# CLANDESTINE LABORATORIES AND PRECURSORS

## KEY POINTS

- The number of clandestine laboratories detected nationally continued to decrease this reporting period, with 575 detections in 2015–16.
- Around two-thirds of clandestine laboratory detections in 2015–16 were in residential locations.
- While the majority of detected laboratories continue to be addict-based, the proportion of industrial scale laboratories increased in 2015–16.
- The number of ATS (excluding MDMA) precursor detections at the Australian border decreased in 2015–16, while the weight detected increased.
- Both the number and weight of MDMA precursor detections at the Australian border decreased in 2015–16.

# 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 and 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 and 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 availability of precursors and the skill of the cook. 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 predominate processes used in Australia for manufacturing methylamphetamine are comparatively simple, using readily available basic equipment and precursor chemicals, with pseudoephedrine and ephedrine 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

Preventing the diversion of precursors, reagents and solvents for use in illicit drug manufacture is an effective and efficient way of limiting the supply of illicit drugs. As many of these substances have legitimate application within various branches of industry, domestic and international precursor controls must balance legitimate access with efforts to reduce diversion to the illicit market. This, in conjunction with the growth and expansion of the chemical industry over the last two decades, increases in the international trade in chemicals and the emergence of production methodologies using pre-precursors, solvents and reagents that fall outside exiting controls remain ongoing challenges for government and law enforcement (EMCDDA and EUROPOL 2016; INCB 2015).

The 1988 United Nations Convention against Illicit Traffic in Narcotic Drugs and Psychotropic Substances (1988 Convention)[1] aims to prevent the diversion of chemicals from licit market for use in the manufacture of illicit drugs. The International Narcotics Control Board (INCB) established the Precursors Incident Communication System (PICS) in 2012 to monitor non-scheduled chemicals and to prevent the diversion of those substances into the illicit drug 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 the controlled precursors, derivatives and the illicit manufacture of new drugs (BINLEA 2016; INCB 2016).

Chemicals are manufactured in most countries, with variation in the scale and range of chemicals produced. Asia is the largest chemical manufacturing region in the world. China and India remain significant global producers and exporters of precursor chemicals. To assist in reducing the diversion of chemicals to illicit drug manufacture, two ongoing international initiatives led by the INCB have been established—Project Cohesion and Project Prism. Project Cohesion, which commenced operation in 2006, monitors and targets acetic anhydride, a chemical used in the illicit manufacture of heroin and potassium permanganate, a chemical used in the illicit manufacture of cocaine. Project Prism, which commenced operation in 2003, monitors and targets phenylacetic acid, ephedrine and pseudoephedrine, chemicals used in the illicit manufacture of ATS (EMCDDA and Europol 2016).

1 The 1988 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.

Taskforce Blaze is a partnership between the Australian Federal Police and the Chinese Narcotics Control Bureau to target criminal syndicates trafficking methamphetamine to Australia and internationally. Since its inception in November 2015, approximately 8 000 kilograms of methylamphetamine and precursors have been seized across both countries.

