

**GROUP OF EXPERTS ON CHEMICAL SUBSTANCES AND PHARMACEUTICAL
PRODUCTS**

May 29 - 31 2018

Panama City, Panama

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**THE ROLE OF FORENSIC LABORATORIES IN THE CONTROL OF SYNTHETIC DRUGS,
INCLUDING NPS AND ITS CHEMICAL PRECURSORS**

The image shows a two-story modern building with a dark, vertically-slatted upper section and a light-colored lower section. A sign on the right side of the building reads "MINISTRY OF NATIONAL SECURITY TRINIDAD AND TOBAGO FORENSIC SCIENCE CENTRE" and features the national coat of arms. To the left, there is a ramp leading to an entrance. The building is surrounded by a green lawn and a gravel path. A flag is visible on the far left.

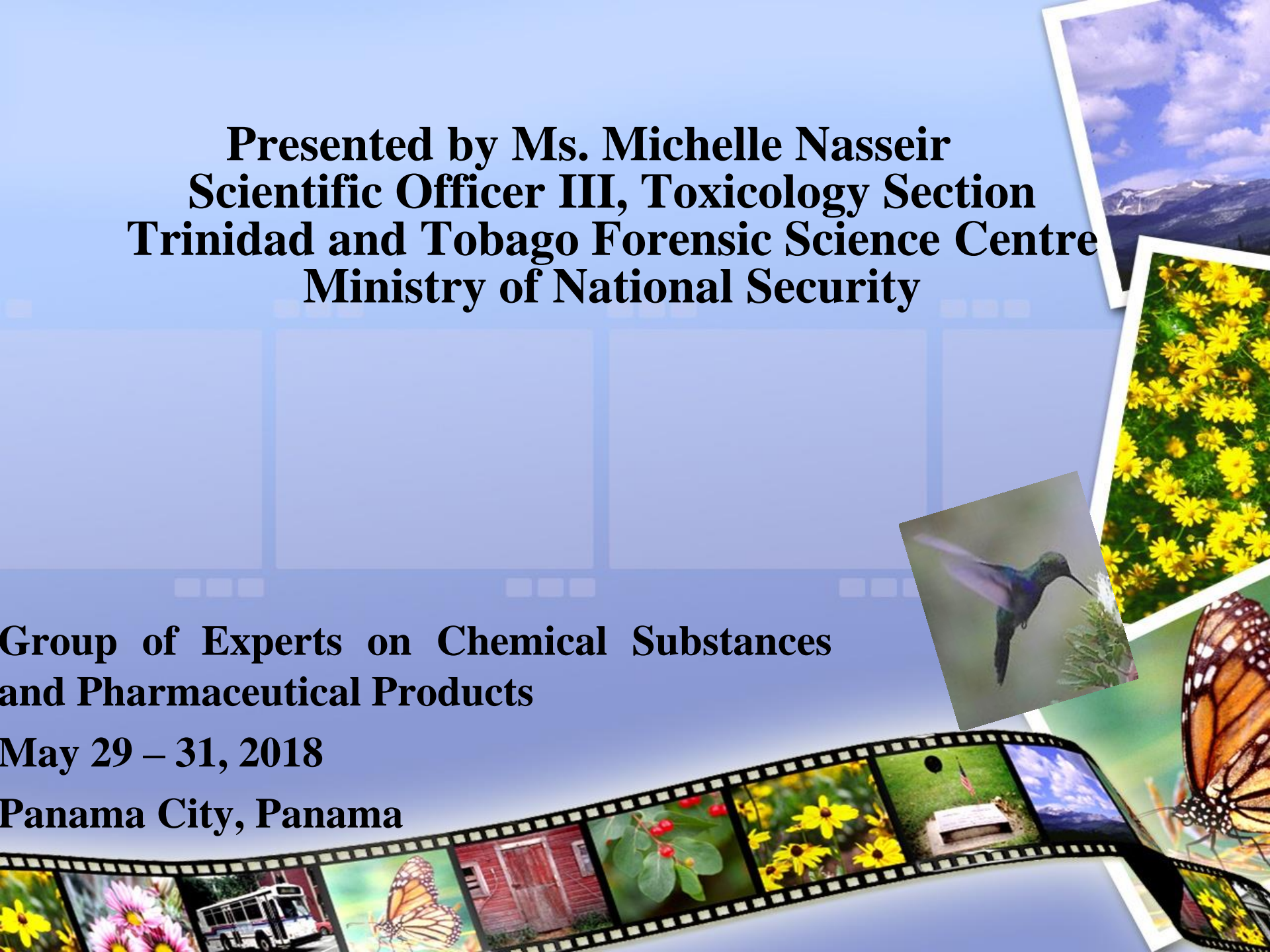
The Role of Forensic Laboratories in the Control of Synthetic drugs, including NPS and its Chemical Precursors

