

What Are “Fossil Fuels” and How Can We Measure the Pollution They May Create?

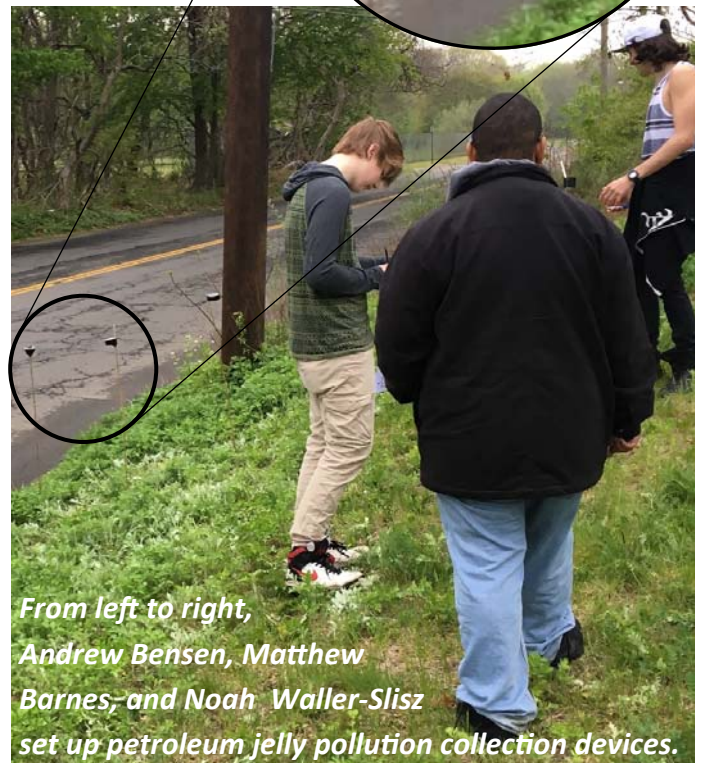
by JAEALYN ROBERTS

Fossil fuel is created by people digging into the earth’s surface and taking the energy from plants that once lived off the sun’s energy. The stored energy from the sun from when the ancient plants lived is what makes the fossil fuel become fossil fuel. Coal, oil, and natural gas we use today were once plants living in the ocean that died and sunk to the bottom. When the plant was alive it absorbed energy from the sun and used it to build high energy, unstable sugar molecules and other chemicals. When the plant died, it died with the energy from the sun still stored inside of the chemicals it built. When it sank down uneaten, it created a bottom layer of the ocean which eventually millions of years later was covered in other material and squished together with lots of pressure. The plants that once lived still under the earth are what coal, oil, and natural gas sellers go into the earth for today. The amount of heat and pressure in the earth is what determines whether the material will be formed into a solid (coal), a liquid (oil), or a gas (natural gas).

