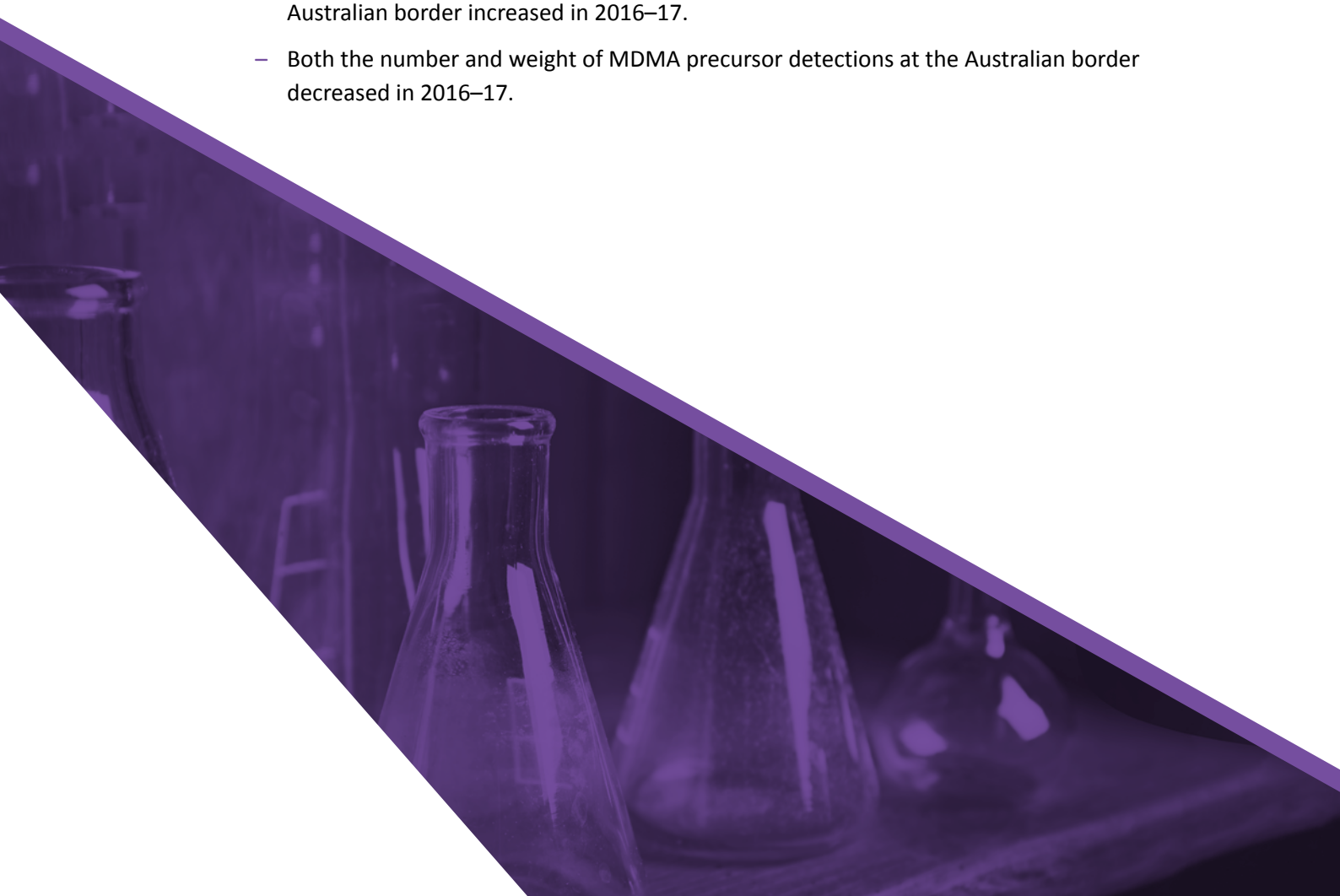
CLANDESTINE LABORATORIES AND PRECURSORS

KEY POINTS

- Many countries produce and trade chemicals that can be diverted for use in illicit drug manufacture. Preventing the diversion of precursors, reagents and solvents used in illicit drug manufacture is an effective and efficient way of limiting the supply of illicit drugs.
- Indicators of domestic drug production provide a mixed picture.
  - The number of clandestine laboratories detected nationally decreased for the fifth consecutive reporting period in 2016–17.
  - Around half of the clandestine laboratories detected nationally in 2016–17 were addict-based, with other small scale and medium seized laboratories accounting for an increasing proportion of detections this reporting period.
  - Both the number and weight of ATS (excluding MDMA) precursor detections at the Australian border increased in 2016–17.
  - Both the number and weight of MDMA precursor detections at the Australian border decreased in 2016–17.