**Presented by Ms. Michelle Nasseir
Scientific Officer III, Toxicology Section
Trinidad and Tobago Forensic Science Centre
Ministry of National Security**

**Group of Experts on Chemical Substances
and Pharmaceutical Products**

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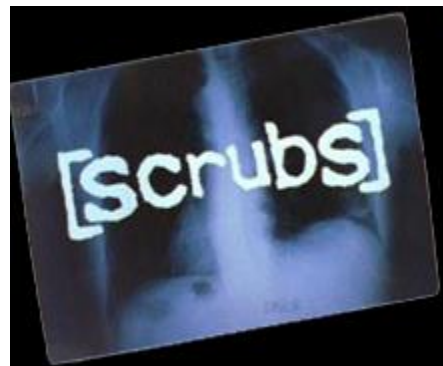
Location





Forensic Science

- the application of scientific, technical or other specialized knowledge to assist courts in resolving questions of fact in civil and criminal trials
- Forensic laboratories apply scientific methods and processes to solving crimes





The Job of the Forensic Scientist

- Analyze physical evidence using a variety of scientific and generate a report based on the findings to be used in the criminal justice system (judiciary)
- Provide expert testimony in a court of law



Forensic Science Disciplines

- Forensic Odontology
- Forensic Serology and DNA Analysis
- Forensic Medicine and Pathology
- Forensic Toxicology
- Forensic Chemistry
- Firearms and Tool marks
- Forensic Document Examination

Forensic Chemistry



- ▶ Controlled Drugs
- ▶ Fire Accelerants
- ▶ Explosive Residues
- ▶ Other Trace Evidence (paint, glass)
- ▶ Serial Number Restoration from Stolen Motor Vehicles





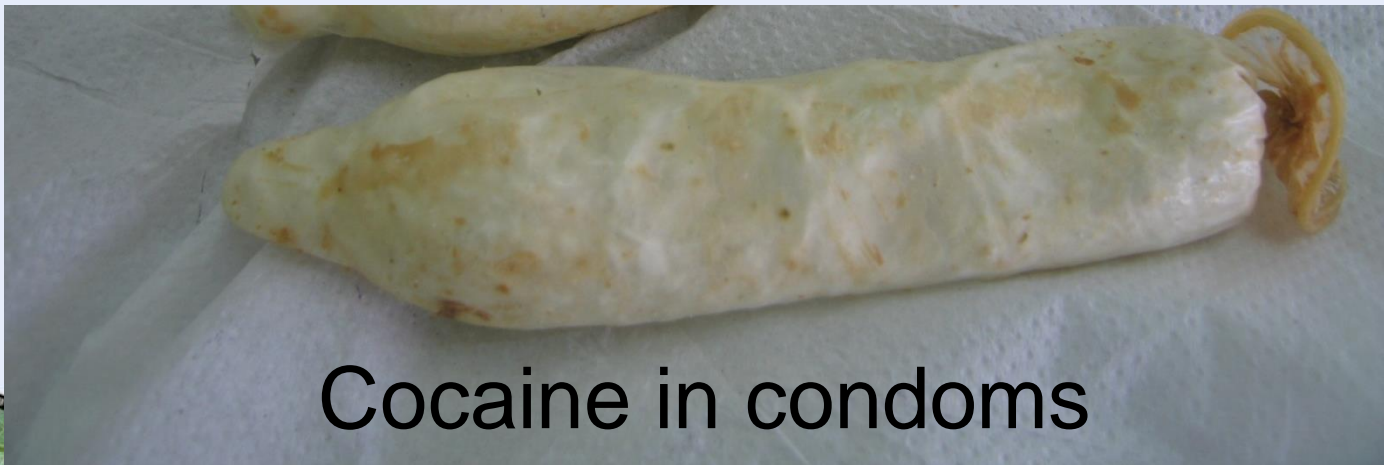
Crack Cocaine being manufactured in a pot



