and it appeared that the ground had been contaminated with their contents.

**Nitty Gritty – A “Big Idea”- Who is responsible when people are harmed by environmental contaminants? The company who improperly stored the material? What if they didn’t know the substance was harmful? Is the Government always left with the costs of clean-up? How much clean-up is required? To prevent future exposure? To restore an imagined pristine condition? These are the difficult ethical questions we ask when faced with a contaminated environment. The development of standards for these situations is currently ongoing and often depends on science. As scientists learn more about how chemicals affect our bodies and what storage methods work (or don’t), standards change over time. Costs associated with lawsuits for liability can bankrupt companies and cause people to lose their jobs. These standards and policies for protecting environmental health will no doubt evolve dramatically during students’ lifetimes.**

## Questions

- 1) As the siblings of the poisoned children in the case study, what are your recommendations to your families based on the discovery of the investigators?
  
- 2) Since the source of the lead has been discovered to be in the soil at the playground, should your families do anything to reduce the risk factors for lead found in their homes?
  
- 3) What should be done about the abandoned lot to protect other children from exposure?  
  
At the least?  
  
At the most?
  
- 4) What should be done with the contents of the rusting barrels?
  
- 5) Should cost be a consideration in the clean-up process?

## Answer Key

- 1) As the siblings of the poisoned children in the case study, what are your recommendations to your families based on the discovery of the investigators?

Find another park for the playgroup to meet, or sit away from the area with bare earth. Wash children's hands and make sure they do not play in the dirt.

- 2) Since the source of the lead has been discovered to be in the soil at the playground, should your families do anything to reduce the risk factors for lead found in their homes?

Yes, lead exposure is "additive" -- even if children get a little here and a little there they can slowly accumulate high blood lead.

- 3) What should be done about the abandoned lot to protect other children from exposure?

At the least? Fence the area off to prevent people coming in contact with the lead, remove benches to discourage gathering in the area.

At the most? The upper layer of soil in the lot could be removed and disposed of (buried in a waste dump.) The bare earth in the park could be scraped off then covered with a thick layer of grass or mulch and bushes.

- 4) What should be done with the contents of the rusting barrels?

They should be removed by the owner of the lot to a hazardous waste dump.

- 5) Should cost be a consideration in the clean-up process?

This is a place for a general discussion of cost vs. benefit and the issue of responsibility.