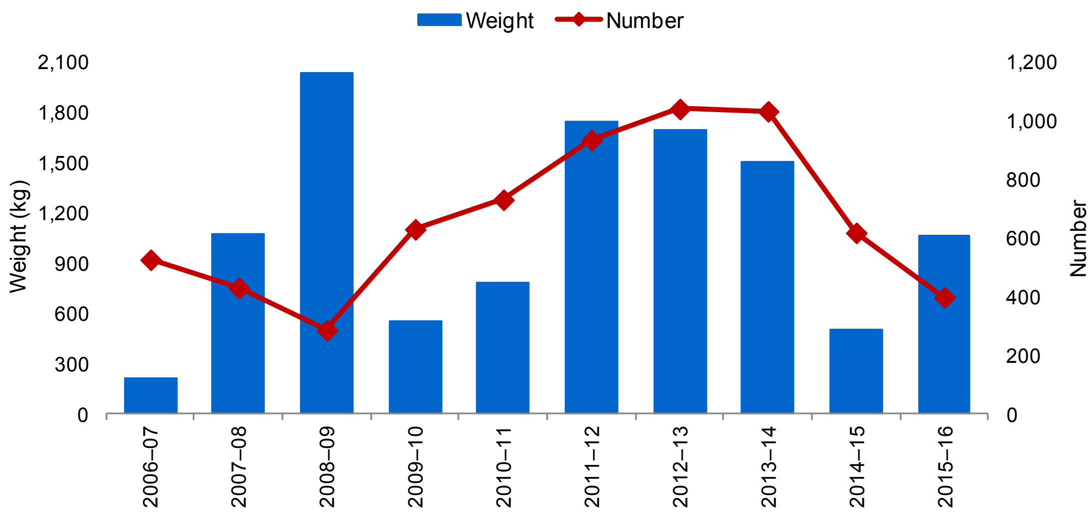
# DOMESTIC TRENDS

## AUSTRALIAN BORDER SITUATION

As ATS are the most common illicit drugs manufactured in domestic clandestine laboratories, analysis of border detection data focuses on ATS (excluding MDMA) precursor and MDMA precursor detections. In 2015–16, ATS (excluding MDMA) precursor border detections included Eph/PSE, with MDMA precursor border detections of safrole.

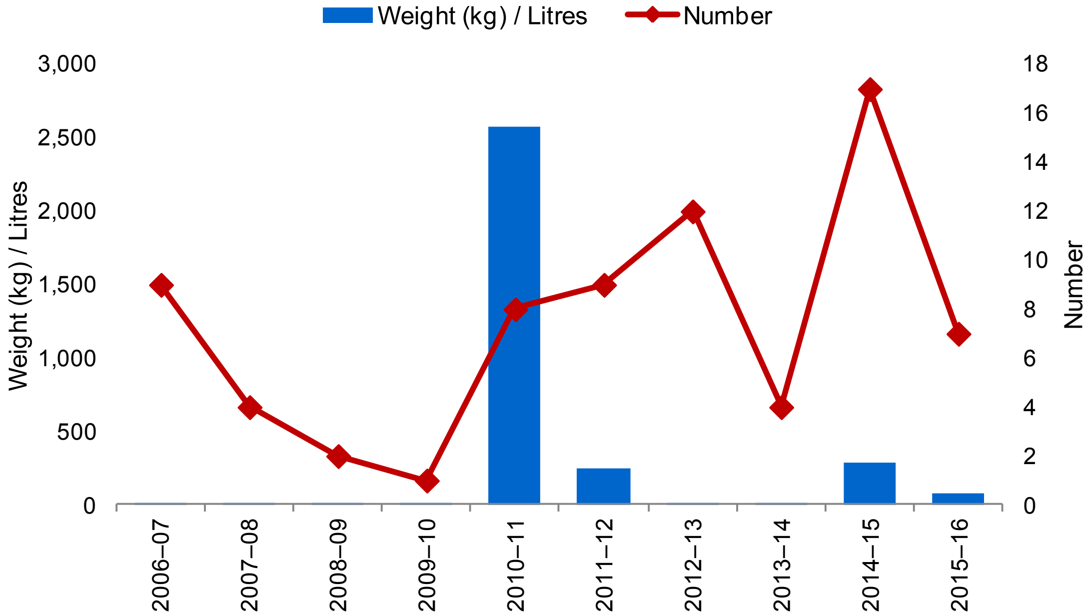
This reporting period the number of ATS (excluding MDMA) precursor detections at the Australian border decreased 35.5 per cent, from 620 in 2014–15 to 400 in 2015–16. The weight of ATS (excluding MDMA) precursors detected increased 112.4 per cent this reporting period, from 500.8 kilograms in 2014–15 to 1 063.7 kilograms in 2015–16 (see Figure 82). In 2015–16, 95 detections weighed more than 1 kilogram. Combined, these 95 detections account for 98.4 per cent of the weight of ATS (excluding MDMA) precursors detected in 2015–16.

**FIGURE 82: Number and weight of ATS (excluding MDMA) precursor detections at the Australian border, 2006–07 to 2015–16 (Source: Department of Immigration and Border Protection)**




This reporting period the number of MDMA precursor detections at the Australian border decreased 58.8 per cent, from 17 in 2014–15 to 7 in 2015–16. The weight of MDMA precursors detected decreased 71.8 per cent this reporting period, from 288.0 kilograms in 2014–15 to 81.1 kilograms in 2015–16 (see Figure 83).

**FIGURE 83: Number and weight/litres[a] of MDMA precursor detections at the Australian border, 2006–07 to 2015–16 (Source: Department of Immigration and Border Protection)**




[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.