Heroin inside wooden blinds



Cocaine pellets



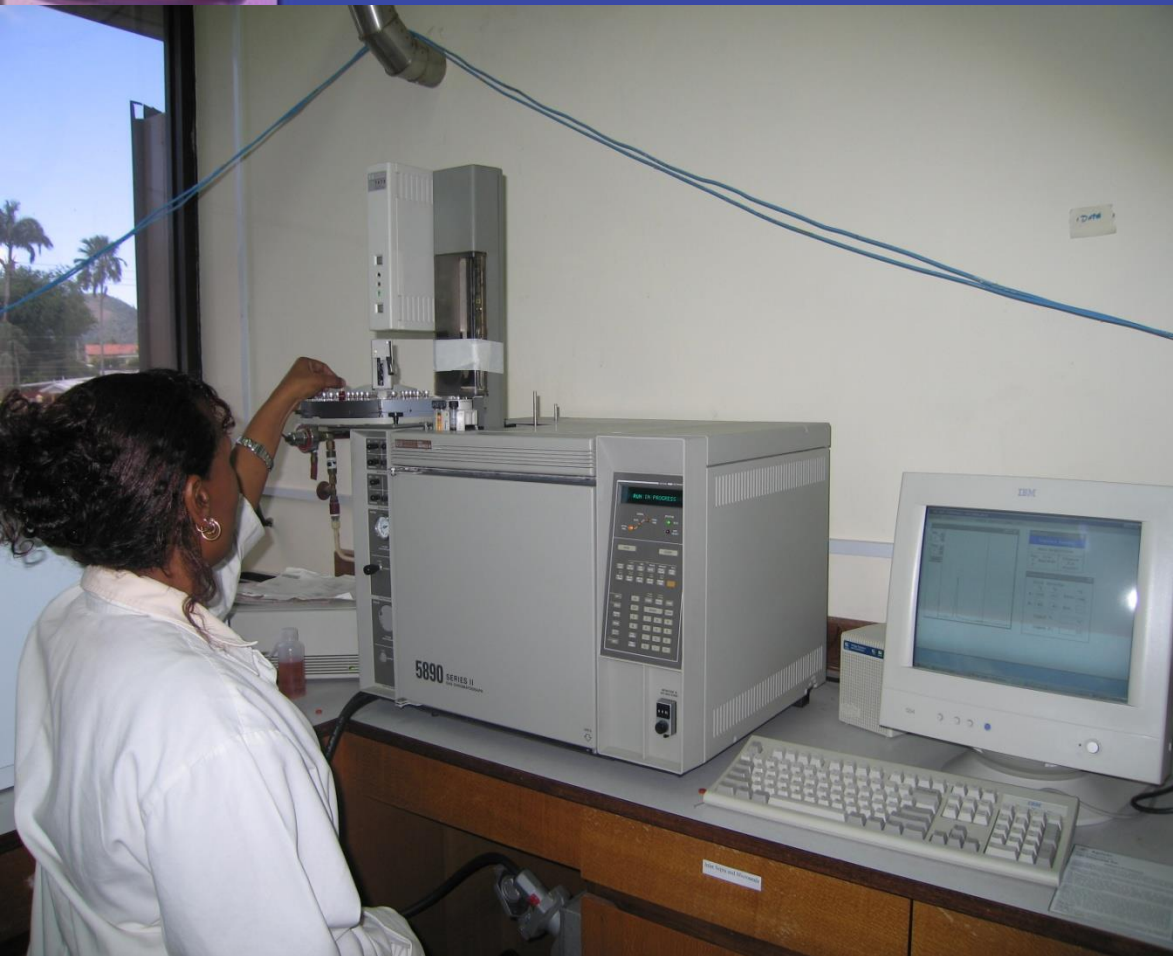
Cocaine in condoms



Cocaine in cosmetics

