

The war on drugs and the development of new forensic toxicology techniques



Since the dawn of civilizations, governments have put in place sets of law codes, designed to both regulate and protect the people that lived under their authority. Similarly, as laws and people to enforce them emerged, so did people who break them. While what exactly is a criminal offense can range from culture to culture, it was not until the Nineteenth Century that taking addictive substances due to pleasure and recreational was criminalized. The criminalization of drug usage is especially prominent in the United States. An example of this can be seen with the country's ongoing "War on Drugs", a government policy that seeks to eliminate not only illegal drug usage in its citizens, but to reduce the illegal drug trade in America. As a result, forensic toxicology has gradually shifted away from analyzing bodily tissues in search of poison to testing if a person had consumed or inhaled drugs in their system. In order to better understand the development of new forensic toxicology techniques and how they coincide with the War on Drugs, it is imperative to look at the origins of forensic toxicology, modern forensic toxicology, the United States' history with illegal and addictive drugs, the War on Drugs controversies, and an examination of critiques against the advancements in toxicology.

The science of forensic toxicology, or the study of harmful substances in the body, can trace its roots to the efforts of Spanish chemist Doctor Mathieu Orfila with his tests to develop a test to detect arsenic poisoning in the 1830s in Paris, France. Before this time, poisoning was largely viewed as a perfect crime, as there was no way to detect poison in a system if a death appeared to be suspicious. Furthermore, recognized poisons at the time were found in common household products, were able to be purchased from a local

pharmacy or apothecary, or even grown in peoples' gardens. Orfila did manage to create a test for arsenic poisoning, but it is largely viewed as unsuccessful as Orfila was unable to make the arsenic visible with his instrument. However, James Marsh, an English chemist, was able to improve Orfila's test and make the arsenic visible; this lent his name to the process, now known as the Marsh Test. With the Marsh Test, "almost anything suspected to contain arsenic could be tested" (Sheely 33). However, it was not until 1840 that forensic toxicology entered mainstream thoughts. In a town known as Le Glandier, located in France, Charles Lafarge was battling what appeared to be cholera, which causes intense stomach cramps, diarrhea, and vomiting. His wife, Marie, who was significantly younger than him, was said to be constantly by his side during his illness and was known to prepare food for her husband. The village doctor, Lespinasse, was called, however, Charles Lafarge died before the doctor arrived at the house. It was no secret that Marie married Charles for his money, and with Charles gone, she believed that the money would all go to her. However, while Doctor Lespinasse was unable to help his patient alive, the doctor examined the body and determined that the victim did not die of natural causes. Rather, he believed Charles was poisoned with arsenic; also known as the Inheritor's Powder, it earned this title due to the fact that it was commonly employed to eliminate a relative who could not die fast enough and transfer the money and/ or property to the inheritor. Naturally, suspicion went to the recent widow and a police task force was sent to the house to collect evidence. Marie Lafarge's trial was one of the earliest cases where forensic toxicology was used and "focused worldwide interest on the science of toxicology"

(Sheely 33). As mentioned previously, murder with poison was fairly easy to
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get away with. This is where Orfila steps in. Both the prosecutors and the defense tested the evidence for traces of arsenic using the Marsh Test, however, when both sides introduced their discoveries, only “ one group said it had found arsenic in Lafarge’s body” (Sheely 33). Orfila was then called in to test the evidence by the Court. Using the Marsh Test as well as having both groups present, Orfila was able to conclude that there was both arsenic in both the eggnog, the last thing the man ingested, and in Charles’ body. Going even further, Orfila was able to see why the defense group did not obtain any samples of arsenic: they used too hot of a flame. With Orfila’s findings, the jury found Marie Lafarge guilty of poisoning her husband and sentenced her to life in prison. It was the Lafarge Trial that set the stage for modern forensic toxicology.

For the past three decades or so, poisoning lost its appeal as one of the best ways to get away with murder. This is largely due to the fact that regulations for harmful substances have tightened over the last two centuries.