## SIGNIFICANT BORDER DETECTIONS

Significant border detections of ATS (excluding MDMA) precursors in 2015–16 include:

- 360.0 kilograms of ephedrine detected on 6 January 2016, concealed in soup containers, via sea cargo into Sydney
- 30.0 kilograms of ephedrine detected on 15 July 2015, built into heating machines and UV lamps, via air cargo from China to Sydney
- 20.0 kilograms of ephedrine detected on 17 June 2016, concealed in cardboard boxes, via air cargo from China to Sydney
- 20.0 kilograms of ephedrine detected on 30 November 2015, concealed in display cases, via air cargo from China to Sydney
- 18.5 kilograms of ephedrine detected on 19 November 2015, concealed in the lining of boxes, via air cargo from Malaysia to Sydney.

These 5 detections have a combined weight of 448.5 kilograms and account for 42.2 per cent of the total weight of ATS (excluding MDMA) precursors detected at the Australian border in 2015–16.

Significant border detections of MDMA precursors in 2015–16 include:

- 80.0 kilograms of safrole detected on 2 September 2015, labelled as shampoo, via sea cargo from China to Sydney.

This single detection accounts for 98.6 per cent of the total weight of MDMA precursors detected at the Australian border in 2015–16.

## IMPORTATION METHODS

In 2015–16, international mail was the prominent importation stream by number (51.3 per cent) for ATS (excluding MDMA) precursor detections at the Australian border, while air cargo was the prominent importation stream by weight (43.6 per cent; see Figures 84 and 85).

**FIGURE 84: Number of ATS (excluding MDMA) precursor detections at the Australian border, as a proportion of total detections, by method of importation, 2015–16 (Source: Department of Immigration and Border Protection)**

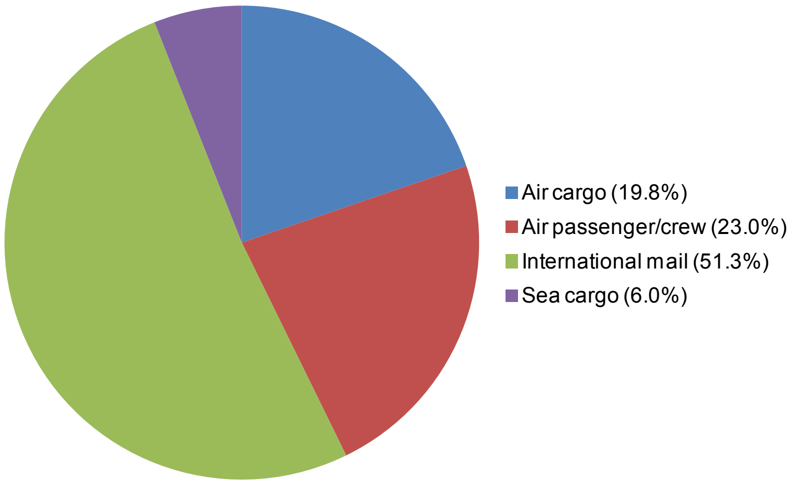
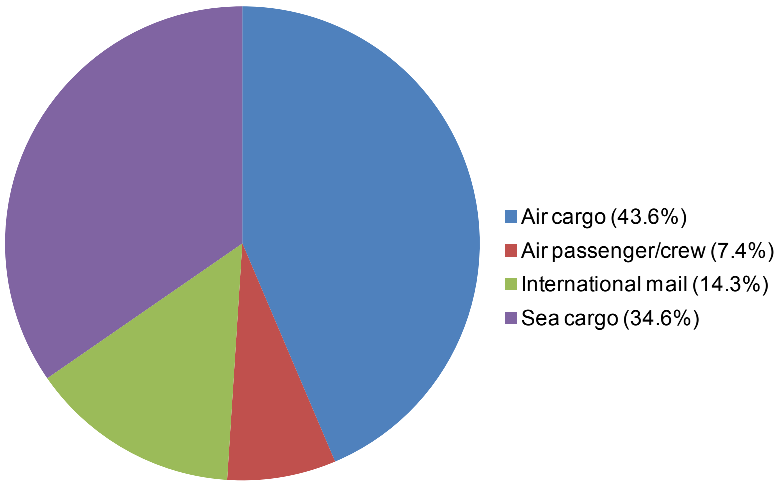



**FIGURE 85: Weight of ATS (excluding MDMA) precursor detections at the Australian border, as a proportion of total detections, by method of importation, 2015–16 (Source: Department of Immigration and Border Protection)**




In 2015–16, air passenger/crew was the prominent importation stream by number (42.9 per cent) for MDMA precursor detections at the Australian border, while sea cargo was the prominent importation stream by weight (98.6 per cent; see Figures 86 and 87).

