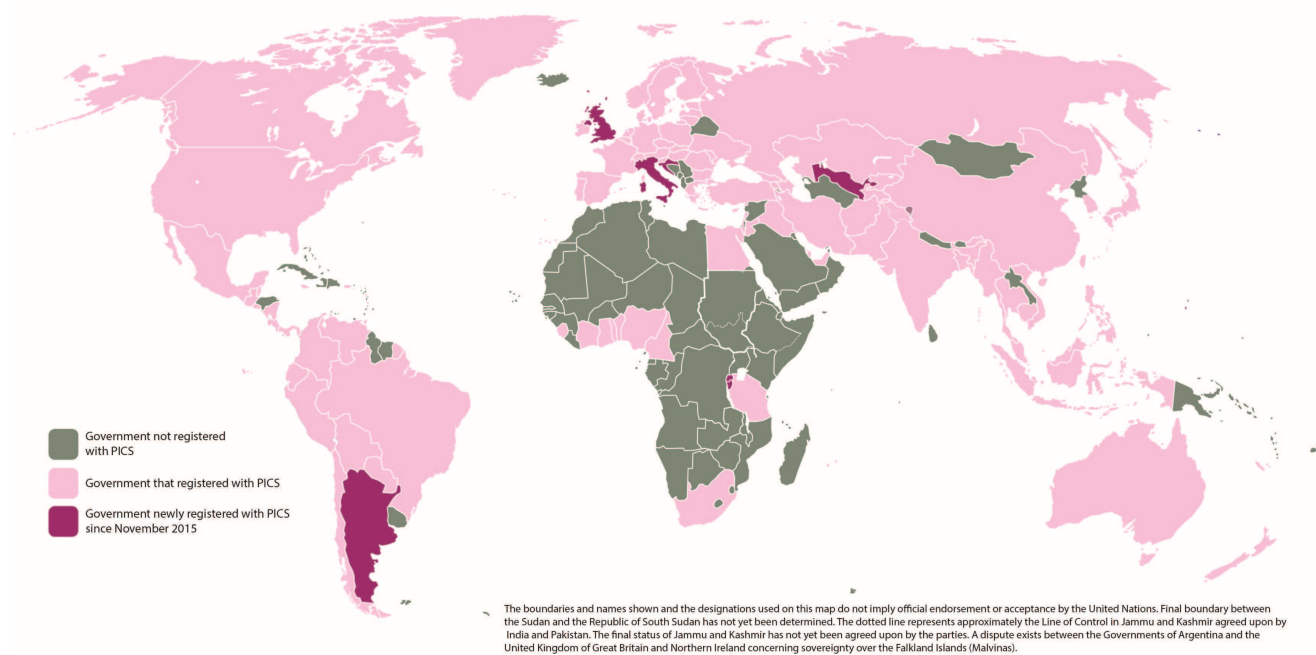


in real time about individual precursor incidents such as seizures, shipments stopped in transit and illicit laboratories, involving scheduled and non-scheduled substances. The early communication of such information alerts users to emerging trends in chemicals and, specifically, alerts the authorities of the countries involved in an incident, as a source, transit or destination country, or when a national of that country is involved, and allows the users to contact each other for further details and to launch joint investigations.⁸

46. Utilization of PICS, which is available in English, French, Russian and Spanish, is cost-free. Since the publication of the last report on precursors, 59 users from 41 agencies in 26 countries have newly registered to use PICS (see map 2),⁹ bringing the number of users to nearly 450, agencies to 214 and countries to 100. With the 212 incidents communicated since 1 November 2015, the total number of incidents communicated through PICS has reached almost 1,700,

involving more than 90 different countries and territories; 30 per cent of those incidents involved chemicals not under international control, including substances on the limited international special surveillance list. An increasing proportion of incidents now also have actionable information, such as routing information (source, transit and destination), company information, relevant documentation and the names used to disguise the identity of the chemicals, which provide a solid starting point for investigations in the countries concerned. **INCB commends all PICS users that share information on individual precursor incidents with sufficient operational detail to allow the users of other countries involved in an incident to initiate requisite follow-up investigations with a view to not only bring to justice those behind the specific incident in question but also to deny traffickers access to chemicals using similar modi operandi in the future.**

Map 2. Governments registered with and that are using the Precursors Incident Communication System
(As at 1 November 2016)



III. Extent of licit trade in precursors and the latest trends in precursor trafficking

⁸ For further details about PICS and the minimum action for sharing information about precursor incidents through the system, see box 3 in the INCB report on precursors for 2015 (E/INCB/2015/4).

⁹ Governments that have not yet registered PICS focal points for their relevant national authorities involved in precursor control may request an account at the following e-mail address: pics@incb.org.

47. The following analysis provides an overview of the major trends and developments identified for both the licit trade in precursor chemicals and the trafficking in these substances. The analysis is based on data provided by

Governments on form D for 2015. Other sources of information include PEN Online, Project Prism and Project Cohesion, PICS and direct notifications from Governments including national reports. That information was drawn on to identify developments for the period 1 November 2015 to 1 November 2016. **INCB wishes to thank Governments for the information received, in particular those Governments that provided information on specific cases of diversion, trafficking and activities associated with illicit drug manufacture.**

48. With regard to data on seizures, readers should bear in mind that reported seizures generally reflect the corresponding level of regulatory and law enforcement activity at that specific time. In addition, as seizures are often the result of law enforcement cooperation among several countries (e.g., through controlled deliveries), the occurrence and magnitude of seizures made in a given country should not be misinterpreted or overestimated in assessing that country's role in the overall situation of trafficking in precursors. From the point of view of precursor control, that is, with a view to addressing gaps and weaknesses in control mechanisms, the amounts seized are of secondary importance; rather, it is the information and intelligence generated from a seizure, a stopped or suspended shipment, theft, attempted diversion or a suspicious order or even inquiry, that is critical for preventing future diversions of chemicals. **INCB therefore encourages all Governments to improve the quality and comprehensiveness of their annual form D submissions and to make better use of PICS.**

49. Given the widespread legitimate uses of a number of the substances in Tables I and II of the 1988 Convention, there is significant international trade in most precursors used in the illicit manufacture of drugs. Between 1 November 2015 and 1 November 2016, the authorities of 67 exporting countries used the PEN Online system for almost 30,000 transactions. Volumes of trade and the number of shipments vary significantly depending on the substance and from one year to another.

A. Substances used in the illicit manufacture of amphetamine-type stimulants

50. Pre-export notifications involving precursors of amphetamine-type stimulants account for about 65 per cent of all pre-export notifications for Table I substances sent between 1 November 2015 and 1 November 2016: the authorities of 42 exporting countries used the PEN Online system for almost 5,600 transactions involving shipments of precursors of

amphetamine-type stimulants. Likewise, precursors of amphetamine-type stimulants represent 43 per cent of incidents communicated through PICS. Those numbers are comparable to those for the previous year.

1. Substances used in the illicit manufacture of amphetamines

(a) Ephedrine and pseudoephedrine

51. Ephedrine and pseudoephedrine are among the most widely used precursors for the illicit manufacture of methamphetamine. They are also both used legitimately for medical purposes and are therefore among the most frequently and widely traded substances in Table I of the 1988 Convention, both in the form of raw materials as well as pharmaceutical preparations. P-2-P, phenylacetic acid and APAAN, as well as a number of non-scheduled substances, may be used to substitute for, or as alternatives to, ephedrine and pseudoephedrine in illicit methamphetamine manufacture (see paras. 98-110 and annex IV).

Licit trade

52. Details regarding 4,912 notifications of planned shipments of ephedrine and pseudoephedrine, in bulk (raw material) and in the form of pharmaceutical preparations, were submitted through the PEN Online system between 1 November 2015 and 1 November 2016. The shipments consisted of a total of 952 tons of pseudoephedrine and 104 tons of ephedrine. The shipments originated in 39 exporting countries and territories and were destined for 166 importing countries and territories. The largest exporters by volume were India and Germany, and the largest importers were the United States and the Republic of Korea.

53. In the reporting period, shipments of ephedrine and pseudoephedrine were stopped at the request of both importing and exporting countries. Canada, Hungary, India and Madagascar reported stopped shipments of ephedrine and pseudoephedrine on form D for 2015, often for administrative reasons. Through the PEN Online system, the authorities of a number of additional importing countries objected to planned shipments, again, mostly for administrative reasons. Among exporting countries, the authorities of India reported on form D having stopped shipments of 200 kg of ephedrine and 25 kg of pseudoephedrine at the request of the importing countries' competent authority through PEN Online.

54. No thefts of ephedrines were reported on form D for 2015. In 2016, two cases of thefts of pseudoephedrine, involving a total of 350 kg from shipments amounting to 3.5 tons, were brought to the attention of INCB. Both cases

involved shipments from India, one destined for Turkey and one for Egypt. INCB has followed up with all countries concerned; investigations are ongoing. **INCB encourages all Governments to cooperate with each other and thoroughly investigate thefts of precursor consignments, or parts thereof, and share relevant findings, especially about the modi operandi, with INCB for further dissemination. The information will help to improve understanding of recent patterns and methods of diversion of precursor chemicals and will assist INCB and competent national authorities in preventing future diversions.**

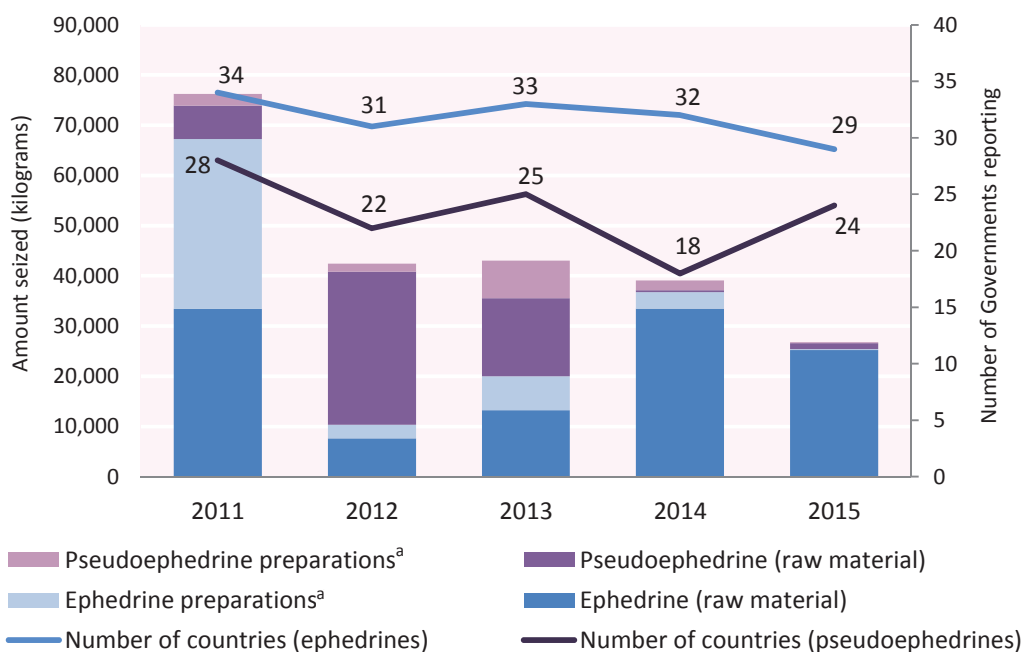
Trafficking

55. In 2015, 29 countries and territories reported on form D seizures of ephedrine either as raw material or in the form of

pharmaceutical preparations. Total seizures of ephedrine raw material amounted to more than 25 tons, with China alone accounting for almost 23.5 tons, followed by New Zealand with more than 950 kg, Australia (457 kg), India (97 kg) and Malaysia (75 kg). With slightly more than 220 kg, China also reported the largest seizures of preparations containing ephedrine.

56. Pseudoephedrine seizures were reported by 24 countries and territories. However, with the exception of India (730 kg) and the United States (210 kg), none of the amounts reported by individual countries exceeded 100 kg, neither as raw material nor in the form of pharmaceutical preparations. While there had been significant fluctuation until 2013, since then the statistics on the reported seizures of the different types of ephedrines reveal an increasing predominance of seizures of ephedrine raw material (see figure II).

Figure II. Seizures of ephedrine and pseudoephedrine reported by Governments on form D, 2011-2015



^a Excludes preparations reported as tablets.

57. Countries in West Asia have traditionally reported few seizures of ephedrines, typically in amounts of less than 50 kg per country and year. An exception was the Islamic Republic of Iran in 2010 and 2011, when more than 6.5 tons of ephedrine raw material were seized. In Pakistan, in that same two-year period 2010-2011, slightly more than 550 kg were seized. Since then, the amounts seized in the region have been negligible, and in 2015, no ephedrine or pseudoephedrine seizures were reported by any country in West Asia.

