How illegal drugs are tested and identified

The Illicit Drugs Laboratory provides the Central Narcotics Bureau (CNB) with drug testing services to identify and determine the amount of drugs present in seized materials. Such analysis is key to establishing the presence of a controlled drug. **JEAN IAU, LEE HUP KHENG** and **LIM KAILI** take a look at the process of identifying drugs.

New psychoactive substances (NPS) are a new generation of drugs that have made rapid emergence globally. These drugs are specially designed and constantly modified — through tweaking small parts of their chemical structure — to circumvent the laws.

DRUG IDENTIFICATION

CNB sends the drug exhibits to the laboratory.

1 For all exhibits, the scientists first document the physical appearance of the substances in the exhibit, such as their form and colour.

2

Subsequently, the weights of the substances are obtained using an analytical balance.

3 After weighing, depending on the suspected drug type, the substances are pulverised and homogenised using a blender or a mortar and pestle into a homogeneous powder.

4 A small amount of the powder is sampled and dissolved with a solvent for instrumental analysis.

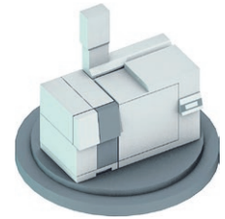
5

The laboratory uses gas chromatography mass spectrometry (GC-MS) for the identification of drugs. It uses liquid chromatography or gas chromatography to determine the amount of controlled substances in a sample.

ANALYTICAL WORKFLOW FOR NPS

For NPS exhibits, due to their variety and fast-evolving nature, the laboratory has adopted a comprehensive workflow using at least two analytical techniques to identify the NPS.

1 An initial analysis typically using GC-MS is carried out and preliminary identification of the unknown substance is performed.



2 A comprehensive literature research is performed to gather information and analytical data on the new substance.

3 A specialised NPS team of officers discuss the data obtained and determine whether there are other possible similar compounds based on the chemical structures. They also determine the appropriate analytical technique for identification of the new NPS. The technique used depends on the sample matrix as well as the chemical structure of the substance.

4 Upon completion of the analysis, the data is reviewed by two other experts before the result is reported.

Sources: CNB, HSA PHOTOS: CNB, KUA CHEE SIONG SUNDAY TIMES GRAPHICS