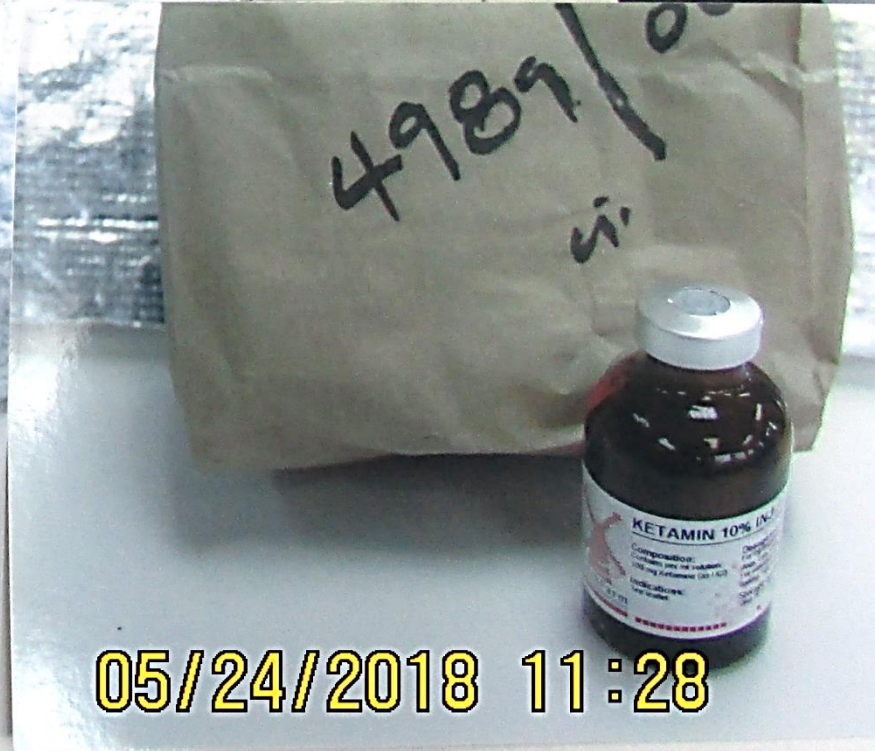
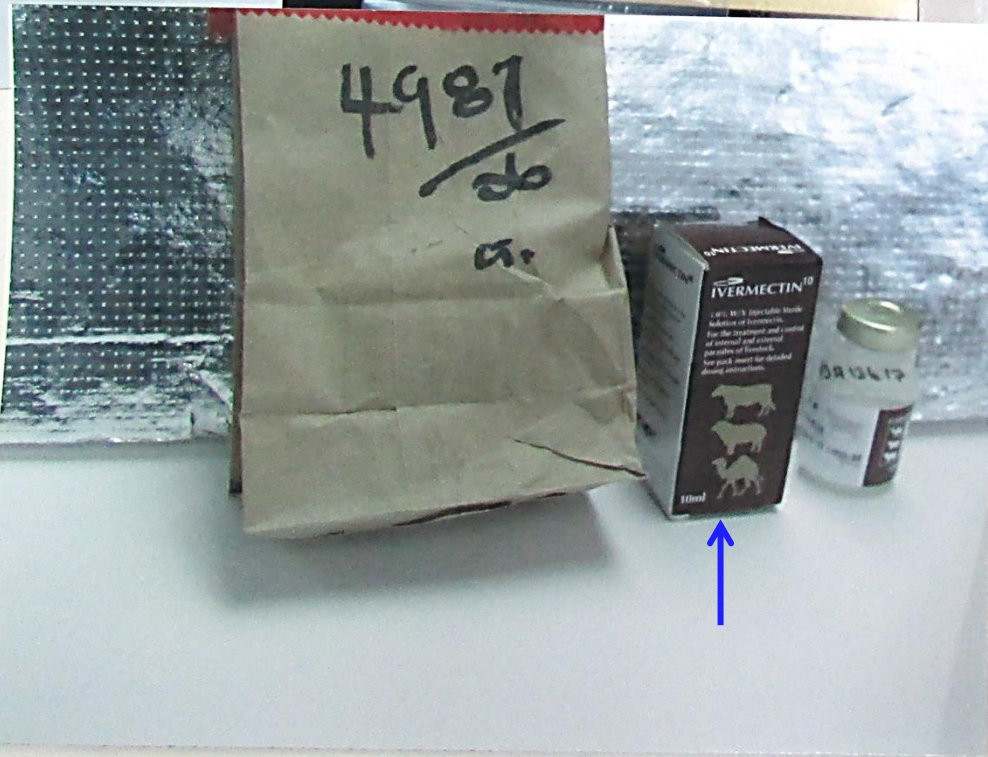
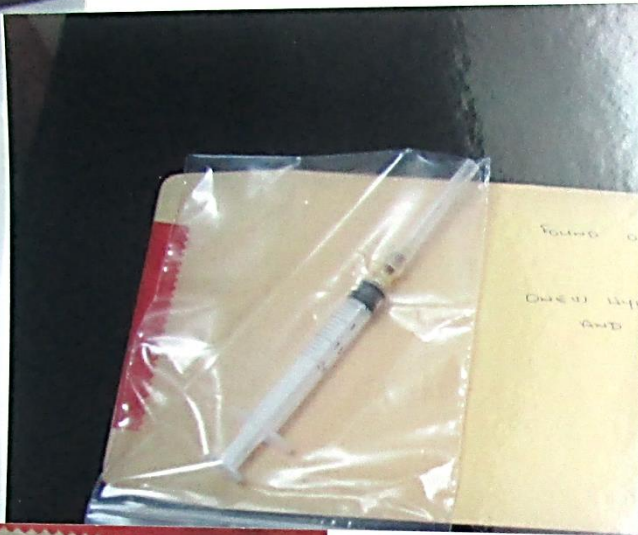