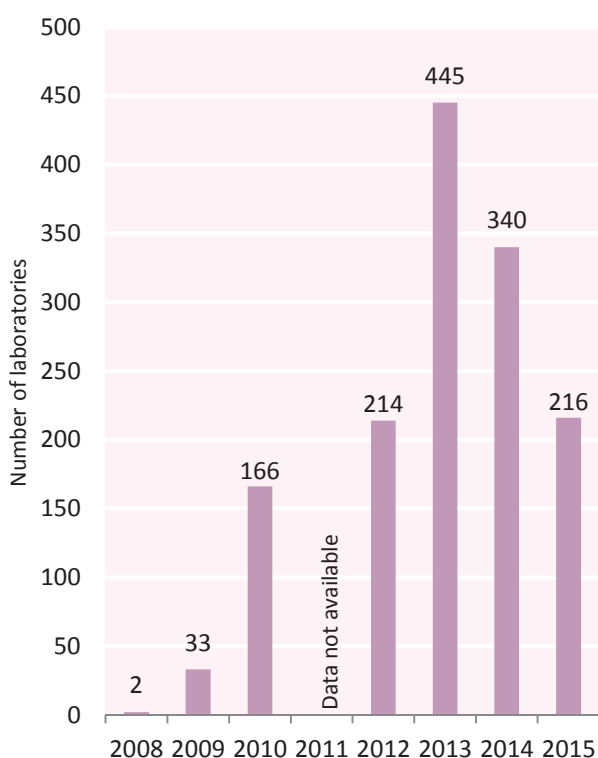
58. According to the annual reports on drug control in the Islamic Republic of Iran, in 2015, for the third consecutive

year, there was a decreasing trend in the number of dismantled laboratories, presumably mostly methamphetamine laboratories (see figure III).¹⁰ At the same time, INCB is aware that authorities in Afghanistan are increasingly concerned about methamphetamine trafficking, abuse and illicit manufacture in their territory. Anecdotal information suggests that pharmaceutical preparations containing ephedrine and pseudoephedrine may feed some of the illicit

¹⁰ Islamic Republic of Iran, Drug Control Headquarters, *Drug Control in 2015* (Tehran, March 2016); and previous years' reports.

methamphetamine manufacture, an observation that has led the Afghan authorities to control the import and export of such products. According to those authorities, illicit methamphetamine manufacture in Afghanistan occurs mostly in the provinces along the Afghan-Iranian border, often in areas outside government control; much of the methamphetamine is smuggled to the Islamic Republic of Iran.

Figure III. Number of laboratories dismantled in the Islamic Republic of Iran, 2008-2015



59. INCB continues to be concerned about the unclear situation with regard to trafficking in ephedrine and pseudoephedrine and their substitute or alternate precursors in other parts of West Asia, especially in countries in or neighbouring conflict areas, and with respect to the illicit manufacture of fake “captagon” tablets (see above). While illicit laboratories compressing amphetamine powder and other ingredients into “captagon” tablets are occasionally reported, there are very few reports of illicit laboratories synthesizing amphetamine or reports of seizures of the chemicals needed in such syntheses (see also para. 83, below).

60. In East and South-East Asia, significant seizures of ephedrines have been reported over the years by Myanmar (more than 3.2 tons of pseudoephedrine and 1.6 tons of ephedrine preparations in 2009, and nearly 3.6 tons of pseudoephedrine preparations in 2013), the Lao People’s

Democratic Republic (more than 4.6 tons of pseudoephedrine preparations in 2009), Malaysia (about 900 kg of pseudoephedrine in 2011) and the Philippines (more than 600 kg of pseudoephedrine in 2013). However, over the years, the most significant amounts have been reported by the authorities of China. In 2015, that country accounted for more than 99 per cent of all ephedrine seizures reported on form D by countries in East and South-East Asia. Although detailed information is not available, it appears that at least part of the ephedrine recently seized in China was illicitly manufactured from 2-bromopropiophenone, a precursor of ephedrine that is not under international control but has been scheduled in China since May 2014.

61. Seizures of ephedrines reported by countries other than China in East and South-East Asia in 2015 rarely exceeded 50 kg, including a few countries that had reported larger amounts in the past, such as Malaysia, Myanmar and the Philippines. Illicit methamphetamine laboratory incidents were reported by only Japan, Malaysia and the Philippines. The low number and limited amounts of seizures of ephedrine and pseudoephedrine contrast sharply with seizure data for methamphetamine end-product (both crystalline methamphetamine and methamphetamine tablets) for which there is a large and growing market in East and South-East Asia.¹¹ Those low numbers and amounts also contrast with other indicators that have long pointed to the Mekong river subregion as a source of illicit methamphetamine, in particular methamphetamine tablets. For example, information available from China for the years 2013-2015 suggests that while most of the crystalline methamphetamine (“ice”) seized in the country is manufactured domestically, the majority of methamphetamine tablets seized in China originated in northern Myanmar.¹² At the same time, and with the exception of China, there have been very few reports in recent years of seizures of other methamphetamine precursors, or non-scheduled substitutes, in countries in East and South-East Asia.

62. China also has long been a source of ephedrines seized in countries in Oceania, namely Australia and New Zealand. Gradually tightened controls in China since 2012 and bilateral cooperation agreements between those countries and China appear to have improved the situation with regard to the specific product, which has long dominated seizures in Australia and New Zealand, i.e., pseudoephedrine

¹¹ *World Drug Report 2016* (United Nations publication, Sales No. E.16.XI.7), p. 53.

¹² National Narcotics Control Commission of China, *Annual Report on Drug Control in China 2013* (Beijing, 2013) and *Annual Report on Drug Control in China 2015* (Beijing, 2015).

preparations in the form of “ContacNT”. Starting around 2014, both countries reported a significant drop in pseudoephedrine seizures, reflected also in fewer detections of illicit laboratories extracting pseudoephedrine.¹³ Since then, seizures of so-called “ContacNT” have largely been replaced by seizures of ephedrine, which accounted for 95 per cent of border seizures in New Zealand in the period 2014-2015. Cooperation between the authorities of China and New Zealand resulted in the seizure of 88 kg of ephedrine in New Zealand in 2015.¹⁴

63. In the first eight months of 2016, the frequency of ephedrine seizures at New Zealand’s borders had decreased to about half the rate of seizures in 2015. However, the quantities involved in the individual seizures increased. Although ephedrine is the most seized precursor at the border, pseudoephedrine is still the main precursor found in clandestine laboratories in New Zealand, most of which are relatively small in scale, often mobile or on private premises. In 2015, 45 laboratories were dismantled.

64. In Australia, seizures of pseudoephedrine raw materials in 2015 amounted to slightly more than 72 kg, in nearly 260 incidents. The largest single amount seized (almost 10.5 kg) was traced to Kenya, while the origin of the vast majority of seizures was unknown.

65. The authorities in Kenya also reported seizures of ephedrine (18.2 kg) in 2015, for the first time in five years, and the country is alleged to be the destination of smuggled ephedrine from India (see para. 69, below). INCB is also aware of a seizure of 12.5 kg of ephedrine in Mali, arriving from Guinea, and a seizure of nearly 280 kg of ephedrine in Côte d’Ivoire, presumably for use as such, as a mild stimulant. The use of ephedrine to cut cocaine has also been reported by authorities in Africa.

66. South Africa continued to be a destination for the smuggling of significant amounts of methamphetamine precursors in 2016. A single seizure in June 2016 involved 140 kg of ephedrine. In May 2016, South African police dismantled an illicit methamphetamine laboratory and seized 12 kg of the drug, as well as a variety of chemicals and drug manufacturing equipment; investigations are ongoing. **INCB regrets that South Africa has effectively stopped providing mandatory seizure information on precursors in 2008, and regrets that the Board has not been able to confirm seizure information available on official government websites. INCB encourages the South African authorities to fulfil**

their international obligations and their role as an important partner in countering illicit drug manufacture and precursor trafficking.

67. In Africa, illicit methamphetamine manufacture was also reported by the authorities in Nigeria. While between 2013 and 2015, 10 laboratories illicitly manufacturing methamphetamine from ephedrines had been found in Nigeria, it was in March 2016 that the Nigerian authorities, for the first time, dismantled an industrial-scale laboratory. Worryingly, not only did the laboratory significantly exceed the scale of previously detected laboratories but also the manufacturing method it used was based on chemicals not under international control (see para. 101, below).

68. Seizures of ephedrines in South Asia have been reported almost exclusively by India. Ephedrine seizures in that country peaked in 2011 and pseudoephedrine seizures peaked in 2012 and 2013. The sharp decline after 2013 (see figure IV) is attributable, according to the Indian authorities, to the strengthening of domestic controls, namely the mandatory registration of operators involved in the manufacture, distribution, sale, purchase, possession, storage or consumption of substances in schedule-A of the Narcotic Drugs and Psychotropic Substances (Regulation of Controlled Substances) Order.¹⁵ India has also occasionally reported illicit manufacture of ephedrine. One such illicit facility was dismantled in July 2016, and 45 kg of ephedrine seized.

69. In April 2016, Indian authorities seized in a single incident more than 10 tons of ephedrine and 8.5 tons of pseudoephedrine, amounts that exceeded by far the total seizures in any one year in the past; the substances were seized from the warehouse of a pharmaceutical company. While INCB understands that investigations are ongoing, there have been claims that the company had been targeted since 2013 and that the ephedrine was intended to be smuggled to Kenya and the United Republic of Tanzania for illicit methamphetamine manufacture, involving international trafficking networks. It is claimed that the case highlights the shortage of drug inspectors for regular inspections at manufacturing and selling units, as well as the dangers of small, financially distressed companies being targeted by traffickers. According to the media, the last inspection of the company was in July 2015, when no violations were observed. However, since the substances had allegedly been stocked for several years as a by-product of the ephedrine manufacturing process, the inspectors did not know the stock existed. The most recent media reports suggested that in addition to the ephedrine by-product having been smuggled outside India,

¹³ Australian Criminal Intelligence Commission, *Illicit Drug Data Report 2014-2015*, p. 155.

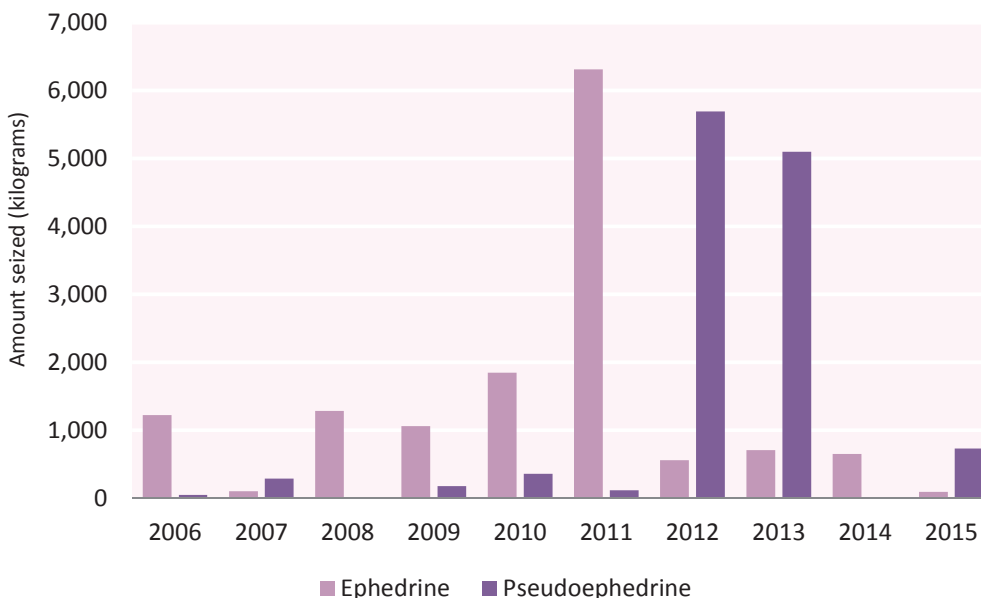
¹⁴ China, National Narcotics Control Commission, *Annual Report on Drug Control in China 2016* (Beijing, 2016).

¹⁵ India, Ministry of Home Affairs, *Annual Report 2015* (New Delhi, Narcotics Control Bureau, 2015), p. 27.

the company had also been used to manufacture ephedrine specifically to be smuggled abroad. **INCB commends Governments for uncovering diversion attempts and effecting precursor seizures. However, INCB would like to remind Governments of the importance of thoroughly**

investigating all diversion attempts and seizures, and communicating relevant findings to INCB and any other countries concerned so that the underlying weaknesses of domestic monitoring systems or shortcomings at the international level can be addressed.

Figure IV. Seizures of ephedrine and pseudoephedrine raw materials reported on form D by the Government of India, 2006-2015



Note: Excludes seizures of preparations containing ephedrine or pseudoephedrine, which were typically reported as tablets. In 2014, India reported having seized 676 kg of pseudoephedrine preparations.

