Chemistry, “Party Pills” and Clandestine Laboratories or “Whose responsibility is it to make the world idiot-proof?”

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Specialist Science Solutions
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protecting people and their environment through science
Features of the New Zealand drug “scene”

• Isolation

• Improvised, “number 8 wire” approach

• Distinctive trends (e.g. “homebake” heroin)
The rise of methamphetamine – “P labs”

- First methamphetamine lab encountered in 1996
- “Street” methamphetamine increased in purity
- Name “P” derived from “pure”
Methamphetamine Point Bags
(contain approximately 100mgs)
Purity of Methamphetamine in Point Bags

- Less than 5%
- 5-9%
- 10-39%
- 40-59%
- 60-75%
- Greater than 75%
Methamphetamine Laboratories In New Zealand
Methamphetamine from Pseudo/Ephedrine

- There are many synthetic routes to manufacture methamphetamine.
- One method used is the reduction of ephedrine or pseudoephedrine with hydriodic acid and red phosphorus, commonly known as “HI/Red P”, and is relatively simple.
- In New Zealand the most routinely encountered method is the reduction of pseudoephedrine with hypophosphorous acid and iodine or red phosphorus with iodine and water. These are variations of the “HI/Red P” method.
Clandestine Laboratories
Methamphetamine synthetic pathways (1)

- Multiple synthetic routes possible with variations on each
- NZ: hydriodic acid (HI)/red phosphorus route using pseudoephedrine (or ephedrine) precursor
- Variations use hypophosphorus acid and iodine or a combination of reagents to give the same reaction chemistry
Methamphetamine synthetic pathways (2)

Internationally other common synthetic routes use a variety of precursors, e.g.

- Ephedrine or pseudoephedrine
- Phenyl-2-propanone (P2P)
- Benzylchloride

And a variety of reaction chemistries based on one or another of these reagents:

- Lithium in liquid ammonia
- Thionyl chloride followed by catalytic hydrogenation
- Methylamine with a wide variety of other possible reagents

These chemistries are very different to the HI/red P route. Some require a higher degree of chemistry skills. Some are suitable for “industrial scale” clandestine laboratories.
Clandestine Laboratories
Pseudoephedrine

• Pseudoephedrine is the main precursor for the illicit manufacture of methamphetamine in New Zealand
• Pseudoephedrine has been relatively readily available in many over the counter and prescription pharmaceutical preparations
• The diversion of these preparations containing pseudoephedrine for the illicit manufacture of methamphetamine has been a problem.
Seizures of Precursors at the New Zealand borders

- In 2004/05, the New Zealand Customs Service seized in excess of 300 kilos of Precursors (mainly in the form of ContacNT granules)
- Sufficient to produce between 60 (50% yield) and 84 (70% yield) kilos of Methamphetamine
- NDIB figures: In 2008 just under 1000 seizures and close to 4 million tablet equivalents; YTD as at end September 2009, 3.7 million tablet equivalents, 633 incidents
External Body Packing
Inside Books

Operation Turbulence

Item RF/10/4

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Sofas
Sofas
Restricting Availability of Pseudoephedrine?

- Report from Office of the PM’s Chief Science Advisor (Professor Sir Peter Gluckman)
- Recommendations from EACD
- Report from “methamphetamine task force”
- Estimated 10-30% of precursor supply is of domestic origin
- Recommendation to reschedule pseudoephedrine from Class C3 (OTC/Prescription) to B2 under MoD Act
- Available only on prescription; other restrictions possible (compare methylphenidate = “Ritalin”)
- Phenylephrine is alternative nasal decongestant (already has 70+% of OTC market)
New Zealand drug legislation

• Medicines Act and Regulations
  - substances not listed cannot be marketed as medicines

• Misuse of Drugs Act and Regulations
  - includes medicines for which an increased level of control is considered necessary and substances that are prohibited because of risk or history of abuse
  - substances not listed are not controlled
Scheduling of substances under the Misuse of Drugs Act

• Minister of Health is advised by an Expert Advisory Committee on Drugs (EACD)

