The Ramapough Lunaape tribe resides near a Superfund site located in Ringwood, New Jersey. Superfund sites are contaminated areas designated by the Environmental Protection Agency (EPA). This Superfund site contained deposited paint sludge and other toxic waste. Contaminants like these can be very harmful to plants, animals, and especially people who live nearby. A study was done to address the tribe’s community health concerns by analyzing the relationship between exposure and chronic health impacts. Researchers found that there was a correlation between exposure to the Superfund site and having asthma and bronchitis.
HOW DO WE INTERACT WITH THE ENVIRONMENT?

We walk through it, eat food grown in it and even play in it. We rely on the natural world to survive. We also affect our environment through pollution, a process where humans introduce harmful waste and chemicals into the natural world. These chemicals find their way into the air we breathe and even the plants and animals we eat. Some areas of the United States are so contaminated by toxic waste that they are given special names—Superfund sites. A Superfund site is an area that is designated as extremely contaminated and that needs to be cleaned. The EPA, a part of the U.S. federal government, oversees the Superfund program, which grants the agency authority to clean up contaminated sites. One site was created when the Ford Motor company deposited waste full of arsenic and lead in Ringwood, NJ—not far from the Ramapough Luanaape tribal lands. Living near such a contaminated site, members of the Ramapough were very concerned about the impacts the site could be having on their health. To address these concerns researchers at the Zelikoff lab at NYU conducted a survey to find a correlation—or connection between—exposure to the Superfund site and chronic health impacts.

HOW WOULD YOU FIND OUT SOMETHING LIKE THAT?

Not all research needs to be done in a laboratory setting. Many studies involving people can be done from far away using tools like surveys. The group used both in-person and online surveys of the Ramapough people that asked about their health conditions and their level of exposure to the Superfund site. Based on their level of exposure, they were assigned an exposure score ranging from 0-5. Out of roughly 5,000 Ramapough people, 187 participated in this study.
Native Americans were 13.84 times more likely to be exposed to the Superfund site in comparison to non-Native Americans. Exposure included eating food from a contaminated area, and playing or working near a contaminated site. In fact, there were more Native Americans than non-Native Americans who lived near the Superfund.

Greater exposure to the Superfund site was linked to a greater likelihood of having bronchitis for Native Americans and non-Native Americans. In fact 63% of all participants that were exposed to the Superfund site had bronchitis.

Amongst the Native American participants, exposure was also significantly associated with asthma. The more exposure to the Superfund Site, the greater the likelihood they would have asthma.

**Table 1:** What participants were asked about in the survey. Each bullet point of criteria was worth one point. The more points a participant had, the more exposed they were to the Superfund.
Exposure to the chemicals in the Superfund Site increased the number of people with health conditions like asthma and bronchitis, especially among Native Americans.

About 400,000 Native Americans across the United States live near waste sites, yet many of them are ignored in research.

The connection between exposure and many chronic illnesses was more noticeable when only looking at Native Americans who live near these Superfund Sites. This evidence supports other studies that find that communities who are often ignored or not given enough resources are more likely to be exposed to dangerous environment conditions.

There are still high levels of toxic metals and chemicals in the Ramapough Lunaape tribe's land, which can make their illnesses worse. The EPA should use the best possible way to clean the land even if it's a bit more expensive.

How can we use research to help our communities, especially those that are often ignored? What sorts of actions can we take as readers of this type of research?

**Figure 5:** Superfund sites in California (left) and Montana (right)