**FIGURE 86: Number of MDMA precursor detections at the Australian border, as a proportion of total detections, by method of importation, 2015–16 (Source: Department of Immigration and Border Protection)**

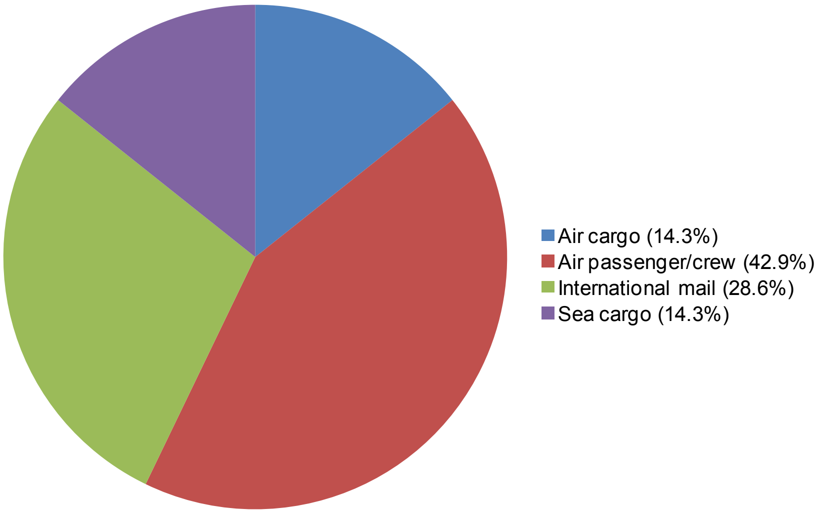
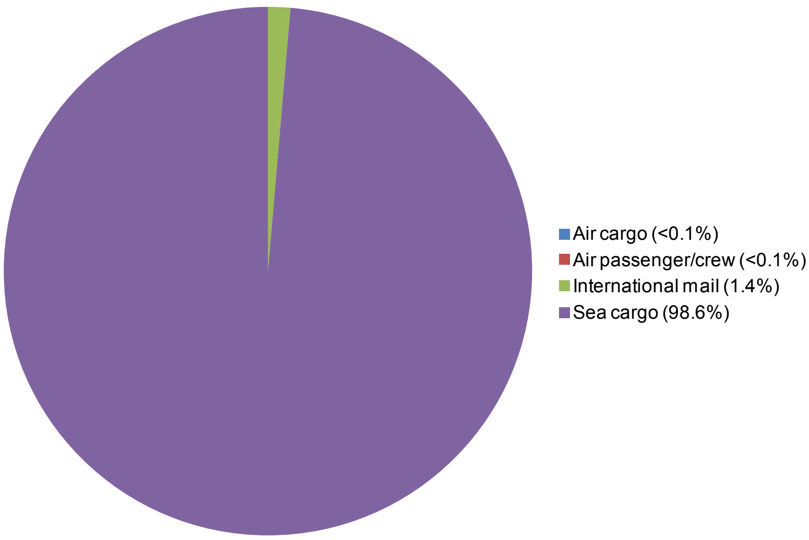



**FIGURE 87: Weight of MDMA precursor detections at the Australian border, as a proportion of total detections, by method of importation, 2015–16 (Source: Department of Immigration and Border Protection)**




## EMBARKATION POINTS

The prominent embarkation point for ATS (excluding MDMA) precursor detections at the Australian border this reporting period was China (including Hong Kong). Other key embarkation points in 2015–16 include Vietnam, Malaysia, India, the United Kingdom (UK), Ethiopia, Korea, Singapore, Indonesia and the United States (US).

China (including Hong Kong) was the prominent embarkation point for MDMA precursor detections at the Australian border in 2015–16, followed by the US.