• Matters to be considered by EACD
  - the likelihood or evidence of drug abuse
  - specific effects of drug, including pharmacological, psychoactive and toxicological effects
  - the risks, if any, to public health
Scheduling of substances under the Misuse of Drugs Act (continued)

- The therapeutic value of the drug, if any
- The potential for the drug to cause death
- The ability of the drug to create physical or psychological dependence
- The international classification and experience of the drug in other jurisdictions
- Any other matters that the Minister considers relevant
Drugs assessed as posing a

• very high risk of harm should be scheduled as Class A

• high risk of harm should be scheduled as Class B

• moderate risk of harm should be scheduled as Class C
Benzylpiperazine (BZP) and analogues became very widely available in New Zealand as “party drugs”

- BZP originally synthesised as an anthelmintic agent
- Later investigated for possible antidepressant activity
- Promoted in some quarters as “herbal high”
- Stimulant (1/10 potency of dexamphetamine)
- Often combined with TFMPP
- At overdose: palpitations, agitation, nausea, vomiting and seizures
“(IL)Legal” Highs – Party Pills
Benzylpiperazines

BZP

TFMPP
Controlled Drug Analogues
‘Designer Drugs’

• “Safety-net” provision in Misuse of Drugs Act

• Class C7

• A “structure substantially similar to that of any controlled drug”
How then should BZP be classified?

• Not a “Controlled Drug Analogue” under NZ legislation

• Led to introduction of a Fourth Class: “Restricted Substances” with restrictions such as:
  - age limit
  - limits on advertising

• Later, following further local studies the EACD recommended rescheduling BZP and related piperazines as Class C
How effective is this new “Restricted Substance” regulatory framework?

• “mixed reviews”

• other countries also grappling with the issue:
  - United Kingdom: “Drug Classification: Making a hash of it”
  - New Scientist, 30 September 2006
    - “New Zealand, however, has taken a different and arguably more enlightened approach…. in response the government introduced a new Class of drug called ‘non-traditional designer substances’, also known as Class D”
“Ease” (methylonone)

- 2-methylamino-1- (3,4 methylenedioxyphenyl) propan-1-one
- So-called ‘clinical trial’ launched by *Stargate International* (Matt Bowden)
- Controversy generated by Great Southern Television investigation and approach to Minister
- “Ease” subsequently withdrawn
Amphetamine Class B1

Methamphetamine Class A

Cathinone Class B2

Methcathinone Class B1

Methylenedioxymethamphetamine (MDMA) Class B1

Methylone 3,4-methylenedioxy – N-methylcathinone Class C7
What are the latest fads?

• Salvia divinorim  
  (salvinorim A = hallucinogenic)

• Diphenylprolinol  
  (e.g. “Neuro Blast”)

• DMAA

• “Spice” and herbal mixes
Diphenylprolinol

Pipradrol

(Both mild stimulants)

(C5 controlled drug)
DMAA

• DMAA = dimethylamylamine or 1.3-dimethylpentylamine, also described as “geranamine” or “extract of geranium oil”
• Mild stimulant
• Government has announced intention to reschedule as a “Restricted Substance”
• Current examples (second also contains caffeine):
“Spice” and herbal mixes

- Herbal mixes often sold as “incense mix”
- Contain additional active ingredients
Analogues of THC

This group of compounds contain HU-210, HU-211 and nabilone. HU-210 and HU-211 are shown below, along with the structure of THC.

HU-210 and HU-211 are analogues of THC and so are Class C CD
CP Series

This group of chemicals with cannabinoid-type effects were synthesised by the chemical company Pfizer, and includes the following compounds:

The CP compounds are in the opinion of ESR, analogues of THC and so are Class C controlled drugs
This group of compounds were synthesised by JW Huffman in the 1990s. Some of these are shown below.

Currently the JWH compounds are not controlled.
Acknowledgements:

ESR Drugs Team
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For material provided
Questions?

[Cartoon: "Look at it this way..."
"Whatever it was, the world is better off without it."
"Parker"]
“Protecting people and their environment through science”

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