In 2015, West Virginia had the highest rate of death due to drug overdose at over forty one deaths per one hundred thousand nationally. (Drug Overdose Death Data). This number has risen by over two hundred percent since 2000 (Kounang); clearly, something needs to change. The situation in West Virginia has become known as an "opioid epidemic".

The most common methods used to detect drugs are urine tests, hair tests, and saliva tests (Types of Drug Tests). However, these tests take time and money. In West Virginia, police forces don’t have the ample time and money to test everyone suspected of drug use in this manner and keep track of them a will clearly take any precautions not to be caught, and it is understandably difficult to forcibly obtain urine samples, along with hair and saliva samples. For these reasons, West Virginia needs a simple way to accurately detect drugs.

One important facet of engineering is designing new products for scientific, and in this case, police use. In order to help fight the opioid epidemic in West Virginia, engineers should create a device similar to a breathalyzer. All one would need to do to be drug tested would be to breathe into these devices. The easy-to-use device would yield instantaneous results and wouldn’t cost too much; Breathalyzers are available for a few hundred dollars apiece. The creation of such a "Drugalayzer" would eliminate the comparatively cumbersome system in place today.

Breathalyzers work because alcohol is a volatile substance; some of it evaporates from your blood into the air in your lungs when consumed (Freudenrich). Since drugs like cocaine and marijuana aren't volatile, the new Drugalayzer would need to instead be
able to identify the chemicals that cause halitosis (bad breath) in the user. Halitosis is a common side effect of smoking cocaine and marijuana, and from snorting heroin. It is caused by an excess of unnatural chemicals left in the respiratory tract (Cocaine). Therefore, it stands to follow that measuring the amount of chemical expelled in the breath would be a good indicator of how much of a substance one has consumed.

In order to make this new technology a reality, engineers would need to determine which trace substances to identify to have the greatest opportunity of identifying drugs. Then, a small operating system would need to be measure levels of those select substances he or she has recently taken. The system must be specific enough to be certain of its identifying ability, but broad enough to detect different types of drugs and drugs used in conjunction with each other. The old system of obtaining samples of hair, saliva, and urine from suspected drug users, analyzing them, and waiting for results would be eliminated, replaced by an easy-to-use device that provides drug analyses immediately.

The upfront costs of such an endeavor would be mainly for research and prototype construction, as it is with most technologically new projects. However, the benefits would more than outweigh the cost. Drug tests cost states hundreds of thousands of dollars annually and often don’t uncover the number of drug users expected from their high price (Covert). Since Breathalyzer devices cost only a few hundred dollars apiece, replacing costly urine, hair, and saliva tests with a Drugalyzer would a great asset in the struggle against the opioid epidemic. West Virginia has the largest number of drug overdoses in the United States (Drug Overdose Death Data), but with the help of engineers, this epidemic can be stopped.
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