70. In a similar case, in July 2016, authorities in Nepal seized nearly 500 kg of pseudoephedrine from the premises of a company in Kathmandu. While investigations are ongoing, INCB understands that the substance was legitimately imported, then manufactured into preparations containing pseudoephedrine, which were subsequently seized from the premises of a packaging company; the substance was to be smuggled abroad. **While commending the Nepalese authorities for the seizure, INCB encourages the authorities to review the annual legitimate requirements for imports of pseudoephedrine into Nepal (currently 5,000 kg) and amend them on the basis of the most recent market data. INCB encourages all other countries to regularly review and update, as required, the annual legitimate requirements for imports of a number of amphetamine-type stimulant precursors as well.**

71. In Europe in 2015, seizures of ephedrines mostly involved preparations containing pseudoephedrine. That is similar to the situation in 2014, although the amounts reported in 2015 were significantly smaller, totalling just about 225 kg. In 2015, the largest amounts were reported by Czechia

(nearly 77 kg, in 120 incidents) and Bulgaria (nearly 66 kg), followed by Ukraine (47 kg) and Poland (35 kg). Bulgaria also reported seizures of pseudoephedrine raw material, while seizures of ephedrine both as raw material and in the form of preparations were negligible in Europe — the largest seizure involved about 4 kg of ephedrine in a postal air shipment from India to Germany.

72. Tablets containing pseudoephedrine seized in Czechia typically contained more than 30 mg (and up to 120 mg) of pseudoephedrine per dosage unit and were destined for one of the 262 small-scale illicit methamphetamine laboratories dismantled in 2015. Turkey continued to be identified as a country of origin. Seizures of preparations containing pseudoephedrine also continued in 2016, as communicated through PICS, although a decrease in the number of such incidents suggests that the measures taken by the authorities in Turkey are having some effect. **INCB reminds Governments to consider, to the extent possible and in accordance with national legislation, applying control measures for pharmaceutical preparations containing ephedrine or pseudoephedrine similar to those for the bulk (raw) substances.**

73. Among all countries having reported seizures of ephedrine, the United States recorded the largest decrease in a five-year period. In 2015, the country reported only a seizure of slightly more than 210 kg involving 37,200 bottles of various pseudoephedrine-antihistamine combination preparations. Investigations determined that the bottles were stolen in 2010, when they were placed on a trailer from a business that the local pharmacy board had shut down, and the owner of the business was supposed to pay to have the products destroyed, but they were then reported stolen. A number of the bottles appeared at a police traffic stop in June 2015 and resulted in the recovery of the trailer with the remainder of the bottles.

74. Even with high-purity methamphetamine being smuggled into the United States, illicit manufacture of the drug has continued in the country. As in the past, and although it continues to decrease, such small-scale domestic manufacture is fuelled by pharmaceutical products containing ephedrine and pseudoephedrine, obtained through a series of purchases from multiple retail outlets to circumvent established purchase limits (known as “smurfing”), and the use of crude manufacturing methods such as the “one-pot method”.

75. In the rest of North America, Mexico did not report any seizures of ephedrine on form D for 2015, while Canada reported negligible amounts. The situation was similar in Central and South America and the Caribbean, where only Argentina reported a notable seizure of ephedrine on form D for 2015, of an amount of less than 50 kg.

(b) Norephedrine and ephedra

Licit trade

76. International trade in norephedrine, a substance which can be used in the illicit manufacture of amphetamine, continues to be low compared with trade in other precursors of amphetamine-type stimulants. Between 1 November 2015 and 1 November 2016, 174 transactions involving norephedrine were recorded through the PEN Online system: 12 exporting countries pre-notified shipments to 28 importing countries, amounting to more than 33 tons of raw material and 19.5 tons in the form of pharmaceutical preparations. Shipments amounting to 1 ton or more were pre-notified to the following importing countries, in descending order: United States, India, Myanmar, Algeria, Cambodia, Philippines and Sweden.

Trafficking

77. Seizures of norephedrine were reported on form D for 2015 by only four countries: Australia, China, Philippines and

Ukraine; the amounts were all less than 15 kg, seized in multiple incidents, i.e., individual seizures were small and the origins mostly unknown. There were no seizures of ephedra reported on form D. However, according to information in its annual report, China seized 146 tons of ephedra in 2015, the lowest amount in three years.¹⁶

(c) 1-Phenyl-2-propanone, phenylacetic acid and APAAN

78. P-2-P, phenylacetic acid and APAAN can be used in the illicit manufacture of amphetamine and methamphetamine. While P-2-P is an immediate precursor to the two drugs, it can itself be synthesized from phenylacetic acid and APAAN. Legitimate trade in the three substances differs significantly in volume, extent and the number of countries involved. Seizures of diverted P-2-P have been rare in recent years and typically involved P-2-P that was illicitly manufactured. Non-scheduled substitutes for, or alternatives to, P-2-P in the illicit manufacture of amphetamine and methamphetamine are addressed in paragraphs 98-110, below.

Licit trade

79. With very few legitimate uses other than for the manufacture of amphetamine or methamphetamine for pharmaceutical purposes, international trade in P-2-P is also very limited. Between 1 November 2015 and 1 November 2016, there were only 18 pre-export notifications for planned exports of P-2-P, from four exporting countries to 11 importing countries; the largest exporter was India and the largest importer was the United States. By contrast, licit international trade in phenylacetic acid is by far more significant and widespread, with 13 exporting countries having notified 47 importing countries and territories about 570 planned shipments of phenylacetic acid. There were no transactions involving APAAN.

80. Following an attempted import of more than 9,000 litres of P-2-P into the Syrian Arab Republic by a previously unknown company in 2014, the same company attempted to import 24 tons of phenylacetic acid in March 2016. The shipment was suspended by the Indian authorities in close coordination with INCB; investigations are ongoing. **INCB welcomes the vigilance and close cooperation of Governments to prevent chemical diversion and encourages the timely exchange of all relevant documentation to enable the authorities of the countries concerned to investigate suspicious cases, diversions and attempted diversions. INCB wishes to acknowledge**

¹⁶ National Narcotics Control Commission of China, *Annual Report on Drug Control in China 2016*.

specifically the efforts made by the authorities of countries participating in Operation Missing Links to assist the authorities in countries where conflicts and political instability affect the ability of those authorities to effectively control the trade in precursors in their entire territory.

Trafficking

81. Seizures of P-2-P in 2015 were reported by 10 countries and territories. The largest amounts were seized by Mexico (more than 16,500 litres), Poland (nearly 7,000 litres) and China (nearly 5,500 litres), followed by the Netherlands (525 litres) and Belgium (435 litres). Other seizures were made mostly by European countries, including Estonia, Finland, Germany and Hungary and did not exceed 20 litres. Most of the P-2-P seized in 2015 was reported to have been seized in illicit laboratories where it had been illicitly manufactured from various pre-precursors (see also paras. 98-110, below); this included the total amount reported by Mexico. The seizure in Poland was the result of meticulous law enforcement investigations that are still ongoing to identify details of the methods of diversion and the trafficking organizations involved. **While the integrity of ongoing investigations must be ensured, INCB encourages the authorities in the countries concerned, as well as relevant European institutions, to ensure that the details of the investigation are made available to those that need to know in order to prevent similar diversions from happening in the future and elsewhere.**

82. Seven countries and territories reported seizures of phenylacetic acid on form D for 2015. The largest amounts seized — more than 16 tons — were reported by the authorities of Lebanon, followed by Mexico (550 kg) and the Netherlands (nearly 260 kg). The amounts seized in Australia, China, Spain and Ukraine did not exceed 25 kg in any country. Information about the origin or modi operandi of the traffickers was usually not provided.

83. The seizure of phenylacetic acid in Lebanon is one of the few seizures in West Asia of precursors of amphetamine, which is typically the main active ingredient in fake “captagon” tablets.¹⁷ Lebanese authorities also confirmed the dismantling of a laboratory in Dar El Wasiaa village in December 2015 and the seizure of chemicals and equipment, which seemed to

suggest that some chemical synthesis may have taken place in that laboratory. In 2016, during the pre-operational phase of Operation Missing Links, INCB also became aware of a seizure in Lebanon of about 1 ton of a solid chemical suspected of being a precursor used for manufacturing “captagon”. **While investigations are ongoing, INCB wishes to commend the Lebanese authorities for those seizures. INCB also wishes to encourage all Governments to be vigilant with respect to shipments of amphetamine precursors under international control, as well as non-scheduled chemicals, to countries in West Asia, as a contribution to establishing the missing links, which would help for understanding and addressing the sources of chemicals that feed the illicit production of “captagon”.**

84. Seizures of APAAN were reported on form D by five countries, totalling slightly more than 1.5 tons. That is a significant decrease from previous years (see figure V), especially when compared with the seizures communicated through PICS.

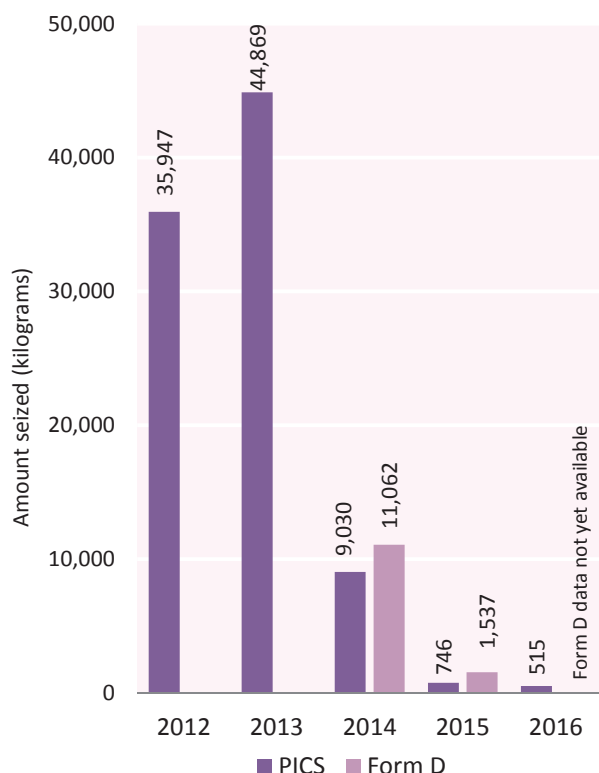
85. Germany reported two seizures of APAAN, totalling 37.5 kg, which originated in China and the Netherlands. In the incident involving APAAN that originated in the Netherlands, the substance was passed off as amphetamine. The larger seizure of APAAN, 35.5 kg, was identified in a mixture with 2-phenylacetoacetamide (APAA), a substance not under international control that is manufactured from, or via, APAAN, is an immediate precursor of P-2-P, and has been encountered in increasing frequency and amounts over the past year (see para. 108, below); it was seized when it was transiting Germany from China to Poland.

86. In 2016, seizures of P-2-P and APAAN continued to be communicated through PICS. In the first 10 months of 2016, eight incidents involving P-2-P, amounting to slightly less than 60 litres, and six incidents involving APAAN amounting to slightly more than 500 kg were communicated through PICS. While the majority of incidents involving both substances occurred in illicit laboratories or warehouses, often in the Netherlands, there were also incidents at airports (France), inland roads (Netherlands) and at a courier company (Mexico).

87. The example of APAAN illustrates the value of the early sharing of information through PICS and the immediate impact of controls: the voluntary communication of individual incidents through PICS contributed to building a case for the international control of APAAN in 2014. Subsequent sharing of information through PICS then revealed the dramatic decline in seizures after controls came into effect. In addition, it should be noted that reporting on form D started only after those controls were in place.

¹⁷ While illicit laboratories compressing amphetamine powder and other ingredients into “captagon” tablets have occasionally been reported, there are few reports in West Asia of illicit laboratories synthesizing amphetamine or reports of seizures of the chemicals needed for such syntheses.

Figure V. Seizures of APAAN communicated through PICS and reported on form D, 2012-2016



Note: Reporting on form D (2012-2015).

2. Substances used in the illicit manufacture of 3,4-methylenedioxymethamphetamine and its analogues

88. 3,4-MDP-2-P is an immediate precursor to 3,4-methylenedioxymethamphetamine (MDMA) and other “ecstasy”-type substances and can itself be manufactured from piperonal, safrole or isosafrole (see annex IV). Legitimate trade in the four chemicals differs significantly in terms of volume, extent and the number of countries involved. Of the four chemicals, piperonal is the most widely traded precursor, while international trade in 3,4-MDP-2-P and isosafrole is nearly non-existent. None of the chemicals have been frequently diverted into illicit markets in recent years, perhaps with the exception of safrole and safrole-rich oils. Instead, seizures of 3,4-MDP-2-P typically involved cases in which the substance had been illicitly manufactured from non-scheduled pre-precursors (see also paras. 111-117, below).