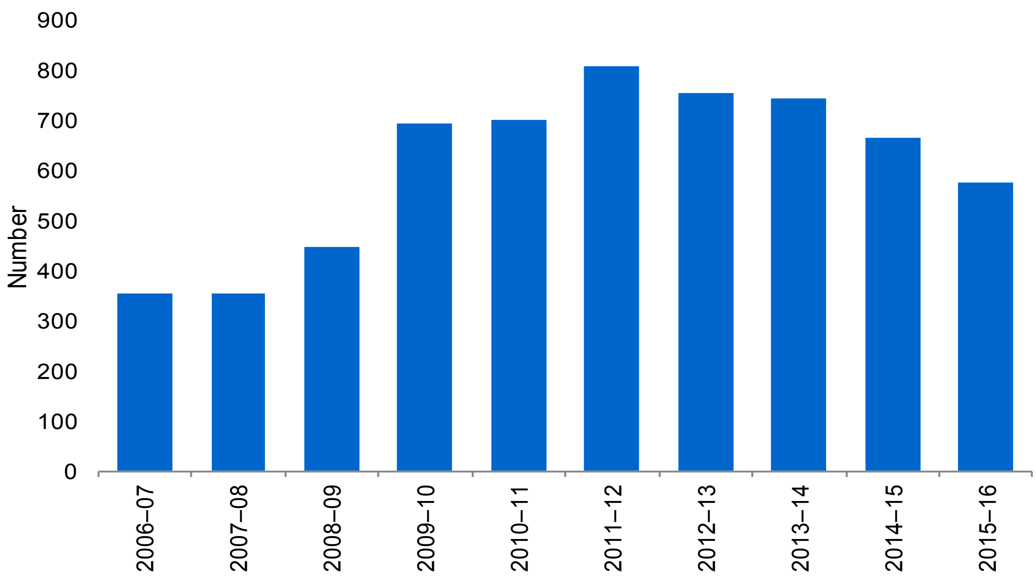
# DOMESTIC MARKET INDICATORS

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. In recognition of the hazardous nature of clandestine laboratories, the Australian Government launched the *Clandestine Remediation Guidelines* in 2011 (AGD 2011).

## CLANDESTINE LABORATORY DETECTIONS

While the number of clandestine laboratories detected nationally continued to decrease in 2015–16, figures remain higher than those reported earlier in the decade. This reporting period the number of clandestine laboratories detected in Australia decreased 13.8 per cent, from 667 in 2014–15 to 575 in 2015–16 (see Figure 88).

**FIGURE 88: National clandestine laboratory detections, 2006–07 to 2015–16**




With the exception of the Australian Capital Territory, where figures remain stable, all states and the Northern Territory reported decreases in the number of clandestine laboratories detected in 2015–16 (see Table 38). Queensland continues to account for the greatest proportion of national clandestine laboratory detections, accounting for 40.7 per cent in 2015–16.

**TABLE 38: Number of clandestine laboratory detections, by state and territory 2006–07 to 2015–16**

| Year | NSW | Vic | Qld | SA | WA | Tas | NT | ACT | Total |
|---|---|---|---|---|---|---|---|---|---|
| 2006–07 | 49 | 72 | 132 | 51 | 37 | 9 | 1 | 5 | **356** |
| 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** |

## SIZE AND PRODUCTION CAPACITY

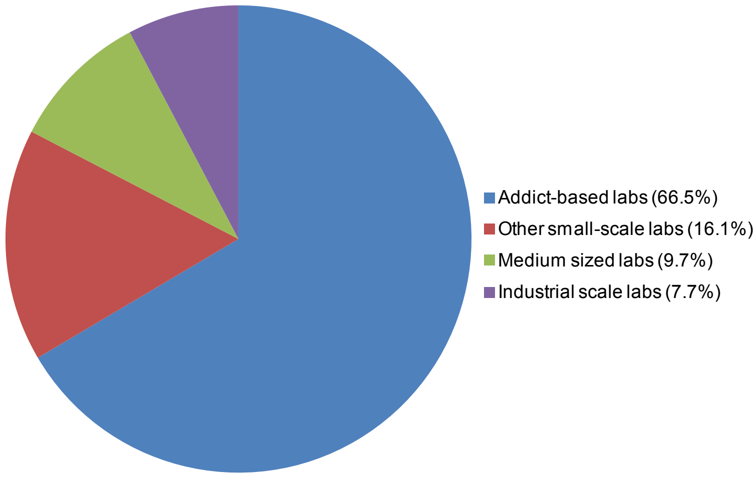
In 2015–16, state and territory police services were asked to provide an indication of the size and production capacity of detected laboratories using categories provided by the United Nations Office on Drugs and Crime in their data collection for the World Drug Report. Full definitions for the four categories—addict-based, other small scale, medium scale and industrial scale—are found in the *Statistics* chapter.

