Hello, my name is Corianna Palmer. I am sure you have all heard of the opioid crisis. Well according to the CDC almost 47,000 people died from an opioid overdose in 2018. With 66% of those deaths involving synthetic opioids. Now a synthetic opioid is class of manmade psychoactive drugs that relieve pain. One synthetic opioid in particular, Fentanyl, works by targeting specific areas in the brain and central nervous system causing euphoria or the intense feeling of happiness and excitement and analgesia or the inability to feel pain. In fact, fentanyl’s pain relieving affects are often said to be 80 to 100 times stronger than morphine, which is why it is often prescribed to cancer patients, other opioid tolerant individuals, or a patient with intense chronic pain whose bodies no longer respond to typical pain relievers. Fentanyl is often prescribed in the form of a transdermal patch where the fentanyl is in an adhesive almost like a band-aid and its applied directly to the skin for three consecutive days. After removing this patch, the FDA recommends that you dispose of it by folding it sticky side in and flushing it down the toilet. However, this can actually be really dangerous because even after wearing the patch for the prescribed amount of time, these patches still contain a substantial amount of fentanyl. One study suggest that on average a used patch contains between 43 and 68% of the original fentanyl. That can equate to as much as 11.4 mg. To put that into perspective I’ve got an image on my slide from the DEA’s website of 2mg of fentanyl, which is what they say is a lethal dose and that can be about 1/6th of what could be left behind in these patches. Now these numbers really just show how dangerous these used patches can be. Not only is there a potential for someone to accidently come into contact with it and be harmed but there is also a huge potential for abuse by addicts who have been known to scavenge these for illicit use. Clearly, a better disposal method is needed that would completely eliminate the risk. There is where my research has been focused. We’ve been working to create a device that would lock the patch inside and subject it to a solution that would completely destroy or capture the remaining fentanyl. Specifically I’ve concentrated my efforts on NarcX, which is on my slide and is a solution of activated carbon that irreversibly binds medications and drugs and is actually used often in law enforcement agencies and hospitals. Unfortunately, we have seen that NarcX may not be that silver bullet we were hoping for as so far I have only been able to show NarcX removing 62% of the fentanyl from the patches. Clearly, we have a lot more work to do but it is imperative that we start somewhere in hopes of solving this important problem. Thank you.