(a) 3,4-Methylenedioxyphenyl-2-propanone and piperonal

Licit trade

89. Between 1 November 2015 and 1 November 2016, 18 exporting countries notified the authorities of 47 importing

countries of 540 planned exports of piperonal, amounting to a total of nearly 1,940 tons. As in previous years, there were no pre-export notifications for 3,4-MDP-2-P.

Trafficking

90. Sizeable seizures of 3,4-MDP-2-P were reported on form D for 2015 only by the Netherlands, Australia and India, amounting to about 500 litres, 140 litres and 43 litres, respectively. One incident in Australia, involving about 90 litres, could be traced to China, while the origin of the substance seized in two further incidents is unknown. Australia and the Netherlands were also the only countries reporting seizures of piperonal in amounts greater than 1 kg. The Netherlands reported three seizures of a total of nearly 45 kg of piperonal, which were all made in illicit laboratories and warehouses. Seizures in Australia amounted to about 5.7 kg, including a mixture of 3,4-MDP-2-P and piperonal.

91. Through PICS, INCB is also aware of additional seizures of both substances in 2016. Of note is a seizure of 125 litres of 3,4-MDP-2-P, together with 375 litres of methylamine, in a warehouse in the Netherlands. Other, significantly larger seizures of non-scheduled 3,4-MDP-2-P derivatives were also communicated through PICS (see paras. 111-117, below). There were no incidents involving piperonal communicated through PICS in 2016.

(b) Safrole, safrole-rich oils and isosafrole

Licit trade

92. During the reporting period, six exporting countries sent 26 pre-export notifications for safrole and safrole-rich oils via PEN Online to 11 importing countries, involving a total volume of 2,300 litres. That represents a further decline from already low levels of trade in the past four years. Unlike what was the case some years ago, only a small portion of trade in safrole was in the form of safrole-rich oils. During the reporting period, there were only two pre-export notifications of less than 10 litres for isosafrole.

Trafficking

93. Seizures of safrole and safrole-rich oils reported through form D for 2015 were negligible. With about 75 litres of safrole seized in three incidents, Australia reported the largest safrole seizures in 2015. There were no seizures of isosafrole and no reports of suspicious or stopped shipments involving any of the three substances.

94. With regard to several seizures that were under investigation or verification at the time of the Board’s last report on precursors, the Board regrets that no further

information has been forthcoming. This applies to a seizure of 2,100 litres of isosafrole reported by Namibia in 2014, for which INCB tried to determine the circumstances of the seizure and the origin of the substance. It also applies to the seizure of nearly 5,000 litres of safrole-rich oils buried in underground tanks in Cambodia, the seizure of 5 tons of unspecified amphetamine-type stimulant precursors in the Lao People's Democratic Republic near the border with Viet Nam, and the seizure of a large-scale sophisticated laboratory operation capable of producing industrial-scale volumes of MDMA in Ontario, Canada, in June 2015. **Governments are required to report seizures on form D and are requested to provide additional information on the background and circumstances of a seizure in response to INCB inquiries, with a view to supporting follow-up investigations, disseminating relevant information widely and preventing similar diversions in the future and elsewhere.**

95. Seizures of safrole and safrole-rich oils continued to be communicated through PICS in 2016. Two seizures occurred in illicit laboratories in the Netherlands; however, the amounts were small. INCB is also aware of another seizure of about 110 litres in Cambodia but has not yet been able to verify the details.

3. Use of non-scheduled substances and other trends in the illicit manufacture of amphetamine-type stimulants

96. In accordance with article 12, paragraph 12 (b), Governments are required to provide information on form D about any substance not included in Table I or Table II which is identified as having been used in illicit manufacture of narcotic drugs or psychotropic substances and which is deemed by the party to be sufficiently significant to be brought to the attention of the Board. In recent years, INCB has received such information for a number of substances used in the illicit manufacture of amphetamine-type stimulants, reflecting the diversification that has occurred in the illicit manufacture of those substances over time. **INCB commends those Governments that provided information about non-scheduled substances on form D and encourages them to consider making better use of PICS for the early sharing of such information worldwide.**

97. The following subsections provide information on non-scheduled substances and other trends in the illicit manufacture of amphetamine-type stimulants, split to the extent possible into subsections for pre-precursors for amphetamine and methamphetamine, and pre-precursors for MDMA and other "ecstasy"-type substances. A number of chemicals are required in the illicit manufacture of all

amphetamine-type stimulants and even other drug types; they are included in the subsections for which the most information was available.

(a) Pre-precursors for amphetamine and methamphetamine

98. On form D for 2015, a number of countries reported seizures of substances not included in Table I or Table II of the 1988 Convention but which were identified as having been used in illicit amphetamine or methamphetamine manufacture.

99. Mexico reported an increase of almost 38 per cent in the dismantling of illicit methamphetamine laboratories (an increase from 141 dismantled laboratories in 2014 to 195 in 2015). The predominant method of illicit methamphetamine manufacture in those laboratories continued to be based on P-2-P. However, in contrast to previous years when the starting materials were mostly esters and other derivatives of phenylacetic acid, the use of the nitrostyrene method, which starts from benzaldehyde and nitroethane via, or from, the intermediary product 1-phenyl-2-nitropropene, has become increasingly common in that country. In 2015, for the first time, Mexican authorities seized more than 4,000 litres of benzaldehyde and almost 5,500 litres of 1-phenyl-2-nitropropene. In August 2016, United States authorities seized a misdeclared consignment of nearly 36 tons of benzaldehyde en route from India to Mexico.

100. The fact that more than 12 tons of iron powder were seized in Mexico in 2015 provides further evidence of an increasing use of the nitrostyrene method for illicit methamphetamine manufacture in the country. The shift in P-2-P-based manufacturing methods for the illicit manufacture of methamphetamine in North America, from the use of phenylacetic acid and its derivatives to the nitrostyrene method and use of benzaldehyde as a starting material has also been confirmed by forensic drug-profiling programmes. In the first six months of 2016, 51 per cent of selected samples analysed in the United States and found to be based on P-2-P as a chemical intermediary used the nitrostyrene method, and only 21 per cent started from phenylacetic acid and its derivatives, while ephedrine-based and pseudoephedrine-based methods had disappeared.¹⁸

101. INCB is concerned about indications arising in 2016 that the know-how of Mexican illicit methamphetamine laboratory operators has reached countries in Africa.

¹⁸ United States Drug Enforcement Administration Special Testing Laboratory, Methamphetamine Profiling Programme, 2016.

Specifically, in March 2016, the Nigerian authorities dismantled the first industrial-scale illicit methamphetamine laboratory. The chemicals found at the laboratory, which was located in an abandoned factory in an industrial area of Delta State of Nigeria, suggested a manufacturing method based on the nitrostyrene method; four Mexican nationals were among the arrestees. The chemicals, most of which are not yet scheduled in Nigeria, were purchased from legitimate sources within the country. Investigations are ongoing.

102. In addition to Mexico, seizures of benzaldehyde were reported by five other countries, of which four also reported seizures of nitroethane and/or 1-phenyl-2-nitropropene, indicative of the nitrostyrene method for illicit amphetamine or methamphetamine manufacture. Such combined seizures were reported by the authorities of Austria, Estonia, Mexico, Poland and the Russian Federation. The incident in Austria had previously been communicated through PICS with relevant operational details; the chemicals had been imported from China via Germany. In June 2016, a seizure of 600 kg of 1-phenyl-2-nitropropene was communicated through PICS; the substance was transiting Belgium, from China to Italy.

103. After several years in which there had been no seizures of international shipments of methylamine (monomethylamine),¹⁹ in 2015 Mexico reported the seizure of nearly 25,000 litres of methylamine upon arrival at a seaport. Seizures of methylamine were also reported by an additional six countries (Estonia, France, Guatemala, Netherlands,

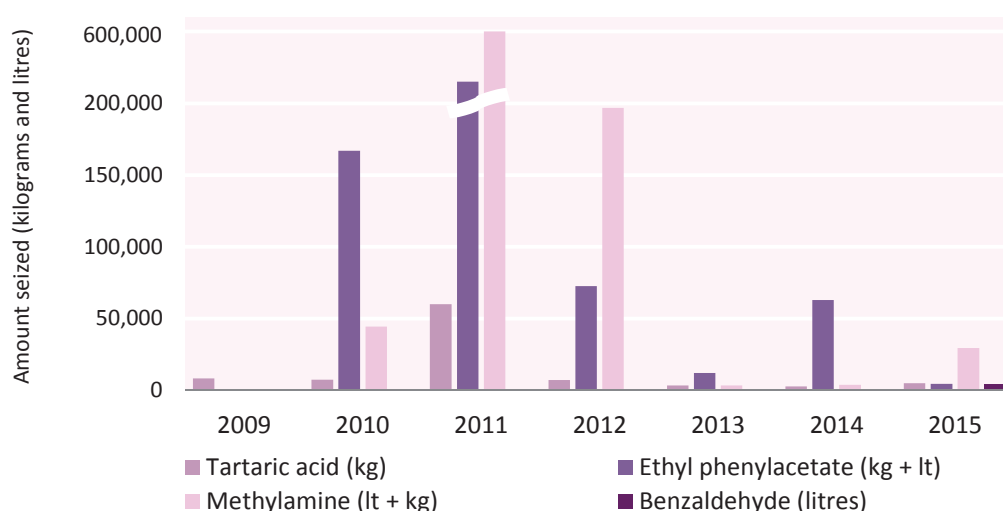
Poland and United States); especially in Europe, seizures may also have been related to the illicit manufacture of MDMA (see para. 116, below).

104. In 2015, Mexico also seized ammonium chloride (more than 1.8 tons) with reported links to illicit methamphetamine manufacture, as well as heroin manufacture. Although no further details were provided, ammonium chloride might have been used for the illicit manufacture of methylamine.

105. The investigation of a case of diversion of significant amounts of methylamine from shipments from the United States to Mexico, detected in 2010, was concluded in October 2015. The company in the United States was charged for knowingly exporting methylamine, a regulated chemical in the United States, without verifying the legitimacy of the transaction and for failing to report the missing shipments.

106. When methamphetamine or amphetamine is manufactured using methods starting from, or via, P-2-P, tartaric acid is needed to make the more potent form of methamphetamine. Mexico has regularly reported significant seizures of tartaric acid since 2009. In 2015, seizures amounted to nearly 5 tons; over the years, the amounts seized have ranged between 2 and 8 tons, with the exception of 2011, when nearly 60 tons were seized (see figure VI). All reports of seizures have been linked with illicit methamphetamine manufacture.

Figure VI. Seizures of chemicals associated with illicit methamphetamine manufacture reported on form D by Mexico, 2009-2015



¹⁹ Methylamine is not only a key chemical for the illicit manufacture of methamphetamine. It is also required to produce MDMA and several new psychoactive substances. Seizures in Mexico are assumed to be related to the illicit manufacture of methamphetamine.

107. “Designer” precursors of amphetamine and methamphetamine were reported to have been seized in four countries. Belgium reported seizures of small amounts of unspecified P-2-P methyl glycidic acid derivatives. Authorities in the Netherlands, within a two-week period in

November 2015, seized almost 3.3 tons of the sodium salt of P-2-P methyl glycidic acid (a precursor of P-2-P) when it arrived in Rotterdam. Both consignments had been declared as wallpaper glue. In one case, the consignment was mixed with more than 700 kg of the sodium salt of 3,4-MDP-2-P methyl glycidic acid (a precursor of 3,4-MDP-2-P and of “ecstasy”; see paras. 111-117, below), originating in China, transiting Hong Kong, China, and destined for the Netherlands. Additional seizures occurred in France and the Netherlands in 2016, the most significant involving almost 2.3 tons of the substance seized from a warehouse in the Netherlands in August 2016.

108. Germany reported on form D for 2015 the seizure of a mixture consisting of about 200 kg of APAA and 35 kg of APAAN. German authorities had already communicated that seizure through PICS in June 2015. APAA is not under international control and appears to have filled the gap left when APAAN, its immediate precursor, was placed in Table I of the 1988 Convention in October 2014.²⁰ In the first 10 months of 2016, seven additional incidents involving APAA, in amounts totalling more than 5.6 tons, were communicated through PICS, and INCB is aware of further incidents amounting to an additional 800 kg; all incidents occurred in Europe. **Governments are reminded once again of the possibility of traffickers approaching legitimate industry for customized synthesis of non-scheduled intermediaries and of the need to alert industry to that possibility.**

109. The Philippine authorities confirmed on their form D for 2015 the seizure of more than 650 kg of 1,2-dimethyl-3-phenylaziridine, an unusual chemical not under international control which is known as an intermediary product in the illicit manufacture of methamphetamine from ephedrine. However, as the Board noted in its 2015 report on precursors, the substance is also an artefact from the laboratory analysis of “chloro(pseudo)ephedrine”;²¹ another “designer” precursor of methamphetamine. Attempts by INCB to verify the nature of the chemical with the Philippine authorities have so far been unsuccessful.