In 2015–16, clandestine laboratories detected in Australia ranged from addict-based labs, 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 detected clandestine laboratories in 2015–16 were addict-based. Continuing the trend from previous reporting periods, Queensland continues to account for the greatest proportion of addict-based laboratories, with New South Wales accounting for the greatest proportion of industrial sized laboratories.

Compared to the previous reporting period, the proportion of laboratory detections categorised as addict-based and industrial scale increased this reporting period, from 60.9 per cent to 66.5 per cent and 5.9 per cent to 7.7 per cent respectively. The proportion of laboratory detections categorised as small and medium sized decreased this reporting period, from 20.2 per cent to 16.1 per cent and 12.9 per cent to 9.7 per cent respectively (see Figure 89).

CLANDESTINE LABS AND PRECURSORS

**FIGURE 89: Category of detected clandestine laboratories, by size and production capacity, 2015–16**




## 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 2015–16 (see Table 39). Methylamphetamine remains the main drug produced in laboratories detected nationally.

**TABLE 39: Number of clandestine laboratory detections, by drug production type and state and territory, 2015–16**

| State/ Territory | ATS (excluding MDMA) | MDMA | Homebake heroin | Cannabis oil extraction | PSE[a] extraction | GHB/ GBL | Other[b] | Unknown[c] | Total[d] |
|---|---|---|---|---|---|---|---|---|---|
| NSW | 57 | 10 | 0 | 0 | 0 | 3 | 12 | 1 | **83** |
| Vic | 69 | 3 | 0 | 8 | 5 | 0 | 8 | 51 | **144** |
| Qld | 121 | 3 | 0 | 10 | 9 | 5 | 22 | 81 | **251** |
| SA | 50 | 0 | 0 | 7 | 1 | 3 | 1 | 12 | **74** |
| WA | 31 | 1 | 5 | 1 | 1 | 0 | 3 | 0 | **42** |
| Tas | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **1** |
| NT | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **3** |
| ACT | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **1** |
| **Total** | **333** | **17** | **5** | **26** | **16** | **11** | **46** | **145** | **599** |

a. Pseudoephedrine.
b. 'Other' refers to the detection of other illicit manufacture.
c. 'Unknown' includes seized substances which were unable to be identified or are awaiting analysis.
d. 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 13.7 per cent this reporting period, from 386 in 2014–15 to 333 in 2015–16. Since 2000–01, Queensland has accounted for the greatest proportion of national ATS (excluding MDMA) clandestine detections, accounting for 36.3 per cent in 2015–16. The number of MDMA laboratories detected nationally decreased this reporting period, from 18 in 2014–15 to 17 in 2015–16. This reporting period MDMA laboratories were detected in New South Wales (10), Victoria (3), Queensland (3) and Western Australia (1).

The number of homebake heroin laboratories detected nationally decreased 64.3 per cent this reporting period, from 14 in 2014–15 to 5 in 2015–16. This reporting period all of the homebake heroin laboratories were detected in Western Australia.

Although the number of cannabis oil extraction laboratories remains low, the number of detections increased 160.0 per cent this reporting period, from 10 in 2014–15 to 26 in 2015–16. This reporting period laboratories were detected in Queensland (10), Victoria (8), South Australia (7) and Western Australia (1). The 26 laboratories detected in 2015–16 is the highest number on record since related reporting began in 2007–08.

In 2015–16, 11 laboratories were detected nationally manufacturing gamma-hydroxybutyrate/ gamma-butyrolactone (GHB/GBL), a decrease from 12 in 2014–15. This reporting period laboratories were detected in Queensland (5) and South Australia (3). The number of clandestine laboratories detected nationally extracting pseudoephedrine increased 1 500 per cent per cent this reporting period, from 1 in 2014–15 to 16 in 2015–16. This reporting period laboratories were detected in Queensland (9), Victoria (5), South Australia (1) and Western Australia (1). Clandestine laboratories detected in Australia also manufacture a range of other illicit drugs, precursors and pre-precursors. In 2015–16 this also included dimethyltryptamine (DMT).