MAIN FORMS

Clandestine laboratories—commonly referred to as clan labs—are used to covertly manufacture illicit drugs or their precursors. Clandestine laboratories range from crude, makeshift operations using simple processes, to highly sophisticated operations using technically advanced processes, equipment and facilities. Irrespective of their size or level of sophistication, the corrosive or hazardous nature of many of the chemicals used in clandestine laboratories pose significant risks to the community. Many of the chemicals are extremely volatile and in addition to contaminating the laboratory premises, they can also contaminate the surrounding environment, including soil, water and air (EMCDDA & Europol 2016; UNODC 2016).

Drug manufacture carried out in clandestine laboratories may involve any or all of the following processes:

- Extraction—the active chemical ingredients are extracted from a chemical preparation or plant, using a chemical solvent to produce a finished drug or a precursor chemical. Examples of extraction include the extraction of precursor chemicals from pharmaceutical preparations, or the extraction of morphine from opium.
- Conversion—a raw or unrefined drug product is changed into a more sought-after product by altering the chemical form. Examples include converting cocaine base into cocaine hydrochloride or methylamphetamine base into crystalline methylamphetamine hydrochloride.
- Synthesis—raw materials are combined and reacted under specific conditions to create the finished product through chemical reactions. Synthetic drugs such as methylamphetamine, 3,4-methylenedioxymethylamphetamine (MDMA) and lysergic acid diethylamide (LSD) are created through this process.
- Tableting—the final product is converted into dosage units. An example is pressing MDMA powder into tablets.

There are three types of substances used in illicit drug manufacture:

- Precursors—considered the starting materials for illicit drug manufacture. Through chemical reactions, the precursor's molecular structure is modified to produce a specific illicit drug. For example, precursors such as ephedrine (Eph) and pseudoephedrine (PSE) are converted to methylamphetamine.
- Reagents—substances used to cause a chemical reaction that modify the precursor's molecular structure. For example, when the reagent acetic anhydride is mixed with the precursor phenyl-2-propanone (P2P), the resulting compound is methylamphetamine.
- Solvents—added to the chemical mixture to ensure effective mixing by dissolving precursors and reagents, diluting the reaction mixtures, and separating and purifying other chemicals. For example, acetone and hydrochloric acid are used in heroin production (UNODC 2014).

The method of illicit drug manufacture employed is influenced by a number of factors, including the skill of the person and the availability of precursors. In Australia, amphetamine-type stimulants (ATS), specifically methylamphetamine, is the predominant drug manufactured in detected clandestine laboratories. The manufacturing methods and precursors used to manufacture ATS vary.

- The predominant processes used in Australia for manufacturing methylamphetamine are comparatively simple, using readily available basic equipment and precursor chemicals, with PSE and Eph the most common precursors used.
- By comparison, MDMA manufacture is considered more complicated, requiring a greater knowledge of chemistry and use of precursor chemicals that are more difficult to obtain.

INTERNATIONAL TRENDS

Many countries produce and trade chemicals that can be diverted for use in illicit drug manufacture. The quantity and type of precursor chemicals originating in each country varies according to the country's industry size and requirements. In 2014 the Bureau of International Narcotics and Law Enforcement Affairs (INL) designated 34 countries as major sources of precursors or essential chemicals that may be used in the production of illicit drugs.[1] Countries were designated based on the volume of precursor chemicals they produced and their proximity to drug-producing regions. Designation is not an indication of inadequate chemical controls or ability to enforce controls. China (including Hong Kong) and India remain significant global producers and exporters of precursor chemicals (BINLEA 2017).