110. Various countries in Europe, East and South-East Asia, Oceania and South America also reported other chemicals not under international control that were seized in relation to clandestine manufacture of amphetamine or

methamphetamine in 2015. The substances most frequently reported included iodine and red phosphorous. Japan reported having dismantled a small-scale illicit methamphetamine manufacturing operation involving ephedrine, red phosphorous and hydrogen iodide. Instances of illicit methamphetamine manufacture using methods involving these chemicals were also reported by the authorities of Germany and New Zealand. In most of the above reports, information about the origin of the chemicals was not provided or not available.

(b) Pre-precursors for 3,4-methylenedioxyamphetamine and related “ecstasy”-type drugs

111. In the period 2015-2016, six countries reported incidents involving pre-precursors for MDMA and related “ecstasy”-type drugs, which are not listed in Table I or Table II of the 1988 Convention. All seizures occurred in Europe and typically involved substances that could be classified as “designer” precursors, i.e., substances that are not available off-the-shelf but made specifically on demand. Overall, amounts were significantly less than just a few years ago; operational details of those seizures were typically shared through PICS.

112. Seizures of non-scheduled “ecstasy”-type precursors in amounts larger than 1 ton involved salts and esters of 3,4-MDP-2-P methyl glycidic acid (Bulgaria, Netherlands and Romania), and 3,4-(methylenedioxy)phenylacetone (Netherlands). Smaller amounts of those substances were also seized in Germany and France.

113. Seizures of about 80 kg of 1-(3,4-methylenedioxyphenyl)-2-nitropropene in the Netherlands and France illustrate that illicit operators are exploring manufacturing methods for MDMA similar to those for amphetamine and methamphetamine: the substance can be considered the MDMA-precursor equivalent of 1-phenyl-2-nitropropene, indicative of the nitrostyrene method (see above).

114. Where such information was available, the substances mentioned above were typically reported to have originated in China; Hong Kong, China; or Taiwan Province of China, and to be destined for the Netherlands. Poland and Ukraine were also mentioned as destination countries. None of the substances are under international control but all are included in the INCB limited international special surveillance list. That list includes key substitute chemicals and relevant extended definitions capturing a range of derivatives and chemically related substances and is available to competent national authorities as part of the information package on the control of precursors, on the secure website of INCB.

²⁰ The first known seizure of APAA occurred in the Netherlands in December 2012 and was communicated through PICS.

²¹ The term “chloro(pseudo)ephedrine” is used to reflect the fact that the substance is typically a mixture of the diastereomeric forms of what are commonly known as chloroephedrine and chloropseudoephedrine.

115. Other non-scheduled chemicals that were reported seized in 2015 included hydrogen gas and methylamine. Germany reported several thefts involving a total of 16,750 litres of compressed hydrogen gas in 335 gas cylinders from company premises in the western part of Germany, near the border with the Netherlands. Some of the stolen cylinders and a truck misused for their transport were later found in the Netherlands. Thefts of hydrogen gas continued in 2016 and operational details and the modi operandi were communicated through PICS. Hydrogen gas, which is used as a reducing agent in the illicit manufacture of a number of synthetic drugs, has also been found in numerous clandestine amphetamine and “ecstasy” laboratories in the Netherlands and elsewhere.

116. Similarly, methylamine is a chemical that is usually associated with illicit methamphetamine manufacture but that is also critical in the illicit manufacture of MDMA. For example, the Netherlands reported seizures in 2015 of methylamine totalling slightly more than 10,000 litres. All seizures were made in illicit laboratories, typically manufacturing MDMA and occasionally synthetic cathinones, or in associated warehouses. Seizures of methylamine also continued in 2016, typically in illicit laboratories in the Netherlands.

117. INCB commends the Governments that share information about non-scheduled pre-precursors, especially those Governments that share such information early, through PICS, to enable the authorities of other countries involved as source, transit or destination countries to initiate the requisite investigations. This applies in particular to the Netherlands (accounting for more than 30 per cent of all incidents in 2015 and 2016) and other European countries, which thus provided a starting point for follow-up and operational cooperation, and helped to raise awareness of new developments.

B. Substances used in the illicit manufacture of cocaine

118. With Colombia accounting for more than 60 per cent of global coca bush cultivation, changes in that country have significant implications for the global supply of cocaine hydrochloride. Following an increase of 44 per cent in 2014, the area under coca bush cultivation in that country increased by another 39 per cent in 2015. Potential production of cocaine hydrochloride is estimated to have increased even more in 2015, by nearly 46 per cent, compared with the previous year. In Bolivia (Plurinational State of) and Peru, the area under coca bush cultivation is reported to have slightly

decreased, by 1 per cent and 6.1 per cent, respectively; the corresponding figures of potential production of sun-dried coca leaves have decreased by 2 per cent in Bolivia (Plurinational State of) and 4.5 per cent in Peru.

1. Potassium permanganate

119. Potassium permanganate is a key chemical used in the illicit manufacture of cocaine. It is traded and used widely as a disinfecting agent and for water purification and is an important reagent in synthetic organic chemistry. A minimum of about 145 tons of the substance are required annually for illicit cocaine manufacture in coca-producing countries.²² While coca-producing countries only account for a limited proportion of legitimate international trade in potassium permanganate, a significant proportion of global seizures of potassium permanganate is reported by those countries. There are also significant seizures reported outside coca-producing regions; however, no specific reference to illicit cocaine manufacture was made in connection with those seizures. In the continued absence of any notable diversions of potassium permanganate from legitimate international trade reported to the Board, illicit manufacture of the substance and diversion from domestic distribution channels with subsequent smuggling, including across international borders, remain the major sources of potassium permanganate for illicit purposes.

Licit trade

120. Between 1 November 2015 and 1 November 2016, there were nearly 1,520 pre-export notifications for potassium permanganate, totalling nearly 25,000 tons, sent by the authorities of 29 exporting countries to the authorities in 128 importing countries. As in previous years, the three coca-producing countries in South America — Bolivia (Plurinational State of), Colombia and Peru — only accounted for about 1.5 per cent (slightly more than 240 tons) of the amount of potassium permanganate notified through the PEN Online system. Other countries in South America accounted for imports amounting to another 950 tons of the substance; none of those countries exported or re-exported any potassium permanganate.

²² Based on the averages of low-end estimates for the period 2011-2014 by UNODC of the potential manufacture of 100 per cent pure cocaine, as published in *World Drug Report 2016* (see annex, p. vi), and using the approximate low-end potassium permanganate quantities contained in annex IV to the present report. Note that potential cocaine hydrochloride manufacture in Colombia increased by 46 per cent in 2015 compared with 2014 (UNODC and Government of Colombia, *Colombia: Monitoreo de Territorios Afectados por Cultivos Ilícitos 2015* (Bogota, July 2016), p. 11.

121. Pakistan reported stopped shipments of potassium permanganate on form D — a total of four stopped shipments, amounting to about 66 tons; those imports were reported to have been stopped for administrative reasons. Other countries reporting stopped shipments of potassium permanganate were Canada and Spain; however, the amounts were significantly smaller.

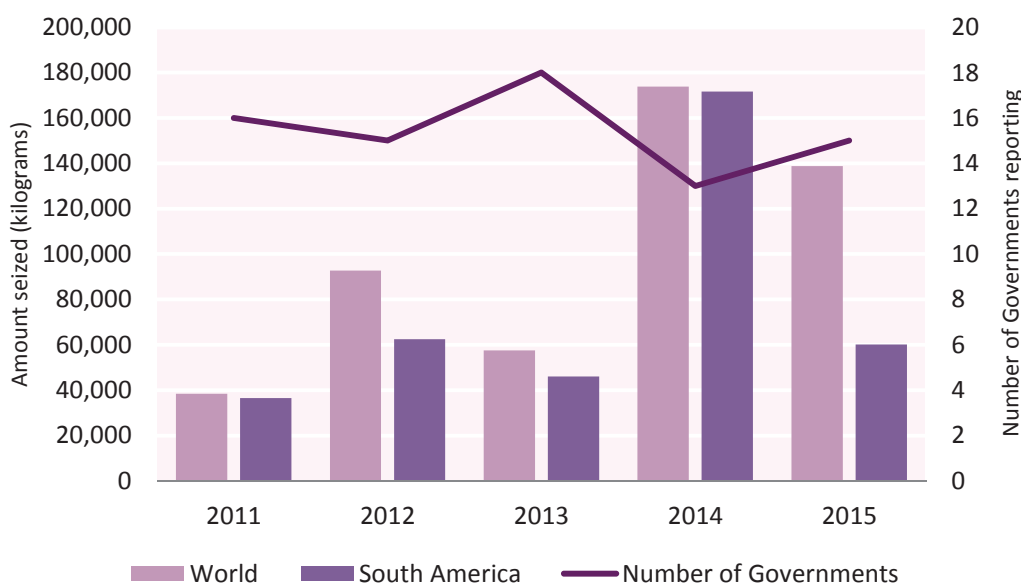
Trafficking

122. Fifteen countries reported seizures of potassium permanganate, totalling nearly 140 tons, on form D for 2015. Of the three coca-producing countries, Colombia accounted for the largest amount (nearly 58 tons) reported. However, levels of seizures in Colombia in 2015 were only about one third of the amount seized in 2014.²³ Significant seizures of potassium permanganate were also reported by Uzbekistan (32.7 tons), China (31.6 tons) and Kazakhstan (13.4 tons); information on the circumstances and reasons for those seizures was usually not provided. Seizures of more than 1 ton were reported by Slovakia and Venezuela (Bolivarian Republic

of). The authorities of the Bolivarian Republic of Venezuela informed that almost the entire amount was seized in three illicit laboratories, thus providing further evidence for cocaine manufacture outside the three coca-producing countries. Within Colombia, the majority of the 236 cocaine crystallization laboratories (conducting the final conversion into cocaine hydrochloride) dismantled in 2015 were located in three departments: Norte de Santander (58), near the border with the Bolivarian Republic of Venezuela, and Cauca (41) and Nariño (38) in the south. **INCB reiterates its warning about the possibility of illicit cocaine manufacture and processing/reprocessing, and the related precursor trafficking, in countries outside the traditional coca-producing regions and along trafficking routes, and the need to address such developments collectively at the regional and international levels.**

123. In 2015, as a result of the significant amounts of potassium permanganate seized outside South America, the proportion of global seizures of that chemical that was seized in that region dropped to 43 per cent; within South America, the total amount of potassium permanganate seized in Bolivia (Plurinational State of) and Colombia together, 862 kg, accounted for 99 per cent of all seizures in that region (see figure VII).

Figure VII. Seizures of potassium permanganate reported by Governments on form D, 2011-2015



²³ As in the past, the Government of Colombia indicated that the reported amounts did not include seizures of potassium permanganate in the form of solutions, as concentrations are usually not known.

124. Seizures of potassium permanganate in South American countries and Uzbekistan were reported to have mostly originated from domestic sources, while seizures in countries in other regions, for which information was available, originated in foreign countries. Colombian authorities also continued to encounter the illicit manufacture of potassium

permanganate from internationally non-scheduled chemicals (see paras. 126-131, below). There were 12 such facilities dismantled in 2015, up from 9 in 2014 and 3 in 2013.