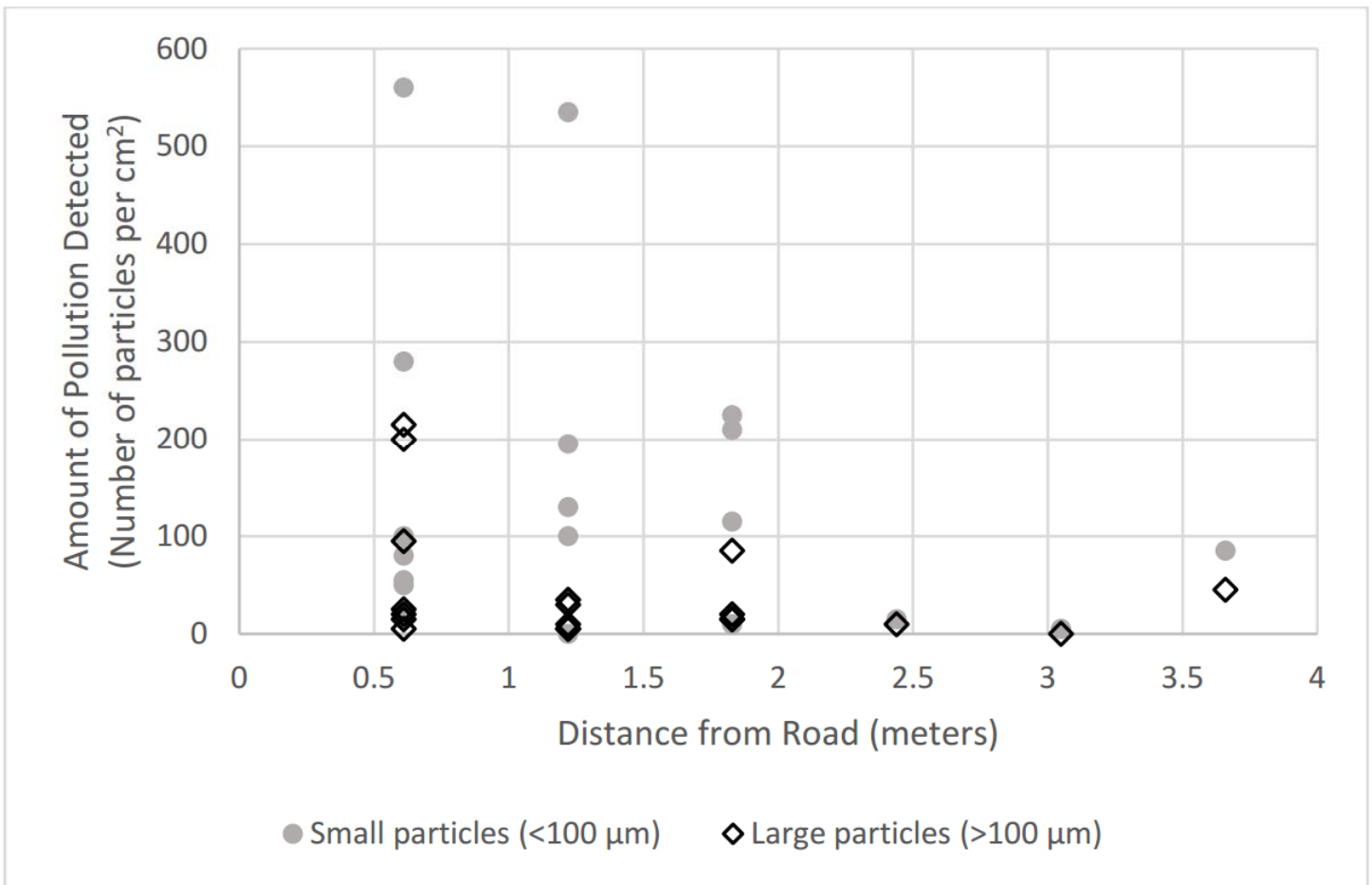
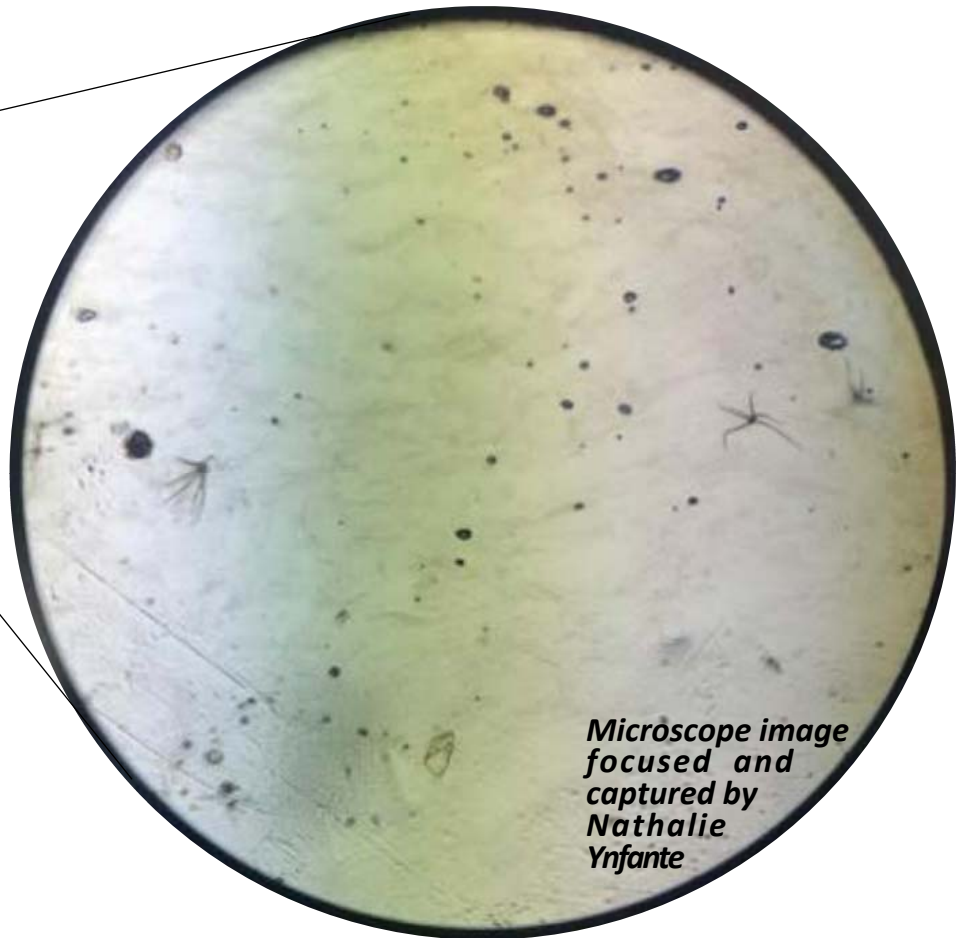
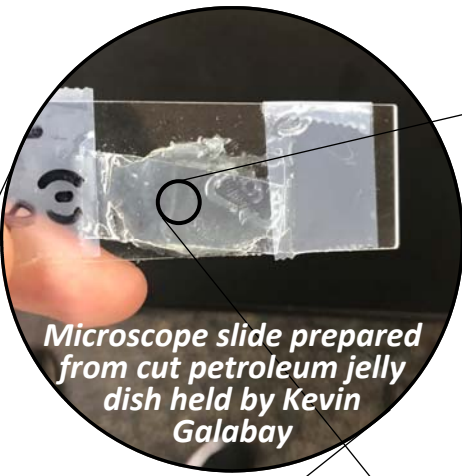
In New Haven, we use fossil fuels to heat our buildings, generate electricity, and run our transportation systems, like cars, trucks, and buses. Gasoline and diesel fuels made from oil are the most common ways of powering transportation in the United states. Although fossil fuel is useful for transportation, it causes global warming and pollutes the air that we breathe in.