Preventing the diversion of precursors, reagents and solvents used in illicit drug manufacture is an effective and efficient way of limiting the supply of illicit drugs. As many of these chemicals have legitimate industrial and domestic uses, control measures have to balance access for legitimate use with efforts to reduce their diversion to illicit markets. At an international level this concept is illustrated by the 1998 United Nations Convention against Illicit Traffic in Narcotics Drugs and Psychotropic Substances[2], which aims to prevent the diversion of chemicals from the licit market for use in the manufacture of illicit drugs. Ongoing international cooperation continues to prevent the diversion of precursor chemicals, identify new chemicals used as alternatives to known precursors and identify chemicals used in the manufacture of new, high-threat drugs. In March 2017, the United Nations Commission on Narcotic Drugs (CND) made the decision to schedule N-phenethyl-4-piperidinone (NPP) and 4-anilino-N-phenethylpiperidine (ANPP) and place the two precursors under international control. NPP and ANPP are precursors for fentanyl-type substances, which have been associated with a large number of deaths (BINLEA 2017; UNODC 2017a; UNODC 2017b).

1 The 34 countries include Afghanistan, Argentina, Bangladesh, Belgium, Bolivia, Brazil, Canada, Chile, China (including Hong Kong), Colombia, Costa Rica, Dominican Republic, Egypt, El Salvador, Germany, Guatemala, Honduras, India, Indonesia, Iraq, Mexico, Myanmar, the Netherlands, Nigeria, Pakistan, Peru, Republic of Korea, Singapore, South Africa, Switzerland, Taiwan, Thailand, the United Kingdom (UK) and the United States (US).

2 The 1998 Convention sets out specific measures for the manufacture, distribution and international trade of a number of chemicals frequently used in the manufacture of illicit drugs. These are listed under two categories: Table I lists the more strictly controlled substances and Table II lists the relatively less controlled substances.

To assist in reducing the diversion of chemicals to illicit drug manufacture, the International Narcotics Control Board (INCB) established two ongoing international initiatives—Project Prism and Project Cohesion. Project Prism, which commenced in 2003, monitors and targets chemicals used in the illicit manufacture of ATS. Project Cohesion, which commenced in 2006, monitors and targets chemicals related to the production of heroin and cocaine. In 2012, the INCB established the Precursor Incident Communication System (PICS) to monitor non-scheduled chemicals and to prevent the diversion of those substances into the illicit market. As a real-time online communication tool, PICS shares intelligence and facilitates direct contact between national authorities to launch bilateral and regional investigations into chemical trafficking. The system includes non-scheduled chemicals such as pre-precursors, products containing controlled precursors, derivatives and the illicit manufacture of new drugs (BINLEA 2017; INCB 2017).

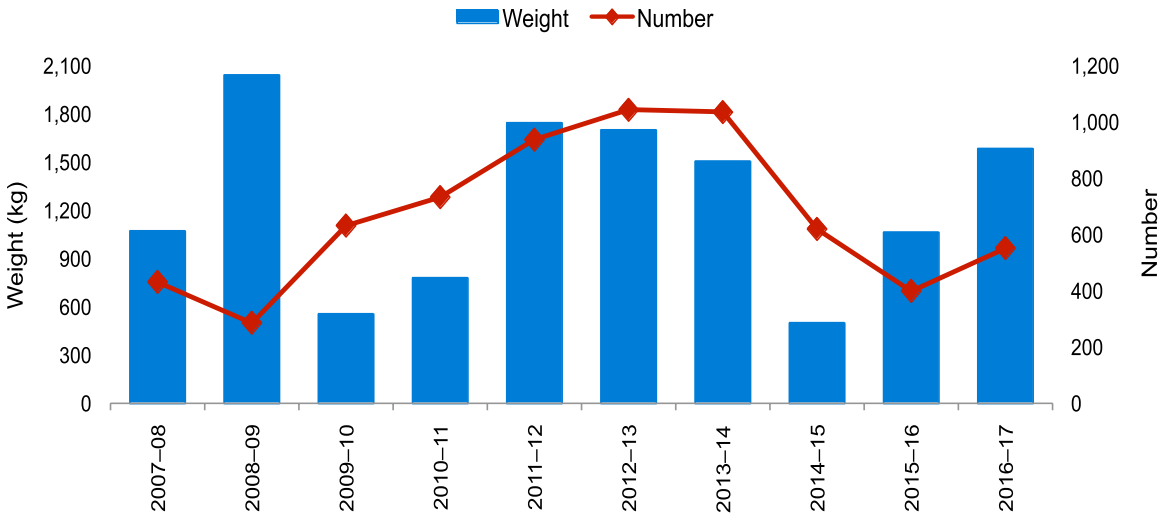
DOMESTIC TRENDS

AUSTRALIAN BORDER SITUATION

As ATS are the most common illicit drugs manufactured in domestic clandestine laboratories, border detection data in this report focuses on ATS (excluding MDMA) precursor and MDMA precursor detections. In 2016–17, ATS (excluding MDMA) precursor border detections included phenylacetic acid, Eph and PSE. MDMA precursor border detections in 2016–17 include piperonal and 3,4-methylenedioxyphenyl-2-propane (MDP-2-P).