125. Additional seizures of potassium permanganate were also communicated through PICS in 2016.

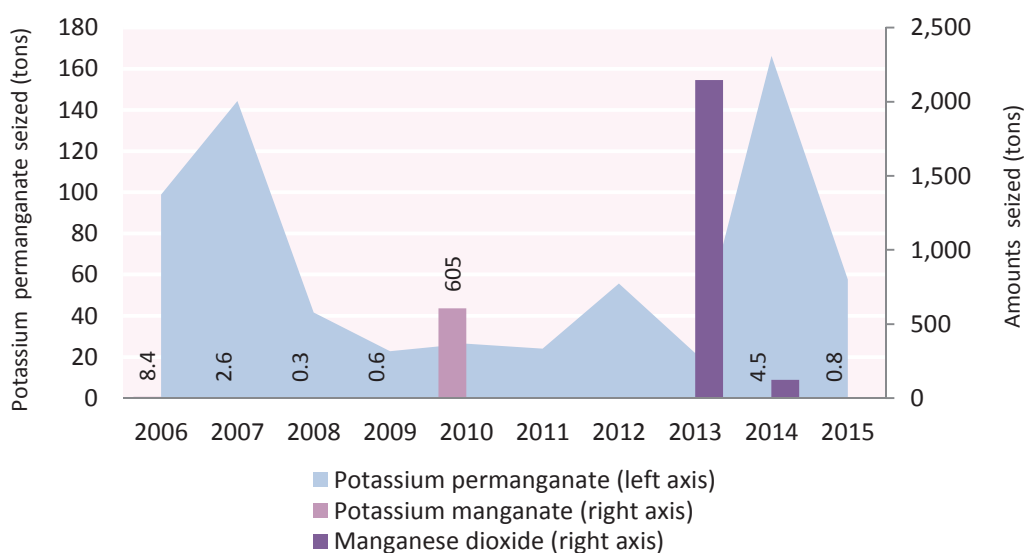
2. Use of non-scheduled substances and other trends in the illicit manufacture of cocaine

126. As in previous years, several countries in South America and elsewhere reported seizures of a variety of chemicals not under international control used in the processing, further refinement (after trafficking) or adulteration of cocaine. Those chemicals included (a) alternative solvents for the extraction of cocaine base from coca leaves and for the conversion of cocaine base into cocaine hydrochloride, (b) chemicals used in the illicit manufacture of internationally controlled precursors, and (c) chemicals used for improving the efficiency of cocaine processing, for example, by reducing the volume of chemicals needed and/or the processing time. Several of these alternative chemicals that are not under international control are, however, under national control in the countries concerned; they are known to have been used in illicit drug manufacture for many years and have partly replaced some chemicals under

international control, in particular substances in Table II of the 1988 Convention. Furthermore, improved processing techniques, and recycling and reuse have resulted in reduced requirements for Table II acids and solvents. Where such information was provided, in the majority of cases, these chemicals were reported to have originated from domestic sources.

127. Significant amounts of such chemicals were reported on form D by the authorities of the three coca-producing countries, Bolivia (Plurinational State of), Colombia and Peru, as well as other countries in South America. Colombia reported seizures of 23 of the 25 substances under national control. The Plurinational State of Bolivia reported 28 internationally non-scheduled chemicals and Peru reported 22 substances. However, with the exception of the Bolivarian Republic of Venezuela, the amounts seized were generally much smaller than in 2014. For example, seizures of potassium manganate, a precursor of potassium permanganate, in Colombia amounted to just 785 kg in 2015, down from 4.5 tons in 2014; those seizures were reported to have been made at four illicit potassium permanganate-manufacturing locations. No seizures of manganese dioxide, another precursor of potassium permanganate, were reported in 2015 (see figure VIII).

Figure VIII. Seizures of potassium permanganate and its precursors, as reported on form D by Colombia, 2006-2015



128. Significant seizures of sodium hypochlorite, a substance that can be used as a substitute for potassium permanganate in the purification of coca paste, have regularly been reported on form D by the authorities of Bolivia (Plurinational State of) and Peru. In 2015, such seizures amounted to more than 20 tons in the Plurinational State of Bolivia and nearly 10 tons in Peru. Seizures of the substance have never been reported by Colombia.

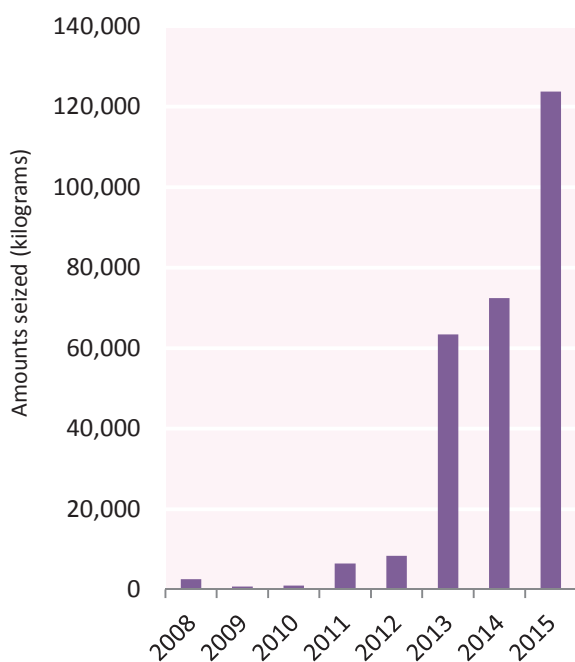
129. Seizures of urea, a chemical that is used in the extraction step to generate ammonia,²⁴ also dropped significantly, mainly because Colombia, which had reported seizures of more than 3,000 tons in 2013 and 2014, did not report any seizures in 2015. Similarly, seizures in the Plurinational State of Bolivia

²⁴ Urea is also used as fertilizer in coca bush cultivation, and could also be used to produce explosives.

in 2015 were down to 240 kg, falling from more than 3 tons a year earlier. By contrast, seizures in 11 incidents in the Bolivarian Republic of Venezuela, totalling nearly 142 tons in 2015, were almost five times the amount of 2014, but still less than in 2011 and 2012.

130. Sodium metabisulfite is a reducing agent that is used to standardize the oxidation level of cocaine base obtained from different sources prior to further processing. It is not under international control but is included in the INCB limited international special surveillance list. Seizures of sodium metabisulfite, which have almost exclusively been reported by countries in South America, show a steady increase, especially in the past three years (see figure IX). In 2015, seizures were reported, in descending order, by the authorities of Colombia (103.3 tons, up from 54 tons in 2014), the Plurinational State of Bolivia (16.7 tons, about the same level as in 2014) and the Bolivarian Republic of Venezuela (3.6 tons, up from 1.9 tons). Seizures of sodium metabisulfite also continued in 2016, with incidents in illicit laboratories in Bolivia (Plurinational State of) and Colombia communicated via PICS.

Figure IX. Seizures of sodium metabisulfite, as reported on form D, 2008-2015



131. Calcium chloride is another chemical used to increase the efficiency of cocaine processing. Specifically, as a drying agent for solvents, it is used as part of the conversion of cocaine into cocaine hydrochloride. It is also used as part of the recycling and reuse of solvents. In 2015, seizures of

calcium chloride in amounts larger than 1 ton were reported on form D by the authorities of Bolivia (Plurinational State of) (18.6 tons, up from 13 tons in 2014) and Colombia (81.9 tons, up from 28.3 tons in 2014). Several other countries reported seizures of the substance although, with the exception of the Bolivarian Republic of Venezuela (575 kg) and Spain (500 kg), in amounts not exceeding 100 kg. As for most other non-scheduled chemicals, information on the origin of calcium chloride was usually not provided.

C. Substances used in the illicit manufacture of heroin

1. Acetic anhydride

132. Acetic anhydride is one of the most widely traded substances in Table I of the 1988 Convention and it is the key chemical in the illicit manufacture of heroin. However, acetic anhydride is also required in the illicit manufacture of amphetamine and methamphetamine, namely in instances where the manufacturing process starts from phenylacetic acid or phenylacetic acid derivatives (see annex IV). While, therefore, seizures of acetic anhydride in Afghanistan and neighbouring countries, as well as in other heroin-producing regions, are typically associated with illicit heroin manufacture, seizures of the substance in Mexico and neighbouring countries might be attributed to the illicit manufacture of either heroin, or methamphetamine from phenylacetic acid derivatives.

Licit trade

133. Between 1 November 2015 and 1 November 2016, there were almost 1,580 pre-export notifications for shipments of acetic anhydride sent by the authorities of 24 exporting countries and territories to 85 importing countries and territories; those shipments involved a total of 482 million litres of acetic anhydride.²⁵

134. Traffickers' attempts to divert acetic anhydride from international trade have been rather rare in past years. In 2016, a shipment of 18,500 litres of acetic anhydride to the Islamic Republic of Iran, about which the Italian authorities sent a notification through PEN Online, was suspended at the request of the Iranian regulatory authorities because the proposed importer in the Islamic Republic of Iran was not authorized to import the substance.

²⁵ This does not include trade among the individual States members of the European Union.

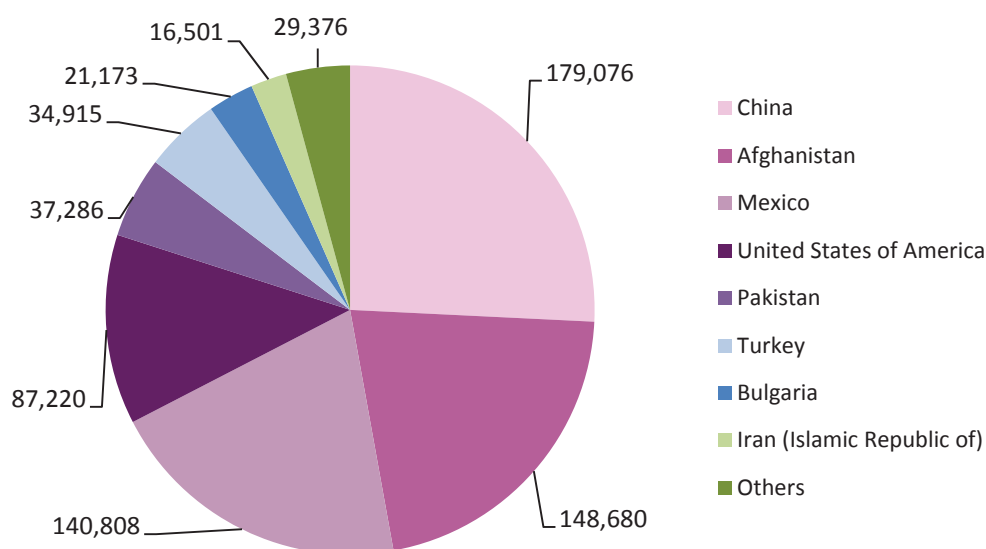
135. Neither the importing nor the exporting country informed INCB whether the shipment was not allowed to proceed because of administrative reasons or whether it was an actual attempt by traffickers to divert acetic anhydride. **Thorough investigation into suspicious transactions and other irregularities in legitimate trade, such as in the above-mentioned case, is very important. Suspending the delivery of a suspicious precursor shipment alone, without further law enforcement investigation, is not enough, as experience has shown that the persons behind the**

suspicious order may continue looking for acetic anhydride in other source countries.

Trafficking

136. Since 2010, the total global seizures of acetic anhydride, reported on form D, amounted to more than 695,000 litres. China, Afghanistan and Mexico, in that order, were the countries reporting the largest volumes of the substance (see figure X).

Figure X. Seizures of acetic anhydride (in litres), as reported on form D, 2010-2015



137. Seventeen countries and territories reported seizures of acetic anhydride on form D for 2015. The largest volume was reported by China (more than 11,000 litres), followed by Pakistan (about 5,300 litres) and Turkey (more than 4,400 litres). Seizures of more than 1,000 litres were also reported by Afghanistan, Argentina, Austria and Mexico. Myanmar reported having seized 60 litres of acetic anhydride in 2015, the first such report by that country in more than five years. **The lack of reported seizures of acetic anhydride and other chemicals required to manufacture heroin remains a concern worldwide.**

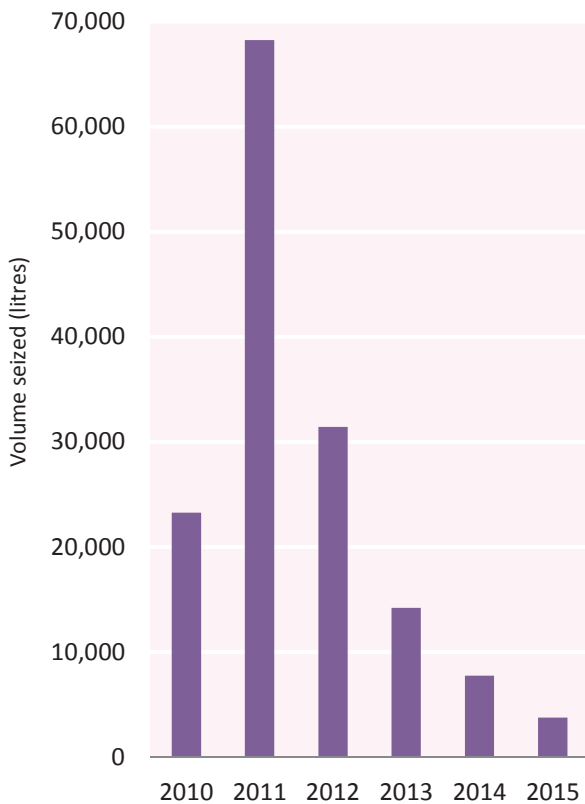
138. With regard to Afghanistan and countries in Central Asia that share a border with Afghanistan, the situation regarding acetic anhydride trafficking has not changed from the last reporting period. The Board noted the continued lack of seizures of acetic anhydride reported by Tajikistan, Turkmenistan and Uzbekistan on form D, a situation that has prevailed for the past 15 years.