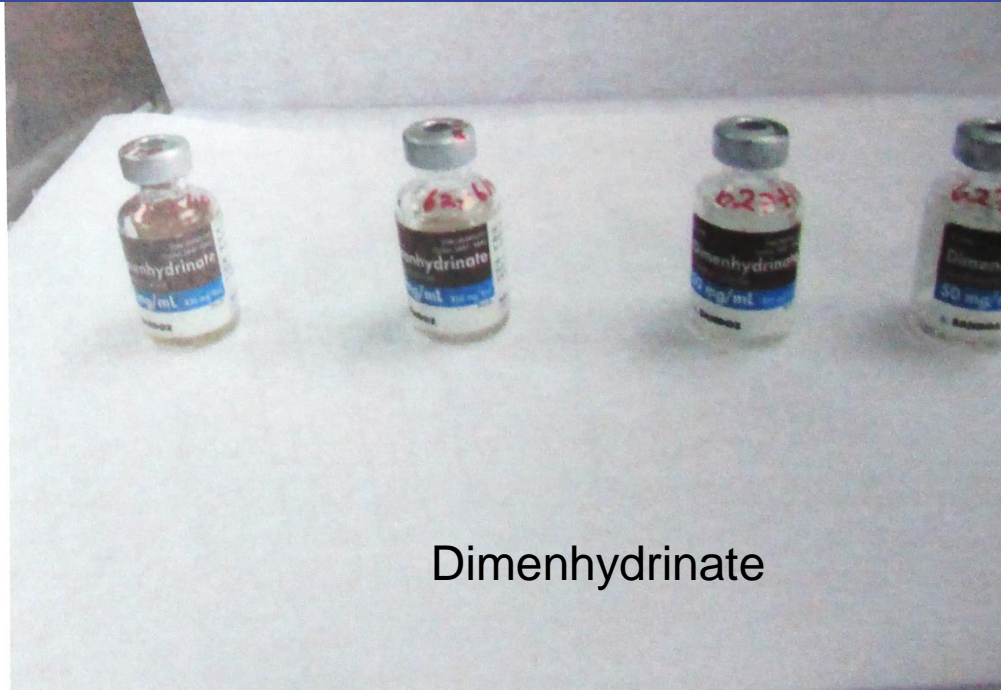
Forensic Toxicology



Analysis of body fluids
and other substances
for the presence of

- drugs
- alcohol
- poisons





Dimenhydrinate



Ketamine

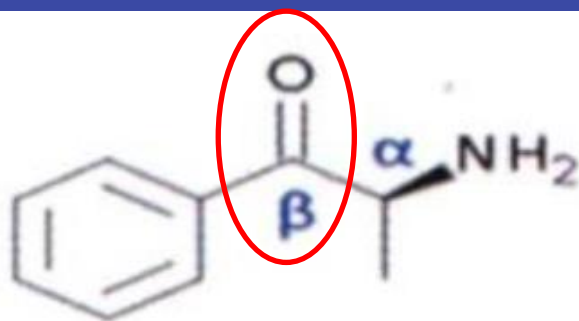


New Psychoactive Substances

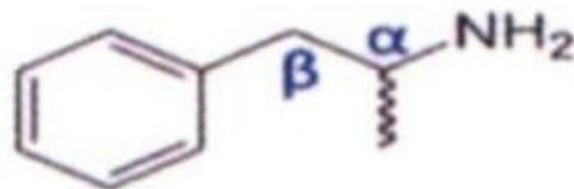
■ Definition

- New Psychoactive Substances (NPS) are drugs which are designed to replicate the effects of illegal substances like cannabis, cocaine and ecstasy whilst remaining legal.
- NPS are therefore not scheduled under the Single Convention on Narcotic Drugs (1961) nor the Convention on Psychotropic Substances (1971)

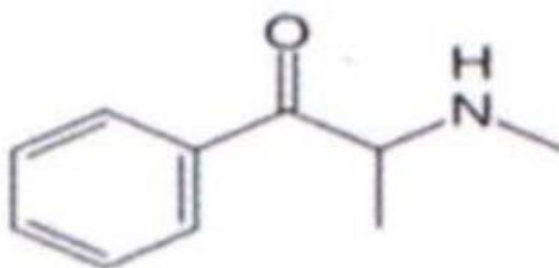
How are NPS produced?