This reporting period, the number of ATS (excluding MDMA) precursor detections at the Australian border increased 38.0 per cent, from 400 in 2015–16 to 552 in 2016–17. The weight of ATS (excluding MDMA) precursors detected increased 48.9 per cent, from 1 063.7 kilograms in 2015–16 to 1 584.0 kilograms in 2016–17 (see Figure 39).[3]

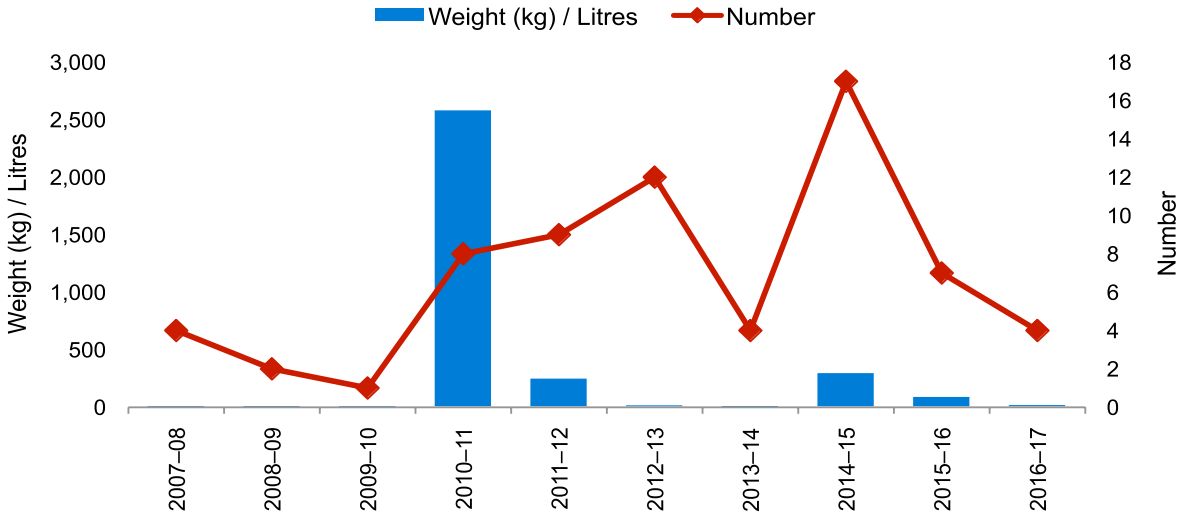
FIGURE 39: Number and weight of ATS (excluding MDMA) precursor detections at the Australian border, 2007–08 to 2016–17 (Source: Department of Home Affairs)



3 See Appendix 1 for significant border detections of ATS (excluding MDMA) precursors in 2016–17.

The number of MDMA precursor detections at the Australian border decreased 42.9 per cent this reporting period, from 7 in 2015–16 to 4 in 2016–17. The weight of MDMA precursors detected decreased 87.5 per cent, from 81.1 kilograms in 2015–16 to 10.2 kilograms in 2016–17 (see Figure 40).[4]

FIGURE 40: Number and weight/litres[a] of MDMA precursor detections at the Australian border, 2007–08 to 2016–17 (Source: Department of Home Affairs)



a. Significant detections of MDMA precursors occur in both kilograms and litres. As this figure reflects two units of measurement, it is necessary to refer to 'Significant Border Detections' for individual reporting periods to determine the related unit of measurement.

IMPORTATION METHODS

In 2016–17, detections of ATS (excluding MDMA) precursors occurred in the international mail, air and sea cargo and air passenger/crew streams. The international mail stream accounted for 62.0 per cent of the number and 44.0 per cent of the weight of detections at the Australian border this reporting period. Detections of ATS (excluding MDMA) precursors in the air cargo stream accounted for 17.4 per cent of the number and 40.4 per cent of the weight detected in 2016–17.[5]

In 2016–17, detections of MDMA precursors occurred in the international mail and air cargo streams. While the international mail stream accounted for 75.0 per cent of the number of MDMA precursors detected at the Australian border this reporting period, this stream only accounted for 1.8 per cent of the weight detected. In 2016–17, the air cargo stream accounted for 25.0 per cent of the number and 98.2 per cent of the weight of MDMA precursor detections.[6]

4 See Appendix 1 for significant border detections of MDMA precursors in 2016–17.
5 Figures for importation methods of ATS (excluding MDMA) precursors detected in 2016–17 will be available on the Crime Statistics Australia website. See <http://crimestats.aic.gov.au/>.
6 Figures for importation methods of MDMA precursors detected in 2016–17 will be available on the Crime Statistics Australia website. See <http://crimestats.aic.gov.au/>.