Furthermore, toxicology tests have made significant improvements and are far more precise. As a result, poisoning cases in developed countries have declined and are either administered by a criminal with access to the poisons, which is heavily documented, or by oneself, whether accidental or otherwise. In short, most poisoning deaths in the modern era stem from self-administered drug overdoses, cumulative poisoning of the body caused by constant exposure, individual reactions of drugs with each other, and contamination of both illegal and legal drugs. Tests have also drastically improved in speed; before, the invention of gas chromatography, which allows for complex chemicals to be easily broken down and analyzed, and

advanced screening tests, drug tests involved an autopsy and slow, extensive, individual tests to achieve accuracy. Another tool used by modern-day forensic toxicologists is the Drug Classification System. This tool allows drugs to be separated into certain families based on the side effects that they produce when they interact with the body and set the stage for drug charges along with their corresponding punishment. There are five families in which a drug can be identified: stimulants, narcotics, depressants, anabolic steroids, and hallucinogens. In the United States, the three most commonly used illegally are depressants, stimulants, and hallucinogens. Depressants “work to depress the central nervous system” include alcohol, barbiturates, and tranquilizers (Owen 77). Stimulants, including cocaine and/or crack, caffeine, and methamphetamine (otherwise known as meth), on the other hand, have the opposite effects of depressants and can produce “feelings of confidence, boundless energy, and loss of appetite” (Owen 78). Hallucinogens, as the name implies, “produces a mixture of startling hallucinations” along with other side effects; this category includes marijuana, LSD, and magic mushrooms. With these advances in the field, these techniques and classification systems have dramatically improved forensic toxicology.

A prominent feature in the American news cycle, the War on Drugs has been involved in many Americans live since the 1960s. However, the United States has a long history of fighting illegal drug usage, starting in the 1870s. These early drug laws focused on opium, but was also a form of immigration control as it was meant to target Chinese immigrants specifically. Gradually, these early drug laws expanded to include cocaine usage and black men and

marijuana amongst Mexican immigrants in the 1910s and 1920s. It was the Counterculture Revolution of the 60s that saw the rise of drug usage as a form of “ youthful rebellion, social upheaval, and political dissent” that jump-started the United States current campaign as parents began to express concern over their children’s usage of marijuana, LSD, and other illegal drugs (The Drug Policy Alliance). It should be noted that tobacco and alcohol were not as strictly enforced as it was just as legal then as it is now. On July 14, 1969, President Richard Nixon stood before Congress to deliver a message that addressed drug abuse as a “ serious, national threat” (NPR). In June of 1971, Nixon formally declares the War on Drugs, which has been kept alive by following presidents. The possible exception to this could be President Jimmy Carter, who as part of his campaign sought to align himself with both young and black voters by advocating for the decriminalization of marijuana. However, after Carter was elected, he would later retract this stance. The War on Drugs would intensify in 1981 with the rise of the infamous Medellin Cartel, a powerful Colombian gang then lead by Carlos Lehder. Their drug routes in the Caribbean lead to Miami, Florida, being the main port of entry for drugs at the time; in turn, President George H. W. Bush created the South Florida Drug Task Force to work alongside the Drug Enforcement Agency (DEA) created by Nixon in 1973. The South Florida Drug Task Force was effective in their region, leading to the Medellin Cartel and others to change their drug running routes. Because of this, the U. S.- Mexican border has become one of the main point of entries with illegal drugs, along with other major port cities in the United States besides Miami. However, it should be noted in recent years that Miami has risen once again as a point of entry for illegal drugs. The War on Drugs between the United

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States and Latin America escalated in 2003 after three Americans on a drug combatant mission for the Pentagon were taken hostage by guerilla fighters in Colombia. As a result, the War on Drugs became less a public health crisis lead by Nancy Reagan's "Just Say No" program and D. A. R. E. and more of a military conflict. With the election of Barack Obama, who advocated for the decriminalization of marijuana, in 2008, there has been an increasing shift in public opinion that drug addiction should be seen as a mental illness rather than criminal activity and minor drug offenses should be decriminalized. Despite a change in policy with the recent Trump Administration, public opinion still remains in favor of Obama's stance. As of now, the War on Drugs remains one of America's longest running political issues.