139. In Afghanistan, the sharp decline in seizures of acetic anhydride continued throughout 2015 as well as the first half of 2016. The total volume of acetic anhydride seized in

Afghanistan in 2015 was 3,760 litres, or just about half the volume reported in 2014, and thus continuing the declining trend, at a year-on-year rate of 50 per cent, that had started in 2011 (see figure XI). According to data provided by Afghanistan on form D for 2015, the acetic anhydride seized in that country was trafficked through the country's border with the Islamic Republic of Iran, in 18 incidents.

140. Although the Iranian authorities did not provide any seizure data on form D for 2015, INCB understands from information published on the Iranian customs authorities website that in 2015, the country's customs authorities seized two large consignments, of 9.3 tons and 17.6 tons of acetic anhydride, destined for Afghanistan. Through PICS, INCB is also aware of a further consignment seized by Iranian customs authorities in February 2016 involving 11.5 tons of acetic anhydride; the consignment purportedly originated in Taiwan Province of China and was also destined for Afghanistan. In 2016, there were additional media reports about seizures of further amounts of acetic anhydride or other chemicals in the Islamic Republic of Iran; these seizures could not be confirmed with the Iranian authorities by the time of finalizing the present report.

Figure XI. Seizures of acetic anhydride, as reported on form D by Afghanistan, 2010-2015



141. Also in early 2016, the authorities of Pakistan communicated through PICS a seizure of more than 20,000 litres (21.7 tons) of acetic anhydride. The seized substance was declared at customs as a shipment of glacial acetic acid from the United Republic of Tanzania. For several reasons, the seizure is one of the most salient incidents involving acetic anhydride in the past few years. Of particular importance is the almost real-time communication of the seizure by the customs authorities of Pakistan through PICS, which enabled the quick launch of backtracking investigations in several countries. These investigations resulted in the identification of a suspected country of origin of the seized substance (China), a point of diversion (United Republic of Tanzania) and the modus operandi used by the traffickers. **The swift and pragmatic cooperation with and between the relevant authorities of China and the United Republic of Tanzania resulted in the prevention of the diversion of further amounts of acetic anhydride to companies in the United Republic of Tanzania.**

142. The investigations assisted in the identification of weaknesses in the control system in the United Republic of Tanzania. They also confirmed the Board’s suspicion and previous alerts regarding the potential use of glacial acetic acid

to mislabel, misdeclare or otherwise disguise shipments of contraband acetic anhydride.

143. In addition to the above seizure, the Pakistani authorities communicated through PICS three additional seizures of acetic anhydride amounting to nearly 18,000 litres in the first 10 months of 2016, including a seizure of about 15,000 litres of acetic anhydride smuggled from Hong Kong, China, and misdeclared as formic acid. Overall, the Board is pleased to note that reported seizures of acetic anhydride in both the Islamic Republic of Iran and Pakistan have finally started to increase from the relatively low levels observed in previous years.

144. In India, another country in the vicinity of heroin manufacture sites in West Asia, the total volume of seized acetic anhydride has amounted to less than 800 litres since 2010. INCB is aware of a seizure of nearly 2,500 litres of acetic anhydride in India in April 2016. However, as the seizure was made in connection with a major case of diversion of ephedrine (see para. 69, above), it is possible that the substance may have been intended for purposes other than diversion into illicit heroin manufacture.

145. INCB has also previously noted a lack of information about the sources of acetic anhydride feeding illicit heroin manufacture in other parts of the world. For example, according to the UNODC *World Drug Report 2016*, the potential production of oven-dry opium in Myanmar averaged around 700 tons annually in the period 2011-2015, with a peak of 870 tons in 2013; it has averaged about 260 tons per year in Mexico in the period 2011-2014, with a recent upward trend. The corresponding figures for potential manufacture of heroin are 70 tons (Myanmar) and 26 tons (Mexico),²⁶ amounts which would require about 122,000 litres (Myanmar) and 45,000 litres (Mexico) of acetic anhydride.

2. Use of non-scheduled substances and other trends in the illicit manufacture of heroin

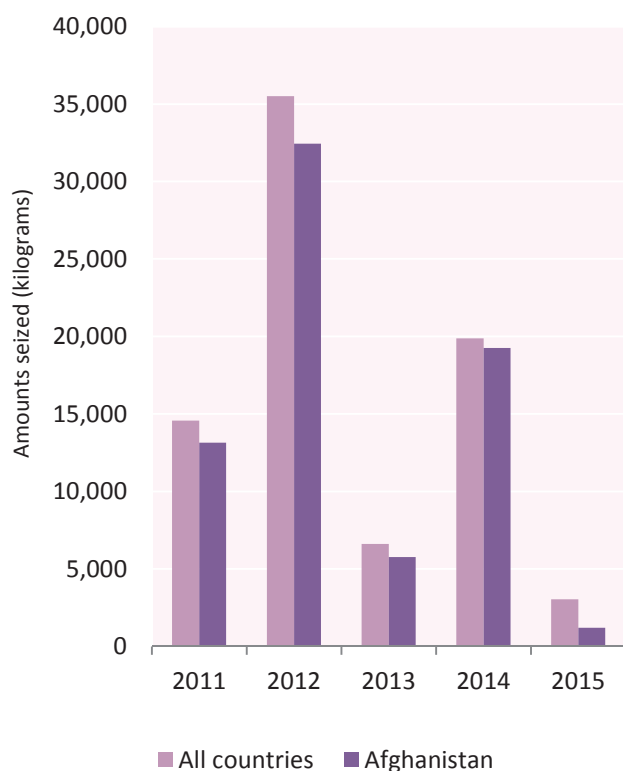
146. The non-scheduled chemicals most frequently associated with illicit heroin manufacture are ammonium chloride, commonly used as part of the extraction of morphine from opium, and glacial acetic acid, which has long been suspected of being used as a possible cover load to conceal contraband acetic anhydride, as well as in the acetylation of morphine to yield heroin, likely mixed with acetic anhydride. Neither chemical is under international control but both are in the limited international special

²⁶ Assuming that all opium produced is converted into heroin using a conversion ratio of opium to heroin (of unknown purity) of 10:1.

surveillance list and, according to information available to INCB, are under national control in a number of countries and territories (21 countries and territories in the case of glacial acetic acid and 8 countries and territories in the case of ammonium chloride). Another acetylating agent, acetyl chloride, is controlled in 17 countries and territories.

147. For several years, the largest seizures of ammonium chloride have been reported on form D by Afghanistan (see figure XII). In 2015, four countries reported seizures of ammonium chloride. The largest seizures were reported by Mexico (1.8 tons), with links to illicit heroin but also methamphetamine laboratories (see para. 104, above). Seizures in Afghanistan amounted to slightly more than 1.2 tons, a decrease of almost 95 per cent compared with the amounts reported in 2014; seizures in other countries did not exceed 25 kg. A seizure of nearly 1.3 tons of ammonium chloride at the Pakistan/Afghanistan border in March 2016 was communicated through PICS by the authorities of Pakistan. Notable seizures of glacial acetic acid were reported only by Mexico, the Netherlands and countries in South America, but without any reference to illicit heroin manufacture.

Figure XII. Seizures of ammonium chloride reported on form D by Afghanistan and other countries, 2011-2015



D. Substances used in the illicit manufacture of other narcotic drugs and psychotropic substances

1. Ergot alkaloids and lysergic acid

Licit trade

148. There is comparatively limited international trade in ergot alkaloids (ergometrine and ergotamine and their salts), which are used in the treatment of migraines and as an oxytocic in obstetrics. Between 1 November 2015 and 1 November 2016, 341 shipments of ergot alkaloids, totalling 1,530 kg, were notified by 15 exporting countries to 44 importing countries; the volumes involved and the number of pre-export notifications are similar to last year. In addition, there were three pre-export notifications for lysergic acid, totalling 0.2 grams.

Trafficking

149. Reports on form D of seizures of precursors of lysergic acid diethylamide (LSD) continue to be infrequent and in small amounts, even considering the potency of the LSD end-product. In 2015, Australia reported having seized 281 grams of ergotamine in six incidents; Canada reported the seizure of about 30 grams of ergotamine and small amounts of lysergic acid; and India seized 470 grams of lysergic acid as well as additional amounts in liquid form, in 26 instances. Information about the origin of the seized substances was not provided.

2. *N*-Acetylanthranilic acid and anthranilic acid

Licit trade

150. *N*-Acetylanthranilic acid and anthranilic acid are precursors that can be used for the illicit manufacture of methaqualone, a sedative-hypnotic which is also known, in reference to its former brand names, as “quaalude” and “mandrax”. While anthranilic acid is traded widely in industrial quantities, trade in *N*-acetylanthranilic acid is limited to small amounts, typically for analytical and research purposes. Between 1 November 2015 and 1 November 2016, there were nearly 320 pre-export notifications sent by 9 exporting countries to 40 importing countries for shipments of anthranilic acid. Those shipments together amounted to more than 1,450 tons; major exporters were China and India, and the major importers were Germany and the United Kingdom of Great Britain and Northern Ireland. By contrast, the five pre-export notifications for shipments of *N*-acetylanthranilic acid did not exceed 150 grams.

Trafficking

151. For the third consecutive year, China was the only country to report significant seizures of anthranilic acid on form D, amounting to more than 9.5 tons in 2015. Total global seizures of *N*-acetylanthranilic acid since 2010 have amounted to just 15 kg. In 2015, China was the only country reporting seizures of that substance, in a negligible amount. The origin and circumstances of the seizures were not provided.

152. Although the official website of the South African Police Service regularly reports seizures of suspected methaqualone tablets, locally known as “mandrax”, as well as alleged laboratories illicitly manufacturing such tablets, very little corresponding precursor seizure information was provided through form D. In 2015, the South African authorities reported a seizure of 37,000 litres of *ortho*-toluidine, a methaqualone precursor not under international control but included in the limited international special surveillance list. **INCB wishes to encourage all Governments to make every effort to provide details of, and confirm, relevant seizures when so requested by the Board. It is only through the sharing of such information that weaknesses in control systems can be identified in a timely manner and be successfully addressed.**

E. Solvents and acids used in the illicit manufacture of various narcotic drugs and psychotropic substances

1. Solvents and acids in Table II of the 1988 Convention

153. Acids, bases and solvents are required throughout various stages of nearly all illicit drug manufacture. There are two acids, hydrochloric acid and sulphuric acid, as well as four solvents, acetone, ethyl ether, methyl ethyl ketone and toluene, included in Table II of the 1988 Convention. A number of acids and solvents, as well as key bases, are included in the INCB limited international special surveillance list; country-specific and region-specific chemicals are under national control in various countries.

154. A total of 36 countries and territories reported on form D seizures of Table II acids and solvents in 2015, while 14 countries reported seizures of non-scheduled alternate chemicals. The majority of the countries reporting non-scheduled alternate chemicals were in South America; countries in Europe included the Netherlands, Poland and Spain, and, in South-East Asia, Malaysia and Thailand.

155. Given that illicit heroin and cocaine processing operations are, on average, much larger than illicit synthetic drug manufacturing operations, the largest amounts of those chemicals traditionally used to be seized in countries in which plant-based drug manufacture is known to occur. However, as illicit synthetic drug operations increase in size and reporting of the chemicals seized in illicit laboratories in some regions improves, the range of countries reporting Table II chemicals is also increasing.²⁷

156. Acetone was the solvent that was seized in the largest volume in 2015; of the total volume, Colombia reported having seized more than 60 per cent (nearly 615,000 litres), followed by the Bolivarian Republic of Venezuela (more than 200,000 litres). The Netherlands ranked fifth, with nearly 21,000 litres. Seizures of acetone of more than 5,000 litres were also reported by Argentina, Bolivia (Plurinational State of), China, Mexico, Peru and Uzbekistan. Colombia also ranked second and third of all countries reporting seizures of, respectively, ethyl ether (11,700 litres) and toluene (56,000 litres); the largest seizures of ethyl ether and toluene were reported in 2015 by, respectively, the Plurinational State of Bolivia (12,300 litres) and China (nearly 92,000 litres). Seizures of toluene above 20,000 litres were also reported by Argentina, Mexico and Ukraine.

157. Seizures of methyl ethyl ketone, a chemical included in Table II of the 1988 Convention primarily because of its use in illicit cocaine processing, were insignificant in coca-producing countries; Spain (1,061 litres) followed by China (726 litres) and the Netherlands (409 litres), reported the largest seizures of methyl ethyl ketone. While seizures in Spain were likely linked to illicit cocaine processing, seizures in China (726 litres) and the Netherlands (409 litres), were more likely connected with synthetic drug manufacture. In cocaine processing in countries in South America, a range of substitute solvents are known to have largely replaced the use of methyl ethyl ketone (see para. 163, below).

