Essay on toxicology

Law, Evidence

Toxicology

The tour of the toxicology lab at the CSI website changed my perception of toxicology as a facet of forensic science. The tour began by me being introduced to a description of the work that forensic toxicologist do. According the CSI website, forensic toxicologists are served with the responsibility of determining the presence of drugs and other chemical substances in the human body; tissues and fluids. As opposed to drug chemistry, which analyzes evidence prevalent outside the body, forensic toxicology concerns itself with the analysis of evidence found inside human bodies. Multiple fluids are normally analyzed by toxicologist in an attempt to minimize error or contamination.

I was barely aware about any history of forensic toxicology until I took the tour. Anecdotally, I learnt that, in as much are forensic science appears to be a new field, the onset of forensic toxicology dates back to 1800s when Mathieu Orlifa, a chemist, proved in court that a woman has poisoned her husband with arsenic. This was several years after Paracelsus had hypothesized that “ The dose makes the poison”.

As I came to learn during the tour, three human fluids are always preferred for forensic toxicology namely; blood urine and vitreous humor. These fluids derive their pertinence from the pivotal role they play in the human body of transporting food substances and oxygen to throughout the body, transportation of waste products and vision respectively. I also learnt that there are times when maggots and stomach contents can be analyzed

especially when dealing with a decomposing body or instituting the means through which the drugs or chemical substance got into the body.

The peak of the tour came when I was involved in analyzing some evidence from a young male killed in a traffic accident. It is worth noting that I had earlier on been introduced to how evidence are sorted out to be analyzed in different labs, amongst them; chemistry labs and forensic labs. The evidence was first screened (screening test; a test that is carried out without being prompted by any symptoms) for certain types of drugs. For instance, the evidence was screened for alcohol using Headspace Gas Chromatography though the test proved that there was not alcohol in the victim’s body, which warranted a conclusion that the victim was not high on alcohol before the accident. Afterwards, an Elisa Test was carried out on the evidence sample in an effort to unravel the presence of Amphetamines, Barbiturates, Opiates, Cocaine, and Marijuana among other drugs. This test, which is principally based on color change, makes use of positive controls as well as negative controls, which help assert whether the test worked properly. The Elisa test was exactly replicated as a means of affirming that no mistake had been committed. From the Elisa test results, it was evident that the victim was high on Methamphetamines or Amphetamines. Since, at this point, we could not pin point that the victim was specifically high on Methamphetamines or Amphetamines before the accident, it was only logical that we carry out a confirmatory test; a test that accurately determines suspected drug substances during toxicology. The confirmatory test used was Gas Chromatograph/ Mass Spectrometer commonly abbreviated GC/MS.

The tour would not have been complete without learning the working mechanism of this expensive machinery in the toxicology field. As I learnt, GC/MS separates and identifies specimen based on their properties. The specimen are ionized before bring analyzed by the analyzer and finally summed up by the detector. The machine then generates a mass spectrum of the chemical particles. With background knowledge that different chemicals have different mass spectra, it was easy to identify the variant chemicals in the victim's blood. Caffeine was first to be matched, but its influence of the victim leading to the accident was overruled because caffeine cannot cause driving impairment to the consumers. Then came Methcathinone (C10H13NO), which I came to learn was trivially known as " cat"; a methamphetamine that is both a stimulant and a hallucinogen. Concisely, the victim's impairment was attributed to " cat" which had a weighty influence on the cause of the accident. Before the end of the tour of the toxicology lab, I was exposed to some traits of a toxicologist. These were 20 personal preference questions. From the questions, is I learnt that a toxicologist should like working with animals, tools or machines, be a scientific problem solver, a risk taker among other traits.

I ended the toxicology lab tour by taking the six-toxicology questions on the CSI website and scored 6 of 6.

Reference

CSI (N. d.). Toxicology Lab. CSI Web Adventures. Retrieved from http://forensics. rice. edu/