The War on Drugs is not without its controversies. In recent years, these controversies have been at the forefront in combating drug use in the United States. One of the biggest critiques of the War on Drugs made by social justice advocates focuses on the discrepancy in sentencing between white, black, and Latinx drug users. Most of the earliest drug policies were meant to target racial minorities and anti-War groups during the Vietnam War. These policies created a large population of disenfranchised people, as felons lose their right to vote when they enter prison as part of their loss of autonomy. Another controversial consequence of the United States' War on Drugs stems from portable drug testing kits. Commonly used by police officers in the field, the most commonly used of these kits have high percentages of false positives and little to no warnings about the possibility of false results. Many false positives are caused by common products including " sage, chocolate chip cookies, motor oil, spearmint, Dr. Bronner's Magic Soap, tortilla dough,

deodorant, billiards chalk, patchouli, flour, eucalyptus, breath mints, Jolly Ranchers, Krispy Kreme donut glaze, *exposure to air* and loose-leaf tea” (Balko). An increasing amount of studies have shown that user error amongst police is also a major factor contributing to false positives. Interestingly enough, “ some studies have shown error ranging from 1 in 5 false positives to 1 in 3” (Balko). It should be noted that as of 2018, there have been no false negatives reported from these tests. In light of these portable testing kits, the United States Department of Justice has issued a warning to police precincts around the country. Despite this effort, police departments, such as the Las Vegas Police Department (LVPD), see these drug tests as a preliminary test for drug testing; these groups also increased usage instead of changing to more accurate and technologically advanced tests. This is most likely due to the fact that increased drug arrests are seen as a sign of productivity, and as result, police departments are giving more funds from federal anti-drug grants based off of this raw percentage and individual evaluations of police officers. These field drug test kits also introduced a new source of controversy with their false positives. Police officers who make a drug arrest is asset forfeiture as an incentive to make more arrests. This means that an officer is allowed to seize cash or anything of value in a car. As a result, the hassle of trying to prove innocence in order to keep these assets is not worth the monetary value of it at the arrest, leading to suspects giving false confessions in order to make the process easier. Overall, the War on Drugs controversies has created more problems with combating drug use than solving them.

One could argue that the development of new advanced forensic toxicologist techniques during the War on Drugs has inadvertently lead to a backlog at forensic labs. One prominent example of this is the large backlog at the Virginia State Lab located in Richmond, Virginia. Virginia has a high rate of drug abuse, especially concerning stimulants, such as heroin and crack/cocaine. This argument mainly stems from the creation of field drug testing kits. As mentioned previously, these kits are often inaccurate and are administered by those who were not trained in forensic toxicology, which can take anywhere from ten to twelve months. To combat the backlog, head of the Virginia State Lab, Linda Jackson, was able to secure funding from the state to create six new forensic analyzes positions, has reported that “ for the quarter ending June 30, 2017, it took an average of 86 days to complete testing in a case, which might involve several suspected drugs. By the end of June last year, testing took 131 days on average; by the end of last month, it took an average of 136 days” (Green). Though it as a temporary solution to a difficult problem, the Virginia State Lab has looked into outsourcing to an out-of-state lab. Also, it should be noted that both accuracy, precision, and time analyzing samples have increased in the past few decades alone. This indicates that the War on Drugs has actually aided the development of forensic toxicology, as the large amounts of samples sent in created the need for better forensic techniques. This includes possible sources of samples, which include hair, blood, urine, salvia, soil samples, skin, and other bodily fluids.

While criminalizing drug usage is nothing new to global societies, it has not been criminalized to the extent it has been in the United States since the

1970s. Known as the War on Drugs, America's issue with drugs is still continuing to this day. However, legalized drugs such as tobacco, alcohol, and in some states, marijuana, are not viewed as a part of the problem in America. With the United States' government efforts to combat drug usage and trade, forensic toxicology has gradually developed to meet the demands of the times. In fact, forensic toxicology has actually shifted away from examining possible poisoning cases to mainly deal with drug detection mainly due to advancements in poison tests. The development of forensic toxicology can only be understood if one looks at the origins of the science, modern forensic toxicology, controversies created by the War on Drugs, and why the War on Drugs has aided the development of forensic toxicology in the United States.

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