158. Thirty-two countries reported seizures of hydrochloric and/or sulphuric acid in 2015. The largest volumes of hydrochloric acid were reported by China (more than 565,000 litres), Brazil (nearly 375,000 litres), Colombia (more than 211,000 litres) and Mexico (more than 188,000 litres); Argentina, Belarus, the Netherlands and Venezuela (Bolivarian Republic of) reported seizures of more than 15,000 litres. With regard to sulphuric acid, Brazil, Colombia and China, in that order, reported the largest volumes, each larger than 150,000 litres; seizures in

²⁷ See annex IV for the approximate quantities of Table II acids and solvents required for the illicit manufacture of cocaine or heroin.

Afghanistan, Bolivia (Plurinational State of), the Netherlands and Peru ranged between 15,000 litres and 52,000 litres.

159. Not unexpectedly, seizures of acids and solvents in Table II of the 1988 Convention were also reported in connection with illicit synthetic drug manufacture. For example, the authorities of Czechia reported seizures of hydrochloric acid, sulphuric acid and toluene in the small-scale illicit methamphetamine laboratories detected in that country. All chemicals were sourced domestically, typically from specialized drug stores from which those chemicals are easily available, as most are widely used for different household purposes.

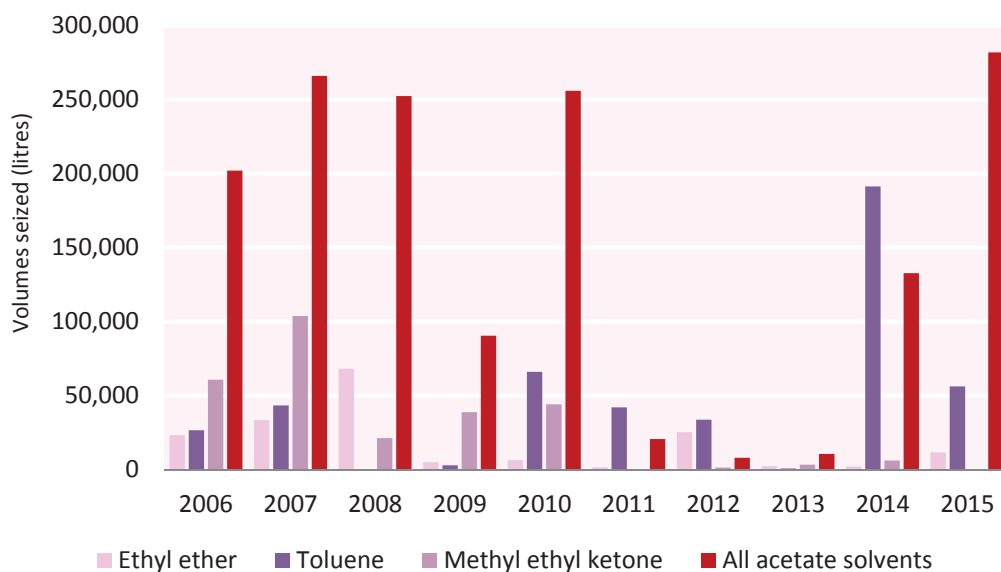
160. Another continuing trend, in the United States, is methamphetamine entering the country in liquid form. The recrystallization or recovery process is not complicated but requires a significant amount of solvents such as acetone.

2. Solvents not included in Table II of the 1988 Convention

161. Solvents not included in Table II of the 1988 Convention have regularly been reported on form D, most frequently and in the largest diversity, by countries in South America, where they are often under national control.

162. Of those countries, Colombia has the most consistent record of such seizures. In 2015, Colombia reported having seized a range of acetate solvents, including butyl acetate (15,255 litres), ethyl acetate (106,614 litres), isobutyl acetate (127,334 litres), isopropyl acetate (30,745 litres), *n*-propyl acetate (20,305 litres) (see figure XIII). These solvents all substitute for Table II solvents, especially in the final crystallization step, when cocaine base is converted into cocaine hydrochloride. Another solvent that can be used in that step that was reported seized in Colombia is methyl isobutyl ketone (9,476 litres). Where information was available, the substitute solvents were obtained from domestic sources; they are all under control in Colombia.

Figure XIII. Seizures of solvents in Table II^a and non-scheduled acetate solvents, as reported on form D by Colombia, 2006-2015



^a Excluding acetone.

163. Countries in South America also regularly report a range of other solvents or solvent mixtures that are predominantly employed in the extraction of cocaine from coca leaves. They include various hydrocarbon solvent mixtures, such as common thinners, kerosene, diesel and various types of gasoline. Several countries reported seizures of a variety of non-scheduled chemicals used in the processing/reprocessing, refinement and/or cutting of cocaine. Such incidents, often illicit laboratory incidents

outside the three coca-growing countries, were reported, for example, by Chile and Spain.

164. Using forensic analysis to determine the solvents used in illicit cocaine processing, namely those used in the final crystallization step, can help to identify linkages between samples of seized cocaine hydrochloride, establish processing trends and, hence, provide valuable information for regulatory controls.

165. Seizures of significant volumes of non-scheduled solvents outside South America appear to be more often individual incidents rather than part of a trend. For example, Thailand reported on form D for 2015 having seized 20,000 litres of methylene chloride (dichloromethane) in connection with suspected illicit methamphetamine manufacture in Myanmar.

166. Acids and solvents included in Table II of the 1988 Convention, as well as alternate chemicals not under international control also continued to be communicated through PICS in 2016.

F. Substances not in Table I or Table II of the 1988 Convention that are used in the illicit manufacture of other narcotic drugs and psychotropic substances or substances of abuse not under international control

167. Although at lower levels, in 2015, Governments also continued to use form D to report seizures of a variety of substances not in Table I or Table II of the 1988 Convention that can be used in the manufacture of other narcotic drugs and psychotropic substances, precursors, or substances of abuse not under international control, including new psychoactive substances. INCB has also been made aware of such information through PICS. However, in some instances the same information was subsequently not included in the annual submission of form D.

1. Precursors of fentanyl

168. INCB is aware, through PICS, of a number of incidents involving precursors of fentanyl, a substance in Schedule I of the 1961 Convention, in Canada and the United States. Specifically, Canadian authorities seized 1.5 kg of NPP, together with a variety of other chemicals, in an illicit laboratory near Edmonton in Canada's western province of Alberta in December 2015. At around the same time, United States' authorities reported seizures of shipments of ANPP entering the United States through Los Angeles International Airport. Together with seizures made following a controlled delivery, the incidents involved a total of 78 kg of ANPP. In September 2016, authorities in the United Kingdom seized two consignments, of 500 grams each, of NPP. Investigations in all countries are ongoing.

169. The seizures of fentanyl precursors provide evidence of the illicit manufacture of fentanyl in North America as one potential source of the drug considered to be responsible for

the largest increase in drug overdose deaths in the United States and Canada in recent years. In addition, authorities of both countries have also encountered the smuggling of illicitly manufactured fentanyl and other synthetic "designer" opioids into their territories. The amounts of drugs and precursors seized should be viewed in the light of the potency of synthetic opioids, as 1 kg of such synthetic opioids may provide several million street doses. It is in that context that the United States authorities have initiated the process of including the two chemicals in Table I of the 1988 Convention (see para. 8, above) and that the United States Drug Enforcement Administration is currently monitoring the shipments of fentanyl and fentanyl analogue precursors, as well as the emergence of synthetic opioids. **INCB welcomes the measures to address new developments in precursor trafficking taken by Governments at the national level. However, INCB also wishes to highlight once again the importance of the early sharing of information about emerging chemicals and new trends in precursor trafficking at the global level and encourages all Governments to make better use of PICS and the form D for this purpose.**

2. Precursors of *gamma*-hydroxybutyric acid

170. *gamma*-Butyrolactone (GBL) can be used in the illicit manufacture of *gamma*-hydroxybutyric acid (GHB) but is also used as a drug per se, as it is metabolized in the body into GHB, following ingestion; it is often not possible to ascertain whether seized GBL was intended for conversion to GHB or consumption as GBL. 1,4-Butanediol is a precursor of GBL and a pre-precursor of GHB. In 2015, nine European countries reported seizures of GBL. The largest seizures were reported by Latvia (1,057 litres) followed by Norway (930 litres in 68 incidents); Norway was also named as the destination of the amount of the substance seized in Germany. Seizures outside Europe were negligible. 1,4-Butanediol was only reported seized by Australia, although amounts were small. Information about the origin of the seized substances and the shipping mode was usually not provided; one country mentioned international courier services.

171. Seizures of GBL continued in 2016 and were communicated through both PICS and the Project Ion Incident Communication System (IONICS). They included three incidents in Poland, including a bulk seizure of 2.8 tons. While smaller volumes of between 100 millilitres and 5 litres were typically shipped by courier service, mislabelled as cleaning agents, to private consignees, the seizure of the bulk amount was effected at a Polish seaport. Additional seizures of GBL were communicated by PICS users in Australia, Belgium, France, the Netherlands, the United Kingdom and the United

States, involving amounts between 1 litre and 1,000 litres; the seizures of the substance were typically effected at airports or post/mail/parcel facilities — where the substance had been mislabelled or misdeclared; there were also seizures at seaports and at a warehouse.

3. Precursors of ketamine

172. In its annual report on drug control,²⁸ China reported 118 cases of illicit ketamine manufacture in 2015, an increase of 12.4 per cent compared with 2014. Cases of illicit manufacture also included the manufacture of two chemical intermediaries of ketamine: “hydroxylimine” and *o*-chlorophenyl cyclopentyl ketone.

173. In August 2016, Malaysian authorities dismantled an industrial-scale illicit ketamine laboratory estimated to have produced more than 100 kg of ketamine since October 2015, in production cycles of about a week, each with a capacity of 5 kg to 10 kg. The lengthy production cycle and chemicals found in the laboratory suggest that the illicit operators, which included Malaysian and Indian nationals, used basic chemicals and not any of the chemical intermediaries of ketamine that had been reported as starting materials in other ketamine laboratories in the recent past. Investigations suggest that the chemicals and glassware were smuggled from India.

4. Precursors of new psychoactive substances, including substances recently scheduled under the 1961 Convention or the 1971 Convention

174. Following the inclusion, effective 4 November 2015, of mephedrone in Schedule II of the 1971 Convention, INCB has become aware of an increasing number of incidents involving precursors of that substance that are not under international control. On form D for 2015, Poland reported seizures of chemicals associated with the illicit manufacture of mephedrone, and the dismantling of a medium-size laboratory. Seizures of the mephedrone precursor 2-bromo-4'-methylpropiofenone were made in clandestine laboratories in the Netherlands in November 2015. Additional incidents involving the substance were communicated by the authorities in the Netherlands and France, in amounts totalling nearly 80 kg; in those incidents, the substance originated in China, and transited France en route to Poland or Ukraine, or transited Germany destined for the Netherlands.

175. Seizures involving precursors of other new psychoactive substances also continued to be communicated through PICS in 2016, such as precursors for 2-fluoroamphetamine or

2-fluoromethamphetamine and 4-chloroamphetamine or 4-chloromethamphetamine.

5. Precursors of other drugs and cutting agents

176. Following seizures of the substance in the Netherlands in 2014, the authorities of Latvia reported having seized about 1.8 kg of 4-methoxy-P-2-P, the non-scheduled equivalent of P-2-P used in the illicit manufacture of *para*-methoxyamphetamine (PMA) and *para*-methoxymethamphetamine (PMMA) in 2015; no further information was provided.

177. Estonia reported on form D for 2015 the seizure of 43 kg of lithium aluminium hydride, in connection with the illicit manufacture of three amphetamine-type stimulants under international control (trimethoxyamphetamine (TMA), 4-bromo-2,5-dimethoxyphenethylamine (2C-B) and 2,5-dimethoxyamphetamine (DMA)).

178. The United States reported on form D for 2015 the dismantling of an illicit phencyclidine (PCP) laboratory in California and the seizure of a number of chemicals, including ethyl ether, sodium bisulfite and sodium cyanide. This and previous PCP laboratories were also communicated through PICS.

179. A number of countries also continued to report seizures of cutting agents (adulterants and diluents), often in amounts of several hundred kilograms. Such reports occur in connection with all types of drugs. The substance most frequently encountered as a cutting agent in connection with different types of drugs is caffeine, reported in 2015 by Brazil (more than 12 tons), Malaysia (153 kg) and the Netherlands (126 kg). Afghanistan reported having seized a total of 656 kg of paracetamol, in a number of instances.

180. With regard to cocaine, it is increasingly frequent for the cutting agents to be added directly to cocaine hydrochloride during the crystallization process in accordance with traffickers' requests. The substances reported in 2015 included benzocaine, lidocaine, mannitol and phenacetin; Colombia did not report the seizure of any cutting agents or diluents although the practice is known to occur there as well. **INCB encourages Governments to consider using information on cutting agents to trace the laboratories in which drugs are illicitly manufactured. Governments may also consider taking action against cutting agents in accordance with article 13 of the 1988 Convention.**

²⁸ National Narcotics Control Commission of China, *Annual Report on Drug Control in China 2016*.