B134 Chemical Waste From a Chemistry Forensic Laboratory and the Challenge of Segregating, Treatment, and Disposal

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Learning Overview: The goal of this presentation is to show that chemical handling needs to be done carefully, attempting to complete the criminal investigation while cautioning to avoid accidents induced by incompatible chemicals and keep the environment preserved.

Impact on the Forensic Science Community: This presentation will impact the forensic science community by showing procedures on handling chemicals to optimize the work, avoid accidents, and keep the environment preserved.

Because of rising crime and the necessity for effective criminal investigations through use of scientific evidence, more services have been required from the chemistry forensic laboratories. The effect of this reality is the volume growth of casework and chemical substances being used, resulting in a volume more and varied waste produced to discard. The added diversity and requirement for a short turnaround time to produce the report, require the consolidation of balanced methodology procedures to guarantee the worker health and security and environmental integrity. Therefore, caring for the produced waste such that it is segregated, disposed, and discarded with established procedures.

Although it could be found some research papers treating laboratory waste, the majority is directed to teaching and research laboratories in universities.[1-4] An abstract written by Adnan Lanjawi for the 18th International Conference on Occupational Health and Safety in 2016 about forensic chemistry laboratory waste was found. It describes that the author started a study on the waste management from the Dubai police forensic chemistry laboratory, addressing the chemical quantity, the labels, the storage space and equipment in use. One finding of the research was regarding chemical segregation stored in alphabetic order, rather than according to the waste's nature and properties.[5] Another article, published October 2nd, 2012, Vince McLeode reported in Forensic Magazine that, because of a leak in a discarded barrel with chemical residue, methanol and choloroform spilled to the basement of Pittsburgh criminal laboratory, in Pennsylvania state.

Considering the scarcity of research studies handling the appointed problem in criminal investigation laboratories, the human and environmental vulnerability and that U.S. and European countries account the largest fraction of forensic chemist employees, this research manifests itself as extremely important to the forensic science community.[6]

This work target is to make a survey of the routine exams achieved in a forensic chemistry laboratory in São Luís, Maranhão, Brazil, identifying the waste properties and to deal with their segregation, treatment and disposal. The consequences of negligence are that it may bring severe injuries to the laborers, environment and society, directly and indirectly, due to the products of forensic activity. The theories used to develop this research study were found in books, research papers, standard operating procedures of government forensic institutions and the law.

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Chemistry Forensic Laboratory, Waste Production, Chemical Handling