Despite a decrease this reporting period in the number of ATS (excluding MDMA) laboratories identified nationally using the hypophosphorous method of production—from 225 in 2014–15 to 168 in 2015–16—it remains the predominant method of production. This is followed by the Nazi Birch method, with the number of related laboratories decreasing from 68 in 2014–15 to 32 in 2015–16. This reporting period New South Wales accounted for the greatest proportion of national hypophosphorous laboratories (29.2 per cent), Western Australia accounted for the greatest proportion of Nazi Birch laboratories (71.9 per cent) and Queensland accounted for the greatest proportion of red-phosphorous laboratories (53.6 per cent). The number of clandestine laboratories identified nationally using the P2P method of production also decreased this reporting period, from 12 in 2014–15 to 9 in 2015–16. Victoria accounted for the greatest proportion of laboratories using the P2P method this reporting period, accounting for 55.6 per cent in 2015–16 (see Table 40).

### TABLE 40: Method of ATS (excluding MDMA) production in clandestine laboratory detections, by state and territory, 2015–16

| State/ Territory | Hypophosphorous | Red-phosphorus | Nazi/Birch | Phenyl-2-propanone (P2P) | Other[a] | Total[b] |
|---|---|---|---|---|---|---|
| NSW | 49 | 6 | 0 | 0 | 2 | **57** |
| Vic | 46 | 3 | 2 | 5 | 2 | **58** |
| Qld | 39 | 15 | 2 | 1 | 2 | **59** |
| SA | 26 | 2 | 4 | 2 | 1 | **35** |
| WA | 5 | 2 | 23 | 1 | 0 | **31** |
| Tas | 1 | 0 | 0 | 0 | 0 | **1** |
| NT | 2 | 0 | 1 | 0 | 0 | **3** |
| ACT | 0 | 0 | 0 | 0 | 0 | **0** |
| **Total** | **168** | **28** | **32** | **9** | **7** | **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

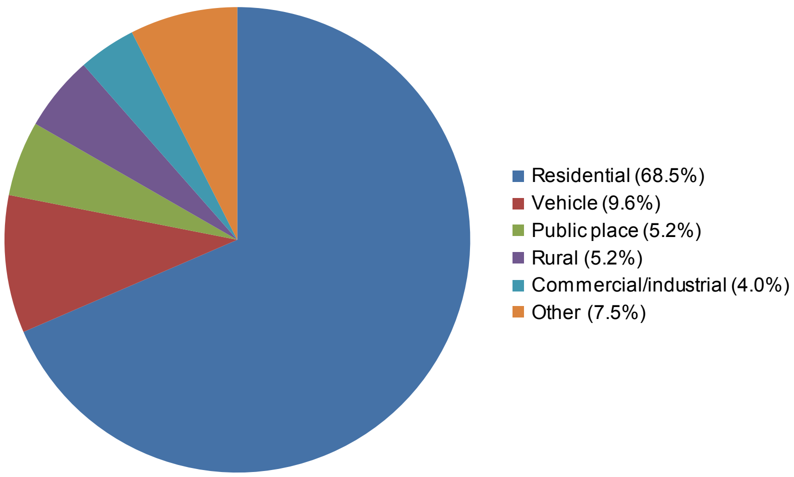
The following provides a national snapshot of the identification and/or seizure of some significant quantities of precursors, reagents and solvents this reporting period:

- 25.0 kilograms of ephedrine in New South Wales
- 18.0 kilograms of ephedrine in New South Wales
- 15.0 kilograms of ephedrine in New South Wales
- 5.7 kilograms of ephedrine in Western Australia
- 11.0 kilograms of pseudoephedrine in New South Wales
- 50.0 kilograms of iodine in New South Wales
- 9.6 kilograms of iodine in Western Australia
- 50.0 kilograms of hypophosphorous acid in New South Wales
- 3.0 litres of hypophosphorous acid in Victoria
- 25.0 litres of toluene in Western Australia
- 4.0 kilograms of formaldehyde in Victoria
- 2.0 litres of MDP2P in Victoria
- 2.0 kilograms of red phosphorous in Victoria.

## LOCATION AND CATEGORY

Residential areas remain the primary location for clandestine laboratory detections in Australia. In 2015–16, 68.5 per cent of detected clandestine laboratories were located in residential areas, followed by vehicles (9.6 per cent, a decrease from 9.9 per cent in 2014–15), other (7.5 per cent, an increase from 4.7 per cent in 2014–15), public place (5.2 per cent, a decrease from 6.8 per cent in 2014–15), rural (5.2 per cent, a decrease from 6.0 per cent in 2014–15) and commercial/industrial areas (4.0 per cent, a decrease from 4.2 per cent in 2014–15; see Figure 90).

