Task 1: ***Stop and Jot***

The Results of Mining at Tar Creek

Environmental Case Study by NRE 492 Group 5

**Adapted from text by* Erin Kin, Scott TenBrink, Jon Gunther, Deepti Reddy, Amy MacDonald, and Shanna Wheeler, *from the University of Michigan Environmental Justice Case Studies* *http://umich.edu/~snre492/cases_03-04/TarCreek/TarCreek_case_study.htm*

Problem:

Mining has destroyed the land and water and poisoned the Quapaw people who live in the Tar Creek area. Large piles of leftover mine tailings, called chat piles, are in close proximity to local residences and school yards. These chat piles are contaminated with heavy metals that pose a threat to children who play on them. When the wind blows, the contaminated dust from the mine tailings fills the homes of the residents.

Stop and Jot 1: *What connections can you make between the information presented in these opening sentences and science content you've learned earlier this year? (Hint: Think back to what you learned about weathering, erosion, and deposition in our geology unit and what you learned about mining waste in the Life Cycle of a Computer expedition.)*

Those living around Tar Creek are exposed to large amounts of lead, zinc, and cadmium from the watershed and the soil in residential areas. The Tar Creek area has been on the National Priorities List (NPL) for 20 years and has a rating of 58.15 (2003); the minimum score required to be put on the List is only 28.5 (1). In 1996, 30% of the children under the age of six living in the site had blood levels of lead above 10 micrograms per deciliter (although 15 micrograms per deciliter is the lead poisoning threshold, there have been severe problems associated with levels much less than this). Chronic exposure to lead can affect the immune system, nervous system, blood system, and kidneys. It may also result in premature births, smaller babies, learning difficulties, decreased mental ability, and reduced growth in small children (3).

Stop and Jot 2: *What is the name of the toxin that people living around Tar Creek are being exposed to?*

Tar Creek is highly toxic and, for all intents and purposes, dead. The fish have disappeared from the creek, which has had a significant impact on the lifestyle of the Native Americans in the area. The banks of the creek are a sickening orange color and the groundwater has also been affected by acid water from the abandoned mines.

Stop and Jot 3: *The author writes about how Tar Creek is dead and fish have disappeared. What connections can you make to what you learned in science earlier this year about* ***biodiversity*** *and the* ***interconnectedness*** *of organisms in an ecosystem?*

Task 2: ***Lead and the Human Body***

One of the most significant pollutants from Tar Creek is ***Lead.***

Study the image from Tech Insider provided in this article, "Here's how lead is poisoning American Children" by Julia Calderone and Skye Gould in Business Insider, and in the boxes below summarize ***four*** *ways that lead poisoning can impact the human body:*

Task 3: ***Deepening Your Understanding of the Human Body***

*In the notes on the previous page you provided examples of ways that lead poisoning can impact different **body systems**. In order to fully understand how lead impacts how our bodies, it is helpful to know how different body systems are supposed to work normally.*

*On Google Classroom you should see two videos posted from the Scholastic Study Jams collection, one about the **Nervous System** and one about the **Circulatory System**. Choose **one video** to watch to build your background knowledge about how the human body works.*

Name of Body System:_____

Film Notes:

Connecting Back to Lead Poisoning:
Looking back at the image on page 3, how does lead change how this body system functions?