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**Pure chemistry – businesses,  
expert evidence and  
psychoactive substances**

*Psychoactive Substances Act 2016*

**Article by David Bowden**

# Psychoactive Substances Act 2016

Pure chemistry – businesses, expert evidence and psychoactive substances

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The [Psychoactive Substances Act 2016](#) received Royal Assent on 28 January 2016. The Home Office says that it intends to bring the Act into force by the summer of 2016.

What does the Psychoactive Substances Act 2016 mean for those advising businesses on its provisions? How will courts approach proving that something is a psychoactive substance? What role will experts have to play on this? David Bowden, freelance independent consultant, comments on the consequences of the 2016 Act which has now received Royal Assent. It also notes the points made by Rt Hon Lord Howard of Newport CBE, Rudi Fortron QC and Dr Robert Ardrey at a seminar held at University College London on 9 March 2016 and chaired by Professor Ian Dennis.

## **What is the background leading to this Act?**

**Lord Alun Howard of Newport CBE (AH):** I am the vice chairman of the All Party Drugs Misuse Group (APG). Before the 2016 Act there was a crisis. Head shops selling psychoactive substances had been closed down as had UK based websites selling these. There was a problem with psychoactive substances in prisons.

The production of psychoactive substances had been a market response to prohibition. Drugs entrepreneurs sought to replicate substances that were controlled under the Misuse of Drugs Act 1971 (MDA). This was easy for a competent chemist to achieve. The Report of the APG noted 101 new psychoactive substances, by 2014 there were 693 websites selling these and it was estimated there were 250 head shops in the UK. Social networking sites made it easy to connect buyers and sellers.

Temporary class drug orders were unable to keep pace. British people are the biggest consumers of psychoactive substances in Europe with common poly drug use and drug bingeing at weekends common among young people. All the 3 main political parties at the 2015 General Election in their manifestos committed to some sort of control.

The prohibition orthodoxy in the MDA had failed. In the 1970s, 10% of the population had used or tried cannabis – by 2009 this had risen to 35%. The figures presented to the APG estimated a market value at \$188 Billion. Prohibition had been a vast gift to criminals. Some of the profits from drugs had been used to finance terrorism. It is an engine of crime. It had been impossible for the police to enforce the MDA properly.

The National Crime Agency reported that it had been able to inspect only 2% of freight imported into the country. It estimated that there are 8000 cannabis farms in the UK. The police were handling 5000 drugs cases a week. In prisons psychoactive substances were being imported in the leaves of books. However there had never been a drugs free world.

### **What are the main provisions of the Act? How is it structured?**

**AH:** It will be an offence to produce, supply or offer to supply psychoactive substances. It will also be an offence to import or export substances capable of producing a psychoactive effect. There are exemptions for substances that are already caught by the MDA. The 2016 Act contains a schedule of exemptions for items such as food, caffeine and medicine.

There are aggravated offences in section 6 of the 2016 Act. It also introduces new stop and search powers. There are graded responses such as a prohibition notices. The extreme penalty is a prison sentence of 7 years. Possession of a psychoactive substance for personal use is not a criminal offence. It is not an offence to possess apparatus (such as a chemistry set) that is capable of producing psychoactive substances.

**RF:** The Act will cover commercial retailers of legal highs. Newsagents and corner shops who have sold psychoactive substances have generally been in it for the money. They are usually keen to be on the right side of the law. Although new offences are created by the 2016 Act there are likely to be few prosecutions. The regime in the 2016 Act is mutually exclusive to that in either the MDA or the [Human Medicines Regulations 2012](#) (2012 No 1916)

### **What is a psychoactive substance?**

**Rudi Fortron QC (RF):** There is a definition in section 2 of the 2016 Act. This says:

*‘2 Meaning of “psychoactive substance” etc*

*(1) In this Act “psychoactive substance” means any substance which—*

*(a) is capable of producing a psychoactive effect in a person who consumes it, and*

*(b) is not an exempted substance (see section 3).*

*(2) For the purposes of this Act a substance produces a psychoactive effect in a person if, by stimulating or depressing the person’s central nervous system, it affects the person’s mental functioning or emotional state; and references to a substance’s psychoactive effects are to be read accordingly.*

*(3) For the purposes of this Act a person consumes a substance if the person causes or allows the substance, or fumes given off by the substance, to enter the person’s body in any way.’*

The Explanatory Note which accompanied the Bill referred to changes in alertness, mood, empathy or drowsiness.

**Dr Robert Ardrey (RA):** I am director of Triple A Forensics. I am a forensic scientist specializing in purity determination and impurity profiling of illicit drug seizures and the analysis of drugs and their metabolites. In organic chemistry, there is typically a d-version of a molecule and a l-version of the same molecule. They are mirror images of each other when represented graphically. These stereo isomers, however, whilst having the same chemical composition can produce different effects. In one analysis of the d-version of amphetamine against the l-version, the d-version was 4 times more active than the other isomer.

### **Can a chemist prove a substance is psychoactive? Is there a subjective element?**

**RA:** There is no method of determining psychoactivity. The Chair of the ACMD wrote to the Home Secretary on 2 July 2015. He advised her that ‘*such proxy measures may not stand up in a court of law*’ and that there was ‘*no guarantee of proving psychoactivity in a court of law*’.

The late Alexander Shulgin was a pharmacologist known as the ‘*godfather of ecstasy*’. He had synthesized lots of drugs and taken them. With his wife he had written 2 books about his experiences – **PIHKAL** and **TIHKAL** (an acronym for ‘*Trips I have known and loved*’) which extensively described his and personal experience with psychoactive drugs. There is a different threshold for each drug to work. Different people have different thresholds for psychoactive drugs to work. There are websites such as [www.bluelight.org](http://www.bluelight.org) where users can share or exchange information on psychoactive substances.

