

History of Drug Control and the Development of Techniques used in Forensic Chemistry

- 1813 - Mathiew Orfila, a Spaniard who became professor of medicinal/forensic chemistry at University of Paris, published *Traite des Poisons Tires des Regnes Mineral, Vegetal et Animal, ou Toxicologie General I*. Orfila is considered the father of modern toxicology.
- 1836 - James Marsh, a Scottish chemist, was first to use toxicology (arsenic detection) in a jury trial.
- 1851 - Jean Servais Stas, a chemistry professor from Brussels, Belgium, was the first to successfully identify vegetable poisons in body tissue.
- Late 1890's – A.A. Michelson invented the interferometer, which led to chemical infrared spectroscopy.
- 1906 – US Pure Food and Drug Act - required manufacturers to label whether a product contained alcohol, morphine, opium and cannabis and other "addictive" and/or "dangerous" drugs. These drugs were considered legal as long as the packaging was labeled with the dosage and contents.
- 1907 – Sir Joseph John “J.J.” Thompson of the University of Cambridge developed the first Mass Spectrometer. His assistant, Francis W. Aston, made improvements and won a Nobel Prize in Chemistry in 1922 for the development of the first workable mass spectrograph.
- 1912 – The first international drug treaty was signed, the International Opium Convention, as a measure to control manufacture, import, sale, distribution, and exporting of morphine and cocaine.
- 1914 - Bureau of Internal Revenue created the Harrison Narcotics Act with the intent to register and tax the production, import, manufacture, and sale of opium or coca leaves. It became illegal for those who were not registered and were in possession of these substances. It also implied that physicians could legally prescribe addictive drugs.
- 1920 – Narcotics division of the Bureau of Revenue began enforcing the Harrison Act, and many violators went to federal prison.
- 1922 - The Narcotic Drug Import and Export Act - established limits and monitoring of opium and coca leaf international commerce.
- 1929 – The first officially recognized, comprehensive, scientific crime detection laboratory in the US was established at the law school in Northwestern University, Evanston, IL.
- 1930 – Federal Bureau of Narcotics (FBN) was created whose agents were tasked with enforcing the Harrison Act.
- 1932 – The Federal Bureau of Investigation established a crime laboratory, which has grown over the years to provide forensic services to law enforcement agencies across the country.
- 1937 - Marijuana Tax Act – federal law prohibiting the production and use of marijuana in the United States.
- 1942 – Opium Poppy Control Act – banned opium poppy production unless licensed.
- 1944 – Judd Resolution – passed by Congress to urge all opium poppy producing nations to reduce the quantity to only fit the needs of medicinal use.

1949 – Peter Felgett, an astrophysicist produced the first Fourier transform infrared spectrum.

Early 1950's – Fred McLafferty and Roland Gohlke began their study of mass spectrometry at Dow Chemical Company. They are credited with establishing instrumentation and methodology, including rules and language used to describe features in the spectra of known compounds.

1951 – 1952 – Anthony T. James and Archer J.P. Martin of the National Institute for Medical Research in London introduced the technique of gas chromatography. Martin and Richard R.L. Synge won the 1952 Nobel Prize in Chemistry for their work with gas chromatography.

1955 – 1956 – first successful demonstration of a paired GC-MS instrument by McLafferty and Gohlke. They presented their findings at the American Chemical Society's April 1956 meeting. Then, Gohlke published his work in *Analytical Chemistry* in 1959.

1956 – William H. Stahl gave a talk on the identification of food flavorings using mass spectrometry.

Late 1950's – Klaus Biemann (MIT) demonstrated the ability of the mass spectrometer to determine complex structures of unknown chemical substances. Biemann and Djerassi continued to study the use of mass spectrometry for the identification of different alkaloids, cocaine and cannabis at Stanford University.

1955 – 1956 – Joseph C. Holmes and Francis A. Morrell of Phillip Morris Inc. also coupled GC and MS, announcing their findings in 1956 and publishing them in 1957 *Applied Spectroscopy*.

1956 – Boggs-Daniels Act increased the penalties for drug violations to include minimum mandatory sentences.

1965 – The first commercially successful GC-MS was debuted.

1966 – The Bureau of Drug Abuse Control (BDAC) was established to enforce drug laws under the Food and Drug Administration.

Late 1960's – Commercial FTIR spectrometers became available due to the ability of microcomputers to perform the Fourier transform.

1966 – The development of the Cooley-Tukey algorithm was instrumental in the commercialization of FTIR spectrometers because it performed a Fast Fourier Transform (FFT).

1967 - The Florida Legislature merged the duties and responsibilities of several state criminal justice organizations to create the Bureau of Law Enforcement. Bringing together the resources of the Florida Sheriffs Bureau, the State Narcotics Bureau, and the law enforcement activities of the Anti-Bookie Squad of the Attorney General's Office.

1968 – The BND and the BDAC were merged – under the Department of Justice and became the Bureau of Narcotics and Dangerous Drugs (BNDD). Under the BNDD the first forensic laboratories were founded which eventually became the DEA Special Testing and Research Laboratory and seven DEA regional laboratories across the US where controlled substance identification is carried out.

1968 -Food and Drug Administration (FDA) laboratory chemists Martin and Alexander identified DMT (dimethyl tryptamine) using High Resolution Mass Spectrometry.

1969 - The Bureau of Law Enforcement became the Florida Department of Law Enforcement, or FDLE. As a department of the executive branch of government, FDLE was headed by the governor and cabinet.

1970 – Altheus, et.al. described the use of GC/MS at MIT to detect Darvon in the stomach contents of an overdose victim.

1970 - The Comprehensive Drug Abuse Prevention and Control Act consolidated drug control laws, increased treatment, rehabilitation and education efforts and greatly expanded law enforcement regulation and enforcement in the field of drug abuse. The act classified drugs into five schedules. It proposed the creation of a unified agency to fight the drug problem in America, called the Drug Enforcement Administration (DEA). Many states base their controlled substances off of the federal codes and are able to modify them as needed.

1973 - The BNDD, Office of Drug Abuse Law Enforcement (ODALE) and US Customs Service combined their efforts into one agency and the Drug Enforcement Administration was established.

1973 – One of the first mass spectrometers was used to identify drugs in Birmingham, UK.

1973 – Saferstein and Chao reported on the use of Chemical Ionization (Introduced by Munson and Field in 1966) to analyze drugs and drug mixtures.

1977 – The first Clandestine Laboratory Guide for Agents and Chemists was published. This document provided a compilation of illicit drug production procedures and investigative techniques.

1981 – The FBI Laboratory formally dedicated the Forensic Science Research and Training Center (FSRTC) which was created for providing training for laboratory personnel from state and local law enforcement agencies.

1990 – The first FDLE laboratory was accredited by the American Society of Crime Laboratory Directors (ASCLD). FDLE has subsequently maintained this accreditation through ASCLD/LAB until it merged with and became part of ANSI in 2019.

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