

Case Study: Forensic Fingerprinting



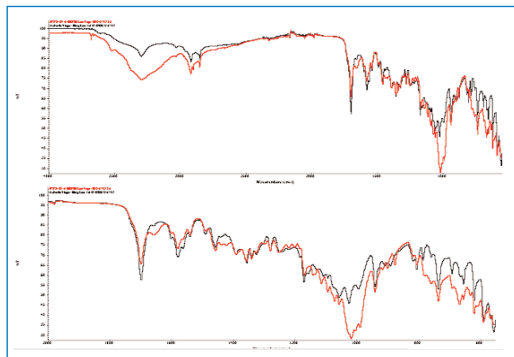
At the forensic lab we've found road paint, talcum powder, floor wax and active ingredients for completely different pharmaceuticals contained in counterfeit Pfizer medicines. We've actually had to increase our team to deal with the cases. Last year we had around 400 suspected counterfeit medicines sent to us for analysis – 90% were fake.

Wendy Greenall, Senior Chemist, Pfizer forensic labs, Sandwich, UK

Much like the illegal drug trade, counterfeit medicines contain a cocktail of ingredients. Counterfeiters often include a small amount of active pharmaceutical ingredient in the hope that this will delay detection. Fillers are used to dilute the active ingredient: talcum powder and gypsum are popular.

Pfizer uses state-of-the-art technology to detect suspected counterfeits and through a range of screening processes the forensic teams are able to identify the fakes. These allow the chemists to analyse the medicines through a variety of tests which together build an accurate picture of what is contained in the counterfeits. The process itself is complex and takes time – some tests require weeks to complete – but the result enable the chemists to create a fingerprint of the fake medicine – a bit like matching DNA.

The example shown here is a reading of a type of screening test called an infrared spectra. The black lines represent the reading of a genuine Viagra® tablet, the red shows the counterfeit.



The fact that the two lines follow the same pattern demonstrates the presence of sildenafil citrate drug substance. The fact that they differ demonstrates that the formulations are distinctly different: the counterfeit contains significantly less active ingredient than the genuine tablet.



A factory manufacturing fake Viagra®, raided in the UK in 2005.

As well as the often dubious contents of counterfeit medicines, the conditions in which they are manufactured and transported will also affect the quality.

Counterfeits have been found in soft toys, large carrier bags and cardboard boxes – a world away from the tightly regulated and sterile environmental conditions laid down for approved medicines. Tests at the forensic laboratory are therefore also able to detect process-related impurities as well as those due to degradation.



Conditions found in Colombia, 2003, where a fake painkiller was produced.



European Trade Group