The use of animals to test psychoactive substances has no value at all according to Shulgin.

### **How will the issue of proof be addressed under the Act in practice?**

**RA:** It is not certain what is meant to ‘identify’ a drug from a legal standpoint. However a scientist will have to assume the crime samples are identical. He will then need to consider what other substances could give the same analytical data. Often the prosecution case on this does not go far enough.

### **What tools are available to an expert? What results do they produce?**

**RA:** There are 3 main tools available:

- Raman spectroscopy,
- Gas chromatography, and
- Mass spectrometry.

Raman spectroscopy provides a rapid and effective screening of samples but is not as good as is made out. Mass spectrometry weighs the molecule and then smashes it to bits. It then provides a chemical analysis of the different bits. Gas chromatography is a mixture of these methods. It is better to test using a combination of both gas chromatography and mass spectrometry.

However there are limitations to all 3 of these techniques and it is not always possible to obtain an unequivocal identification of the substance tested. With isomers there is a problem in getting a genuine reference sample. With mass spectrometry the covalent bonds in the molecules break and it is difficult to carry out unequivocal identification.

### **How will an expert approach his task?**

**RA:** As always the expert’s duty is to assist the court. An expert witness has to sign a declaration in his report acknowledging this duty and to remain independent of the parties.

### **What role will the forensic science service have to play?**

**RA:** The expense of proving a substance is psychoactive rests with the police. Like all public bodies their budgets have been squeezed. It is unlikely the forensic science service will be able to assist. In the end, it may not prove feasible to prosecute under the 2016 Act. In Derbyshire, the police have taken back testing in house from the forensic service.

### **What defences are available?**

**RF:** The offences under the 2016 Act are not absolute and each one has its own mental element which is typically knowledge that a substance is psychoactive. There is no simple offence of possession of a psychoactive substance. ‘Food’ is exempt under

Schedule 1 of the 2016 Act. This is defined in paragraph 7 as ‘Any substance which—  
(a) is ordinarily consumed as food, and (b) does not contain a prohibited ingredient’.  
What does ‘ordinarily consumed as food’ actually mean?

### **What penalties does the Act provide?**

**RF:** The maximum penalty under the 2016 Act is a prison sentence of 7 years.

### **Are there any grey areas?**

**RA:** Possession of a psychoactive substance is not an offence but if a number of people club together to buy it for social sharing then this is caught by the 2016 Act.

**RF:** On the face of the s3 definition, the 2016 Act would appear to catch the burning of incense in churches or even aromatherapy candles where these substances stimulate someone’s emotional state. The prosecution will need to prove that the drug will have a psychoactive affect. There will be problems with proving this in the absence of either clinical trials or animal testing. The 2016 Act is different to the Irish law. However the prosecution does not need to show that the effects of the psychoactive substance are significant, substantial or obvious to a bystander.

On its face it seems it will be impossible to prove psychoactivity. There are real issues with potency such as:

- How much needs to be taken,
- What dosage, and
- Is it enough that it works on 1 receptor in the brain?

The definition refers to ‘*stimulating or depressing the person’s central nervous system*’ and so the prosecution needs to prove a cellular effect on the structure of the brain.

The position on energy drinks is not clear. They may not be exempt as being ‘food’ under Schedule 1. If an energy drink does have a psychoactive affect because it stimulates the central nervous system it would appear to be caught by the s2 definition. Schedule 1 paragraph 3 exempts ‘*Alcohol or alcoholic products*’ but it is not clear if powdered alcohol is covered by this exemption or not.

It is not clear on what basis a court will be able to sentence unless it has expert evidence before it as to the relative harm of the psychoactive substance.

### **What new powers does the Act create and who are these powers given to?**

**RF:** It is likely that the new civil powers in the 2016 are most likely to be used. Civil powers are given to both police and local authorities. They can issue either a prohibition notice or a prohibition order.

### **What are the appeal provisions?**

**RF:** There is no appeal available where a ‘premises notice’ has been issued. However, a recipient of such a notice does not have to comply with it. If there is failure to comply, the police then have the option of going to court to obtain an order. On such an application the Magistrates Court can attach any condition it thinks fit. They can order the prevention of access to premises for up to 6 months.

**How does the Act fit in with financial confiscation powers under previous laws?**

**RF:** 'Lifestyle offences' will be dealt with under the provisions of the Proceeds of Crime Act 2002.

**When will the Act come into force?**

**RF:** As things presently stand, the date we are working to is 6 April 2016 but this is not a date that is yet set in stone.

**What will happen in the period after Royal Assent and the Act coming into force?**

**RF:** The head shops will close down. There are signs already that such shops are winding down their trade. A clandestine market may end up taking over or the trade may go overseas instead. New compounds will inevitably be developed.

**What have other jurisdictions done in this field?**

**RF:** New Zealand passed its Psychoactive Substances Act in 2013. It has adopted a regulated regime. If a manufacturer can show a product has a low risk then it can be approved. However the manufacturer bears the burden and expense of demonstrating this to be the case. The UK government rejected the New Zealand approach when the bill which led to the 2016 Act was introduced. This is a missed opportunity for the UK.

**RA:** In the USA, if a drug is shown to be 'substantially' similar to an existing substance that is already banned by the Controlled Substances Act then it too will be banned. In New Zealand a forensic scientist prosecutes the case.

**16<sup>th</sup> March 2016**