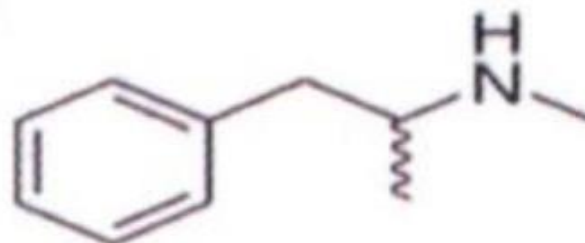
Cathinone



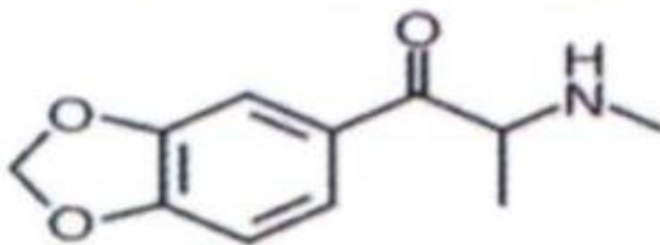
Amphetamine



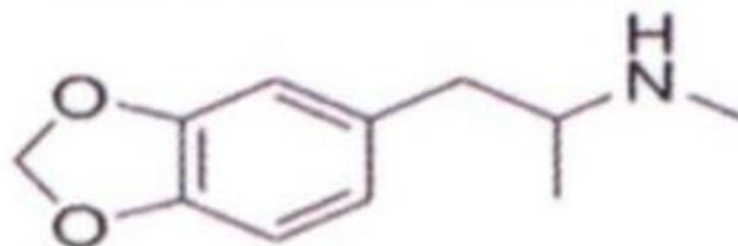
Methcathinone



Methamphetamine



Methyldone



MDMA



NPS Categories

1. Piperazines
2. Phenethylamines
3. Cathinones
4. Aminoindanes
5. Diphenylprolinol
6. Arylcyclohexylamines
7. Tryptamines
8. Synthetic Cannabinoids
9. Plants and extracts
10. Narcotics



NPS Unique Challenges

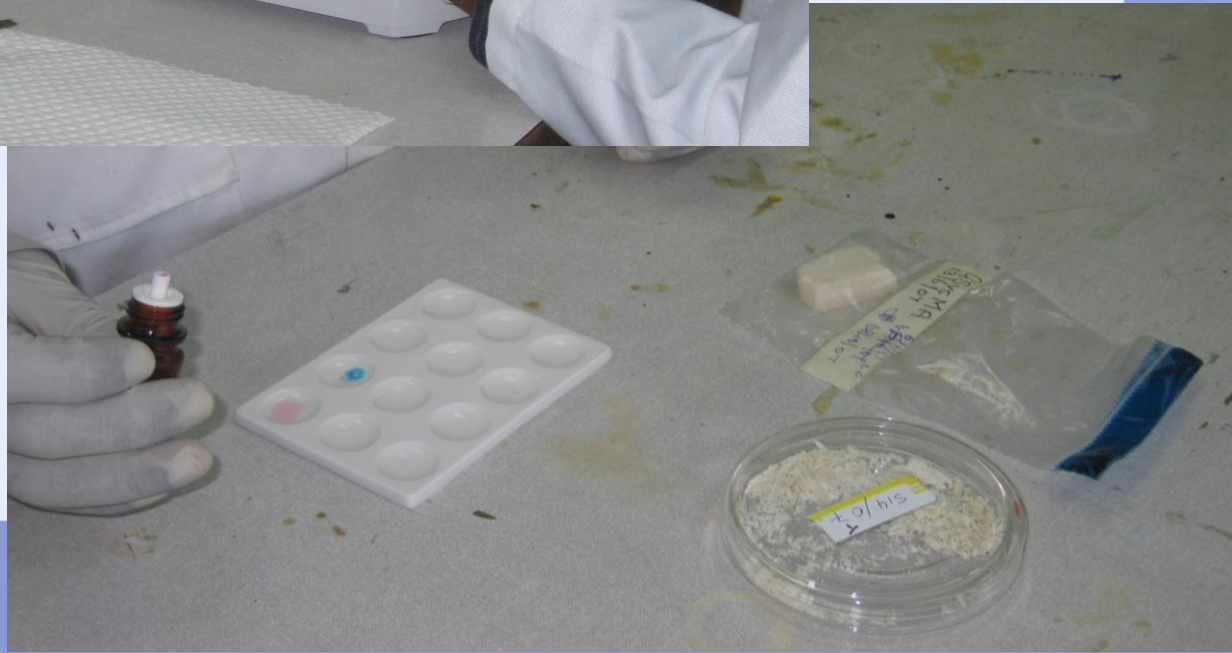
- Lack of Surveillance and reporting
- Difficult to detect through usual drug-screening methods
- Authorities cannot estimate the magnitude of the problem
- Unpredictable effects and unknown neurotoxic properties result in deaths due to overdose



Role of Forensic Laboratories

- **Capacity**
 - Labs are equipped with sophisticated instruments and equipment, chemicals and reagents to detect and identify NPS and precursors
- **Capability**
 - Labs employ experienced and trained experts to analyse, interpret and confirm NPS and precursors

Traditional Screening Test



Screening Test for NPS and Precursors



Handheld Raman Spectrophotometers



Fourier Transform Infra Red Spectrophotometer (FTIR)