EMBARKATION POINTS

By weight, China (including Hong Kong) was the primary embarkation point for ATS (excluding MDMA) precursor detections at the Australian border in 2016–17. Other key embarkation points by weight this reporting period include Vietnam, the Republic of Korea, UK, Malaysia, Ireland, US, Taiwan and Nigeria.

By weight, France was the primary embarkation point for MDMA precursor detections at the Australian border in 2016–17, followed by Spain and the Netherlands.

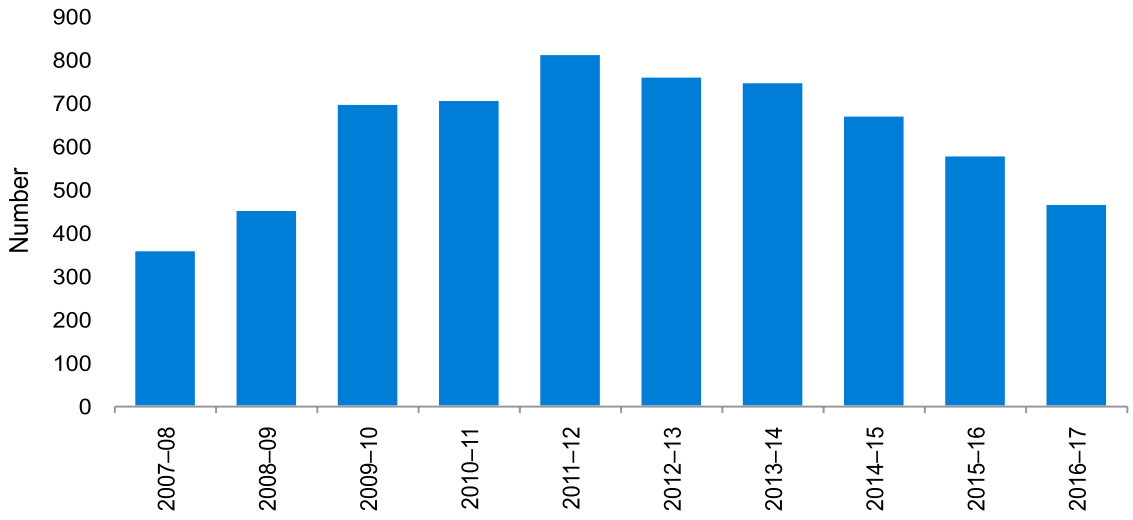
DOMESTIC MARKET INDICATORS

The number of clandestine laboratory detections is not indicative of production output, which is calculated using a number of variables including the size of reaction vessels, amount and type of precursors used, the skill of the people involved and the method of manufacture. Regardless of their size, the residual contamination arising from illicit drug manufacture presents a serious risk to humans and the environment (AGD 2011).

CLANDESTINE LABORATORY DETECTIONS

The number of clandestine laboratories detected nationally continued to decrease in 2016–17. This reporting period the number of clandestine laboratories detected in Australia decreased 19.5 per cent, from 575 in 2015–16 to 463 in 2016–17 (see Figure 41).

FIGURE 41: National clandestine laboratory detections, 2007–08 to 2016–17



In 2016–17, New South Wales, Victoria, Queensland, Western Australia and the Australian Capital Territory reported decreases in the number of detected clandestine laboratories, while South Australia, Tasmania and the Northern Territory reported increases. While the number of clandestine laboratories detected in Queensland decreased by 35.9 per cent this reporting period, Queensland continues to account for the greatest proportion of national clandestine laboratory detections, accounting for 32.4 per cent in 2016–17, followed by Victoria (29.2 per cent). There were no clandestine laboratories detected in the Australian Capital Territory this reporting period (see Table 24).