In our biology class, we created air particle detectors. We did this by taking a stick and a cup, once we received the cup we cut it in half and used the part of the cup that holds liquid. We didn’t drink out of the cup of course but we taped it to the stick we received earlier to keep the cup sturdy. Next, we put petroleum jelly around the inside of the cup which made the

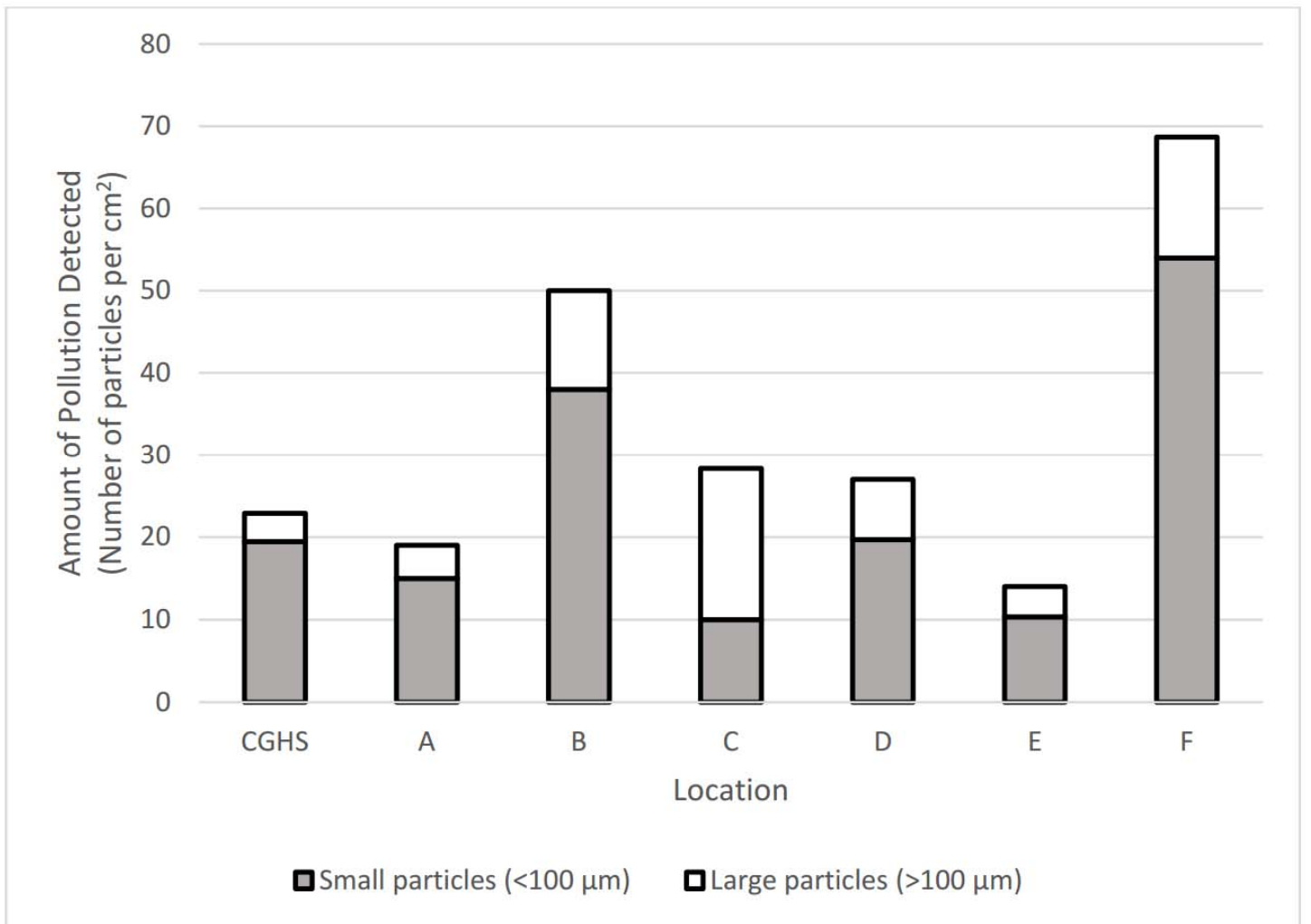
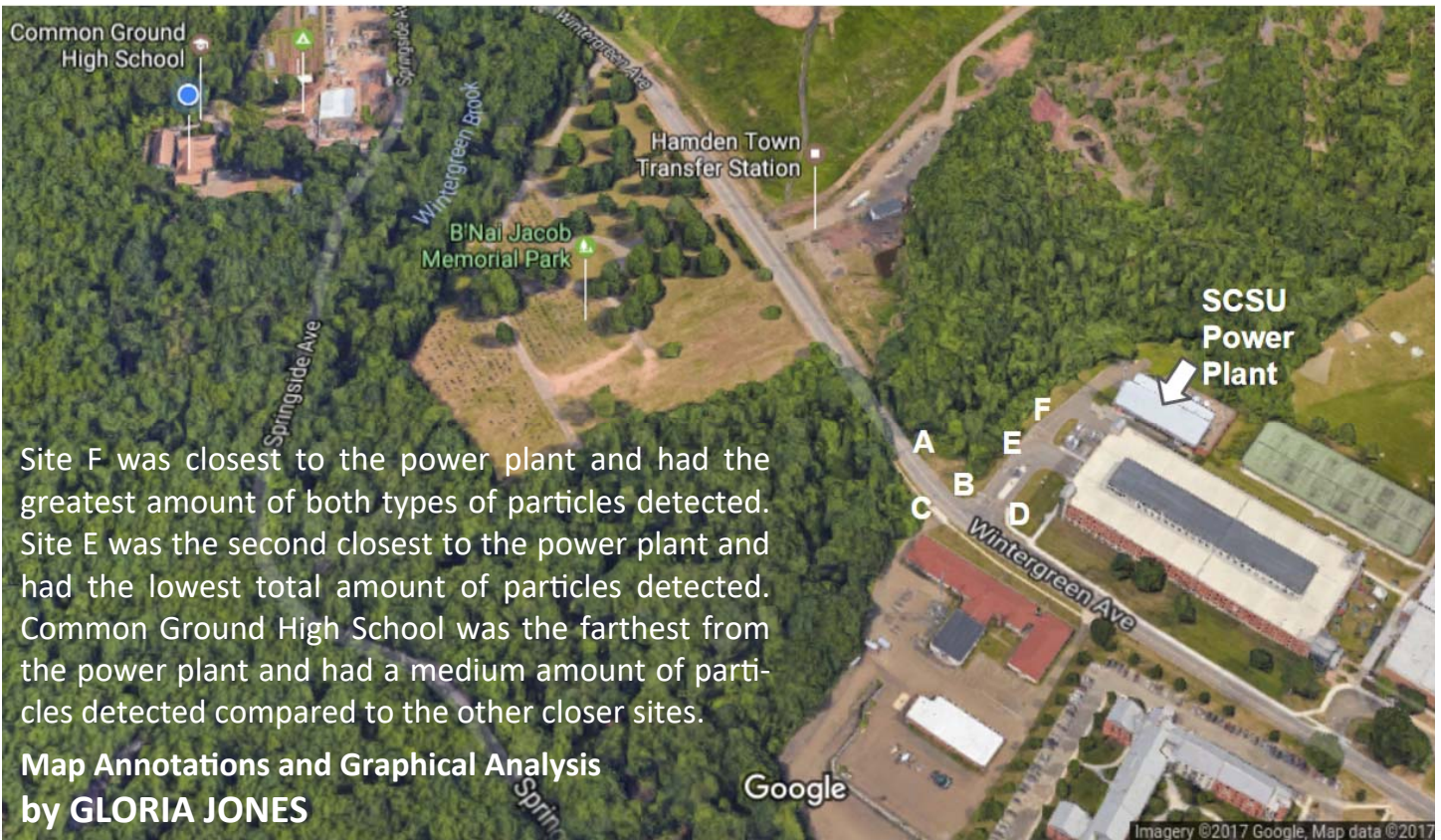
cup sticky inside so it can catch the particles in the air that we were interested in looking at. After that, we stuck the sticks in the ground and let them sit there for a few days. We stuck the particle detectors in the ground spaced out two feet from the one we previously placed in the ground, moving away from the road. After we let them sit for a few days, we picked them back up and took them back to school. We then cut a piece from each petroleum jelly cup and the particles that were stuck to it and put those pieces on a microscope slide. Lastly, we examined the particles on the slide with a microscope and counted how many particles of different types were in each cup.