Screening Test for NPS and Precursors



<u>S-037</u>	JWH-073 3-Hydroxybutyl metabolite, 100 µg/mL	\$195.00	1
<u>S-038</u>	Spice Cannabinoid Mix, 100 µg/mL of each component	\$256.00	1
<u>S-039</u>	JWH-018 N-(4-hydroxypentyl) metabolite-D ₅ (indole-D ₅), 100 µg/mL	\$205.00	1
<u>S-040</u>	JWH-073 N-(3-Hydroxybutyl) metabolite-D ₅ (indole-D ₅), 100 µg/mL	\$205.00	1
<u>S-041</u>	Spice Cannabinoid Mix 2, 100 µg/mL of each component	\$236.00	1
<u>S-043</u>	JWH-019 6-Hydroxyhexyl metabolite, 100 µg/mL	\$180.00	1

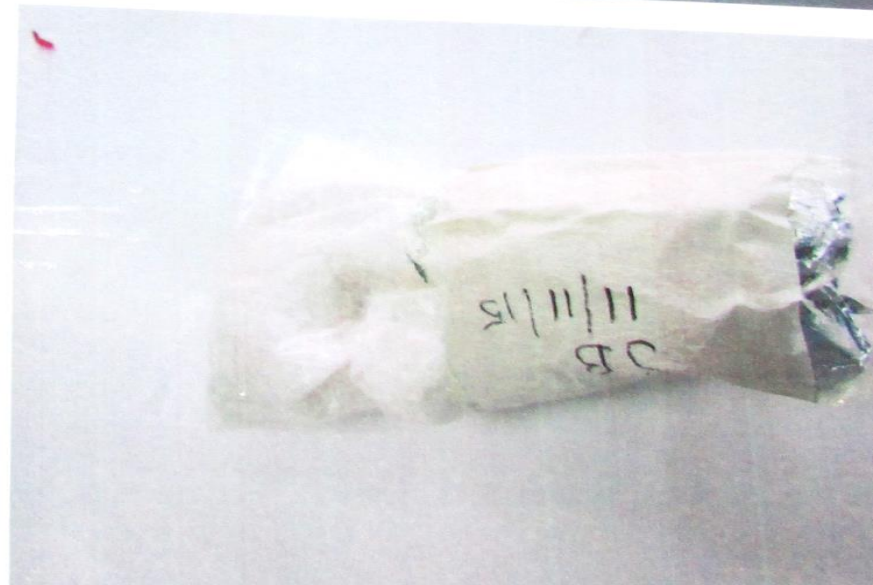
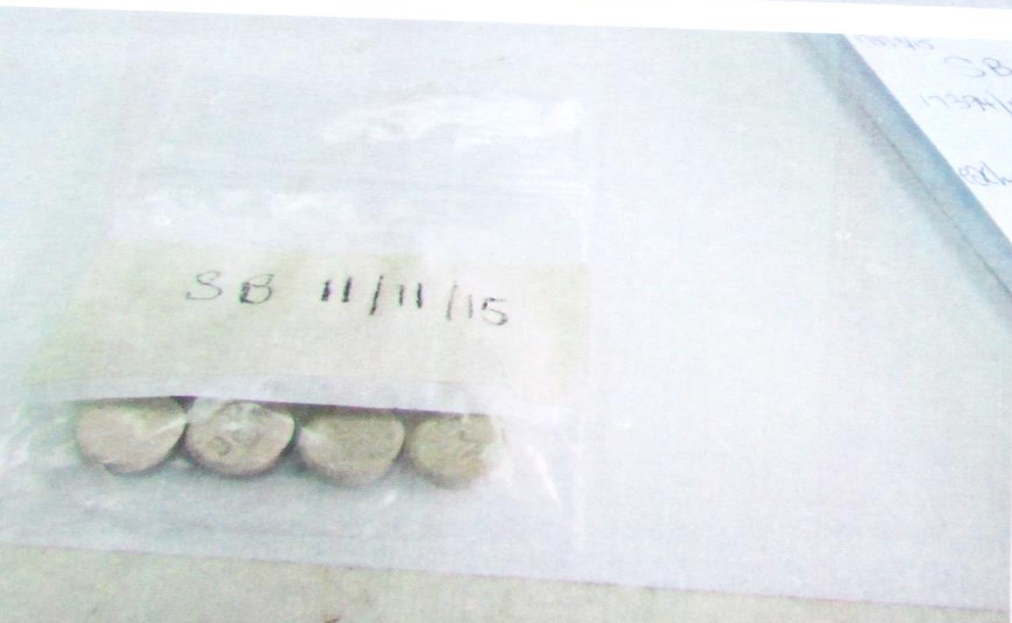
Instrument Room for Confirmatory Tests



Challenges with Drug Identification

- Standards are often not readily available and/or are expensive to purchase. Identification is achieved by matching results of the unknown to those of known substances found in reference libraries such as NIST and PMW.
- For the more polar, non volatile NPS samples gas chromatography is not an option. Liquid chromatography mass spectrometry (LCMS) can be used but due to the cost of this equipment many labs have not acquired one.