TABLE 24: Number of clandestine laboratory detections, by state and territory, 2007–08 to 2016–17

Year	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	Total
2007–08	51	76	121	69	30	2	1	6	**356**
2008–09	67	84	148	65	78	0	7	0	**449**
2009–10	82	113	297	71	118	1	12	0	**694**
2010–11	87	63	293	75	171	11	2	1	**703**
2011–12	90	99	379	58	160	15	7	1	**809**
2012–13	105	113	330	56	136	9	8	0	**757**
2013–14	98	114	340	80	96	5	11	0	**744**
2014–15	99	161	236	71	84	5	10	1	**667**
2015–16	83	144	234	69	40	1	3	1	**575**
2016–17	56	135	150	81	33	3	5	0	**463**

SIZE AND PRODUCTION CAPACITY

In 2016–17, state and territory police services were asked to provide an indication of the size and production capacity of detected laboratories using categories provided by the United Nations Office on Drugs and Crime in their data collection for the World Drug Report. Full definitions for the four categories—addict-based, other small scale, medium scale and industrial scale—are found in the *Statistics* chapter.

In 2016–17, clandestine laboratories detected in Australia ranged from addict-based laboratories, which typically only use basic equipment and simple procedures, through to industrial scale laboratories, using oversized equipment. For those able to be categorised, the majority of laboratories continue to be addict-based, however the proportion attributed to this category decreased this reporting period, from 66.5 per cent in 2015–16 to 49.5 per cent in 2016–17. This decrease is a direct consequence of the increase in the number of small scale and medium sized laboratories this reporting period. The proportion of laboratories categorised as small scale increased from 16.1 per cent in 2015–16 to 27.7 per cent in 2016–17, with the proportion of medium sized laboratories increasing from 9.7 per cent in 2015–16 to 20.0 per cent in 2016–17. The proportion of laboratories categorised as industrial scale decreased from 7.7 per cent to 2.7 per cent this reporting period.[7]

DRUG TYPES AND METHODS OF PRODUCTION

Of those able to be identified, clandestine laboratories manufacturing ATS (excluding MDMA) continued to account for the greatest proportion of detections in 2016–17 (see Table 25). Methylamphetamine remains the main drug produced in laboratories detected nationally.

7 A figure for the size and production capacity of detected clandestine laboratories in 2016–17 will be available on the Crime Statistics Australia website. See <http://crimestats.aic.gov.au/>.

TABLE 25: Number of clandestine laboratory detections, by drug production type and state and territory, 2016–17

State/ Territory	ATS (excluding MDMA)	MDMA	Homebake heroin	Cannabis oil extraction	PSE extraction	GHB/ GBL	Other[a]	Unknown[b]	Total[c]
NSW	32	3	0	3	0	2	15	3	58
Vic	112	3	0	8	5	3	0	4	135
Qld	88	1	0	1	0	3	0	57	150
SA	48	0	0	9	4	3	7	16	87
WA	19	0	1	0	2	0	8	7	37
Tas	2	0	0	0	1	0	0	0	3
NT	4	1	0	0	0	0	0	0	5
ACT	0	0	0	0	0	0	0	0	0
Total	**305**	**8**	**1**	**21**	**12**	**11**	**30**	**87**	**475**

a. 'Other' refers to the detection of other illicit manufacture.
b. 'Unknown' includes seized substances which were unable to be identified or are awaiting analysis.
c. Total may exceed the number of clandestine laboratory detections due to multiple drug production types being identified in a single laboratory.

The number of national ATS (excluding MDMA) laboratory detections decreased by 8.4 per cent this reporting period, from 333 in 2015–16 to 305 in 2016–17.

- This reporting period Victoria accounted for the greatest proportion of ATS (excluding MDMA) laboratories detected nationally, accounting for 36.7 per cent in 2016–17, followed by Queensland (28.9 per cent).
- This reporting period MDMA laboratories were detected in New South Wales (3), Victoria (3), Queensland (1) and Northern Territory (1).

The number of homebake heroin laboratories detected nationally decreased 80.0 per cent this reporting period, from 5 in 2015–16 to 1 in 2016–17. Western Australia accounted for all related detections in both reporting periods. Although the number of cannabis oil extraction laboratories detected nationally decreased 19.2 per cent this reporting period, from 26 in 2015–16 to 21 in 2016–17, the 21 laboratories detected in 2016–17 is the second highest number on record since related reporting began in 2007–08. This reporting period laboratories were detected in New South Wales (3), Victoria (8), Queensland (1) and South Australia (9).

