



B145 Forensic Intelligence in Illicit Markets: The Contribution of Chemical Analysis on Counterfeit Watches

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After attending this presentation, attendees will understand the mechanism of intelligence gathering through the chemical analysis of counterfeit goods. The added value that such information has on understanding the functioning of illicit markets will also be demonstrated.

This presentation will impact the forensic science community by highlighting the scope of the contribution that forensic science can provide from a security perspective, beyond the general emphasis that is placed on forensic science's role in criminal courts.

The practice of forensic science relies fundamentally on the study of trace evidence as remnants of a criminal activity and on the extraction and contextualization of the information this conveys. Counterfeit watches, as products of an illicit activity, hold trace details of their production and/or distribution that can provide information about the structure of illegal trafficking. Fundamentally, by the ability to reveal links between specimens or cases, trace evidence provides pertinent information to investigative activities. When combined with other types of intelligence gathered through spatiotemporal analysis of seizures or monitoring of internet sites selling counterfeit goods, trace evidence offers a powerful tool to decipher the structure of illicit markets.

The contribution of forensic intelligence in gathering information regarding illicit markets through the example of chemical analysis performed on seized counterfeit watches will be illustrated. By considering three types of chemical analyses — the profiling of perfumed plastic straps, the composition of leather and plastic straps, and the metal composition of watchcases — the challenges that characterize the extraction of intelligence from counterfeit watches will be illustrated.

The first challenge, data production, pertains to establishing an analytical strategy that provides representative and informative data on the composition of the different watch parts. Headspace/Solid-Phase Microextraction followed by Gas Chromatography/Mass Spectrometry (HS/SPME-GC/MS) was used for the extraction of volatile compounds from the watch straps, while X-ray spectroscopy and Inductively Coupled Plasma/Mass Spectrometry (ICP/MS) after acid dissolution were used to obtain the elementary composition of watchcases.

The second challenge, data treatment and organization, consists of creating reliable and informative profiles from the analytical results. Subsequently, the profiles for each of the counterfeit watches were compared and grouped by means of similarity indexes, providing intelligence about possible links between specimens.

The integration of this information with other types of intelligence, known as contextualization, is the third challenge. Contextualization revealed forensic science's contribution to the information regarding the illicit



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counterfeit watches market. Information gained through chemical analysis corroborated existing information from other sources and also revealed new links between seizures and specimens.

This presentation exemplifies a more general approach of forensic intelligence for concealed markets. The extraction and exploitation of information from an illicitly produced item to gain information about its production is a generic mechanism that is already widely used. For instance, the chemical profiling of illicit drugs has already been extended by analogy to other types or counterfeit goods (medicines, cigarettes, etc.) or illegal activities (forged documents, doping agents, etc.).

Illicit Markets, Chemical Analysis, Counterfeit Watches