From left to right, Andrew Bensen, Matthew Barnes, and Noah Waller-Slisz set up petroleum jelly pollution collection devices.



Graph created from the combined data collected by all the biology classes.



Graph created from the combined data collected by all the biology classes.

Do Transportation Uses of Fossil Fuels Affect Local Air Quality?

by GERNO ALLEN

Transportation uses of fossil fuels affect local air quality. Closer to the road are more particles of all types than farther from the road. For example, when the distance was about a half meter away, the amount of pollu-

tion was about 550 particles, and when the distance was about 3 meters away the pollution measured was close to zero. The evidence supports my claim because it shows that the closer you are to the road, the more particles there are in the air. If transportation did not affect the air, there wouldn't be this change.

Do Electricity-Generating Uses of Fossil Fuels Affect Local Air Quality? **MAYBE.**

YES. I think that electricity generating uses of fossil fuels affects local air quality. There is more pollution near the power plant than away from it. Our data shows that there were more particles close to SCSU. We don't know what fuels they are using to produce electricity, but we assume, based on what we could find online, that they are using either natural gas or oil. I think that if the power plant didn't affect the air quality, then the pollution found in the air would be spread out and not concentrated close to the power plant.

by TYLER DUBOSE and JADA BURNETT

NO. I think the power plant by SCSU doesn't affect the air because even though the closest one to the power plant had a high number of collected particles, the one next to it was very low. So, I think wherever the cars are mostly by is what caused the pollution differences.

by JAYVON EDWARDS

MAYBE. Transportation is not the only reason our air quality can be lowered. Electricity-generating uses of fossil fuel is also a factor in damaging air quality, but it's not a major one. In a graph based on the data from our experiment, we related the amount of pollution detected to approximate distance from the SCSU power plant. I expected that the traps placed closest to the power plant would produce the most caught pollution particles, but that assumption was wrong. The trap placed at the power plant did have a lot of pollution detected (55 small particle and around 20 large ones on average), but among the other locations, there were varied amounts of particles with no pattern related to its distance relative to the power plant; all of the other five locations (CGHS, A, B, C, and D) had collected more particles than location E, which was the second closest to the plant itself. Based on this data, the way in which this power plant generates electricity probably does not cause significant damage to our local air quality. If the electricity generator was a major polluter, we would have caught a lot of particles in all of our traps near the plant, but we didn't.

by ADAIAH STEVENS