In 2016–17, the number of laboratories detected nationally manufacturing gamma-hydroxybutyrate (GHB) /gamma-butyrolactone (GBL) remained stable at 11. This reporting period laboratories were detected in New South Wales (2), Victoria (3), Queensland (3) and South Australia (3). The number of clandestine laboratories detected nationally extracting pseudoephedrine decreased 25.0 per cent this reporting period, from 16 in 2015–16 to 12 in 2016–17. This reporting period, laboratories were detected in Victoria (5), South Australia (4), Western Australia (2) and Tasmania (1). Clandestine laboratories detected in Australia also manufacture a range of other illicit drugs, precursors and pre-precursors. In 2016–17 this also included dimethyltryptamine (DMT), 3,4-methylendioxyamphetamine (MDA), mescaline, psilocybin and phenyl-2-propoanone (P2P), with both heroin and cocaine extraction also identified this reporting period.

Despite a decrease in the number of laboratories using the hypophosphorous method of production this reporting period, it remains the predominant method of ATS (excluding MDMA) production in Australia.

- The number of hypophosphorous laboratories detected nationally decreased 20.2 per cent this reporting period, from 168 in 2015–16 to 134 in 2016–17.
- The number of red phosphorous laboratories increased 60.7 per cent this reporting period, from 28 in 2015–16 to 45 in 2016–17.
- The number of Nazi/Birch laboratories detected nationally decreased 21.9 per cent this reporting period, from 32 in 2015–16 to 25 in 2016–17.
- The number of P2P laboratories more than doubled this reporting period, from 9 in 2015–16 to 19 in 2016–17.
- The number of ATS (excluding MDMA) laboratories detected nationally identified as using other methods of production increased threefold this reporting period, from 7 in 2015–16 to 21 in 2016–17 (see Table 26).

In 2016–17, Victoria accounted for the greatest proportion of the number of hypophosphorous laboratories detected nationally (32.1 per cent), as well as the proportion of red phosphorous (35.6 per cent, which was also reported by Queensland), P2P (68.4 per cent) and other laboratories (71.4 per cent). Similar to previous reporting periods, Western Australia accounted for the greatest proportion of Nazi/Birch laboratory detections in 2016–17 (76.0 per cent).

TABLE 26: Method of ATS (excluding MDMA) production in clandestine laboratory detections, by state and territory, 2016–17

State/ Territory	Hypophosphorous	Red-phosphorus	Nazi/Birch	Phenyl-2-propanone (P2P)	Other[a]	Total[b]
NSW	30	1	1	1	6	39
Vic	43	16	1	13	15	88
Qld	24	16	1	0	0	41
SA	32	10	1	4	0	47
WA	1	2	19	1	0	23
Tas	2	0	0	0	0	2
NT	2	0	2	0	0	4
ACT	0	0	0	0	0	0
Total	**134**	**45**	**25**	**19**	**21**	**244**

a. 'Other' includes the detection of other ATS (excluding MDMA) production methodologies.
b. Total may not equal the number of ATS (excluding MDMA) clandestine laboratory detections as the method of production may not be identified or the detection is awaiting analysis.

SIGNIFICANT PRECURSOR SEIZURES

The following provides a national snapshot of the identification and/or seizure of some significant quantities of precursors, reagents and solvents this reporting period:

- 300.0 kilograms of PSE in Victoria
- 3.0 kilograms of PSE in New South Wales
- 1.1 kilograms PSE in Queensland
- 9.0 kilograms of Eph in New South Wales
- 15.0 kilograms of hypophosphorous acid in New South Wales
- 4.0 litres of hypophosphorous acid in South Australia
- 0.2 kilograms of red phosphorous in Western Australia
- 0.2 kilograms of red phosphorous in South Australia

- 10.0 kilograms of helional in Northern Territory
- 1.0 litres of helional in Western Australia
- 12.0 kilograms of mercury in South Australia
- 25.0 litres of 1,4-butanediol in Western Australia
- 23.0 litres of GHB in South Australia
- 5.0 kilograms of GABA in South Australia.