Ecstasy (cream tablets) & Ketamine(white crystalline substance)





Early Warning Systems

- Forensic Laboratories therefore form part of the local early warning systems for NPS and its precursor chemicals.
- Forensic laboratories must be mandated to report their findings to authorities at predetermined intervals such as in annual or quarterly reports
- Early Warning Systems help countries identify and communicate the risk of NPS



THE REPUBLIC OF TRINIDAD & TOBAGO



THE
OPERATIONAL PLAN
FOR DRUG CONTROL
IN
TRINIDAD & TOBAGO
2014 - 2018

Precursor Chemicals

- **Precursors chemicals are frequently used in the illicit manufacture of narcotic drugs and psychotropic substances**
- **The United Nations Convention Against Illicit Traffic in Narcotic Drugs and Psychotropic Substance, 1988 identifies the most crucial ones**
- **In Trinidad and Tobago Precursor Chemicals are scheduled under the Dangerous Drugs Act and Toxic Chemical and Pesticide Act**

THIRD SCHEDULE

[This Schedule, which contained amendments to the Interpretation Act, (Ch. 3:01) and the Summary Courts Act, (Ch. 4:20), has been omitted].

Section 6A,
27 of 1994.

FOURTH SCHEDULE

1. N. Acetylantranilic acid
2. Acetic anhydride
3. Acetone
4. Anthranilic acid
5. Benzene
6. Benzyl chloride
7. Benzyl cyanide
8. 2—Butanone (methyl ethyl ketone)
9. Ephedrine
10. Ergonovine
11. Ergotamine
12. Ethyl ether
13. Hydrochloric acid
14. Methylene chloride
15. 3, 4 Methylenedioxyphenyl—2—propanone
16. Norpseudo ephedrine
17. Phenylacetone acid
18. Phenylacetone
19. Piperidine
20. Potassium permanganate
21. Pseudo ephedrine
22. Sulphuric acid
23. Toluene
24. 1—Phenyl—2—propanone
25. Phenylacetic acid and its salts
26. Phenylpropanolamine and its salts
27. Bromobenzyl cyanide
28. Lysergic acid
29. Ergometrine and its salts
30. Sodium sulphate
31. Potassium carbonate
32. Sodium carbonate
33. Isosafrol (cis+trans)
34. Piperonal
35. Safrole
36. Methylethyl ketone (MEK)

The salts of the substances are listed in this Schedule whenever the existence of such salts is possible.

Challenges with NPS Precursors

- The Precursor Chemicals (No 2) Bill, 2014 is not yet Law in my country
- Currently there is no agency to regulate diversion of precursor chemicals

Bill Essentials

The Precursor Chemicals (No. 2) Bill, 2014

An Act to provide for the monitoring of prescribed activities and the prevention of the diversion of precursor chemicals and other chemical substances used, or capable of being used, in any type of illicit transaction involving narcotic drugs, psychotropic substances and other drugs or substances having a similar effect and for purposes connected therewith


Bill No: Bill 6 of 2014

Introduced in: The Senate

Introduced by: The Minister of National Security, Senator Gary Griffith

Introduced on: August 4, 2014



- 
- 22. Provides that a designated officer may be accompanied by an expert knowledgeable in specified chemical substances or specified chemical equipment.
 - 23. Provides that an officer who seizes anything or takes a sample under section 15(3) may submit it to an analyst.
 - 24. Provides for the storage and disposal of specified equipment in accordance with the Pesticides and Chemicals Act.
 - 25. Provides that where a person is convicted of an offence under the Act, the Court may make an order for the forfeiture of the property on which the offence was committed.

PART VI – OFFENCES

- 26. Provides that a person who uses or causes another person to use a specified chemical substance or equipment for manufacturing narcotic drugs, psychotropic substances or other substances having similar effect commits an offence and is liable –
 - a) on summary conviction to a fine of one million dollars and to imprisonment for three years; or
 - b) on conviction on indictment to a fine of three million dollars or imprisonment for five years.

Considerations

- The Bill is inconsistent with section 4 and 5 of the Constitution and requires a three-fifths majority
- • The Bill provides that certain ministries are mandated to share information described in Schedule 3 with the Precursor Chemicals Unit.



Thank You !