**FIGURE 90: Location of clandestine laboratory detections, 2015–16**



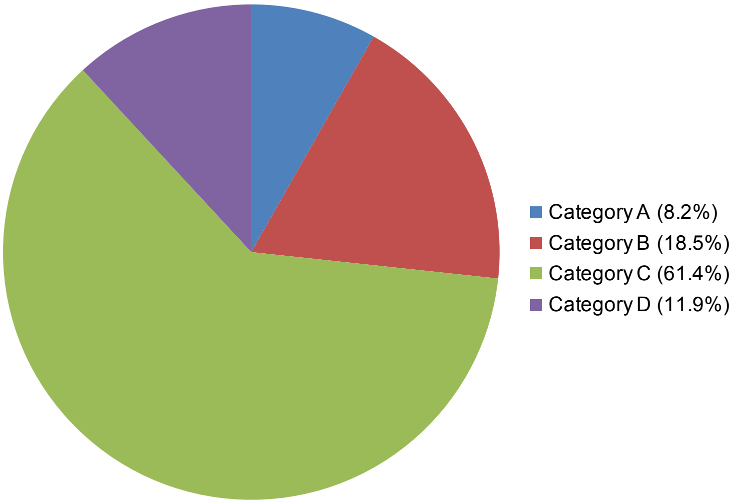

There are four distinct categories of clandestine laboratories:

- Category A—active (chemicals and equipment in use)
- Category B—stored/used (equipment or chemicals)[2]
- Category C—stored/unused (equipment or chemicals)
- Category D—historical site.

Consistent with previous reporting periods, Category C remains the most common category for clandestine laboratories detected nationally, accounting for 61.4 per cent of laboratories in 2015–16, an increase from 51.6 per cent in 2014–15. This was followed by Category B, which accounted for 18.5 per cent this reporting period (a decrease from 25.7 per cent in 2014–15), Category D which accounted for 11.9 per cent (an increase from 11.2 per cent in 2014–15) and Category A which accounted for 8.2 per cent (a decreased from 11.5 per cent in 2014–15; see Figure 91).

2 Laboratories which are fully assembled, but not active at the time of detection.

**FIGURE 91: Category of detected clandestine laboratories, 2015–16**




# NATIONAL IMPACT

The number of ATS (excluding MDMA) precursors detected at the Australian border continued to decrease this reporting period, while the weight detected more than doubled. Both the number and weight of MDMA precursors detected at the Australian border in 2015–16 decreased. Ephedrine and safrole were the predominant precursors detected at the Australian border this reporting period. The international mail stream was the primary importation method by number for ATS (excluding MDMA) precursor detections at the Australian border in 2015–16, while air cargo was the primary importation method by weight. Air passenger/crew was the primary importation method by number for MDMA precursor detections at the Australian border in 2015–16, while sea cargo was the primary importation method by weight. China (including Hong Kong) was the prominent embarkation point for detections of ATS (excluding MDMA) and MDMA precursor detections at the Australian border in 2015–16.

While the number of clandestine laboratories detected nationally continued to decrease for the fourth consecutive reporting period, the 575 detections in 2015–16 is greater than the 356 detections in 2006–07. With the exception of the Australian Capital Territory, which remained stable, all states and territories reported a decrease in the number of clandestine laboratory detected in 2015–16. The majority of laboratories detected this reporting period were manufacturing ATS (excluding MDMA) using the hypophosphorous method of production. In 2015–16, the number of clandestine laboratories detected nationally producing ATS (excluding MDMA), MDMA, homebake heroin and GHB/GBL decreased, while those related to cannabis oil extraction and PSE extraction increased.

Clandestine laboratories detected in Australia range from addict-based through to industrial scale laboratories. Of those able to be classified, addict-based laboratories continue to account for the greatest proportion of detected laboratories in Australia. The proportion attributed to industrial scale laboratories increased this reporting period, from 5.9 per cent in 2014–15 to 7.7 per cent in 2015–16. The proportion of other small-scale and medium laboratories decreased this reporting period. The proportion of clandestine laboratories detected in residential areas remained stable in 2015–16 and continues to account for the greatest proportion of detections. The proportion of laboratories located in vehicles, public places and commercial/industrial locations decreased this reporting period, while the proportion detected in rural and other locations increased in 2015–16.

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