LOCATION AND CATEGORY

In Australia, the majority of clandestine laboratories continue to be detected in residential areas. In 2016–17, 63.9 per cent of detected clandestine laboratories were located in residential areas (a decrease from 68.5 per cent in 2015–16), followed by vehicles (12.5 per cent, an increase from 9.6 per cent in 2015–16), other (8.4 per cent, an increase from 7.5 per cent in 2015–16), commercial/industrial (6.0 per cent, an increase from 4.0 per cent in 2015–16), public places (5.0 per cent, a decrease from 5.2 per cent in 2015–16) and rural areas (4.1 per cent, a decrease from 5.2 per cent in 2015–16).[8] Of note, 74.4 per cent of laboratories within the 'other' category this reporting period related to detections in storage sheds, the majority of which were located in Queensland.

Based on their operating status, there are four distinct categories of clandestine laboratories:

- Category A—active (chemicals and equipment in use)
- Category B—stored/used (equipment or chemicals)[9]
- Category C—stored/unused (equipment or chemicals)
- Category D—historical site.

Consistent with previous reporting periods, Category C was the most common category for clandestine laboratories detected nationally, accounting for 49.4 per cent of laboratories in 2016–17, a decrease from 61.4 per cent in 2015–16. This was followed by Category B, which accounted for 29.1 per cent this reporting period (an increase from 18.5 per cent in 2015–16), Category D which accounted for 13.4 per cent (an increase from 11.9 per cent in 2015–16) and Category A which accounted for 8.0 per cent (a decrease from 8.2 per cent in 2015–16).[10]

NATIONAL TABLET PRESS SEIZURES

Thirteen tablet presses[11] were seized nationally in 2016–17. Tablet press seizures this reporting period occurred in New South Wales (2), Victoria (7), Queensland (3) and Tasmania (1). In 2016–17 there were 6 encapsulators seized nationally. Encapsulator seizures this reporting period occurred in Queensland (3), South Australia (2) and Tasmania (1).

8 A figure for the location of detected clandestine laboratories in 2016–17 will be available on the Crime Statistics Australia website. See <http://crimestats.aic.gov.au/>.
9 Laboratories which are fully assembled, but not active at the time of detection.
10 A figure for the category of detected clandestine laboratories in 2016–17 will be available on the Crime Statistics Australia website. See <http://crimestats.aic.gov.au/>.
11 Eleven simple presses and two rotary presses.

NATIONAL IMPACT

An effective and efficient way of limiting the supply of illicit drugs is to prevent the diversion of precursors, reagents and solvents used in illicit drug manufacture. As many of these chemicals have legitimate industrial and domestic uses, control measures have to balance access for legitimate use with efforts to reduce their diversion. This remains an enduring issue, with both international and domestic controls and strategies implemented in support of this.

Indicators of domestic drug production include border detection, seizure, clandestine laboratory, tablet and encapsulator data.

- In 2016–17, both the number and weight of ATS (excluding MDMA) precursors detected at the Australian border increased, while the number and weight of MDMA precursor detections decreased.
- The predominant ATS (excluding MDMA) precursors detected at the Australian border this reporting period were phenylacetic acid and PSE, with piperonal the predominant MDMA precursor detected in 2016–17.
- In addition to detections of precursors at the Australian border, significant quantities of precursors, reagents and solvents were also seized nationally this reporting period, the majority of which relate to the manufacture of methylamphetamine.
- The number of clandestine laboratories detected nationally decreased for the fifth consecutive reporting period in 2016–17.
- Clandestine laboratories in Australia manufacture and process a range of illicit drugs, precursors and pre-precursors.
  - In 2016–17 this included ATS (excluding MDMA), MDMA, homebake heroin, GHB/GBL, DMT, MDA, mescaline, psilocybin, P2P, as well as cannabis oil, PSE, heroin and cocaine extraction.
- Clandestine laboratories manufacturing ATS (excluding MDMA) continue to account for the greatest proportion of detections, with methylamphetamine the main drug produced in laboratories detected nationally in 2016–17.
- Despite a decrease in the number of laboratories using the hypophosphorous method of production this reporting period, it remains the predominant method of ATS (excluding MDMA) production in Australia.
- Clandestine laboratories detected in Australia range from addict-based through to industrial scale laboratories, the majority of which continue to be located in residential areas.
- While the majority of laboratories continue to be addict-based, the proportion attributed to this category decreased this reporting period. This decrease is a direct consequence of the increase in the number of small scale and medium sized laboratories in 2016–17.
- The majority of laboratories relate to the detection of stored/unused equipment or chemicals (Category C); however the proportion attributed to this category decreased this reporting period.
- In 2016–17, 13 tablet presses and 6 encapsulators were seized nationally.

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