

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

66. The present chapter provides an overview of the major trends and developments in the licit trade in precursor chemicals and in trafficking therein. It contains a summary of information on seizures and cases of diversion or attempted diversion from international trade, as well as activities associated with illicit drug manufacture. The analysis is based on data provided by Governments on form D for 2016 and through PEN Online, Project Prism and Project Cohesion and PICS, as well as in other information from Governments, including national reports, and covers the period up to 1 November 2017.

67. Readers are reminded that the intention of the present chapter is to describe trends and developments with a view to addressing gaps and weaknesses in precursor control mechanisms. More important than seizures and the amounts seized, which reflect successful diversions, is the information generated from a seizure, a stopped or suspended shipment, a theft, an attempted diversion or a suspicious order or even enquiry, as it is critical for preventing future diversions of chemicals. **INCB therefore again encourages all governments to improve the quality and comprehensiveness of their annual form D submissions and to make better use of PICS.**

68. INCB also observes increasing discrepancies between official information shared by Governments on different occasions, including through form D, country reports and presentations at meetings of the subsidiary bodies of the Commission on Narcotic Drugs, and annual report questionnaires and individual seizure reports. **INCB would like to remind Governments that the reporting of seizures**

<sup>14</sup> For further details about PICS and the minimum action for sharing information about precursor incidents through the system, see E/INCB/2015/4, box 3 (p. 11).

of substances in Table I and Table II on form D is mandatory, pursuant to article 12, paragraph 12, of the 1988 Convention, and should represent the most comprehensive set of precursor seizure data available.

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

##### 1. Substances used in the illicit manufacture of amphetamines

69. 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 of the substances in Table I of the 1988 Convention, in the form of both raw materials and pharmaceutical preparations. P-2-P, phenylacetic acid and APAAN, as well as a number of non-scheduled substances, may be used as alternatives to ephedrine and pseudoephedrine in illicit methamphetamine manufacture (see paras. 114–124 and annex IV).

##### (a) Ephedrine and pseudoephedrine

###### *Licit trade*

70. During the reporting period, information regarding more than 5,000 planned shipments of ephedrine and pseudoephedrine was submitted through the PEN Online system. Of those notifications, 33 per cent involved substances in bulk and 67 per cent involved pharmaceutical preparations, respectively. The shipments consisted of a total of about 1,020 tons of pseudoephedrine and slightly more than 100 tons of ephedrine; they originated in 38 exporting countries and territories and were destined for 165 importing countries and territories. As in the past, the largest exporter in terms of volume was India, followed by Germany, and the largest importer was the United States, followed by Switzerland.

71. Between 1 November 2016 and 1 November 2017, almost 320 planned shipments of ephedrine and pseudoephedrine were objected to through the PEN Online system by the authorities of 40 importing countries, often for administrative reasons or, as in the case of Iraq, because the competent authorities had no control over the part of the country in which the importing companies were located. The competent authorities in Iraq objected to 71 pre-export notifications for

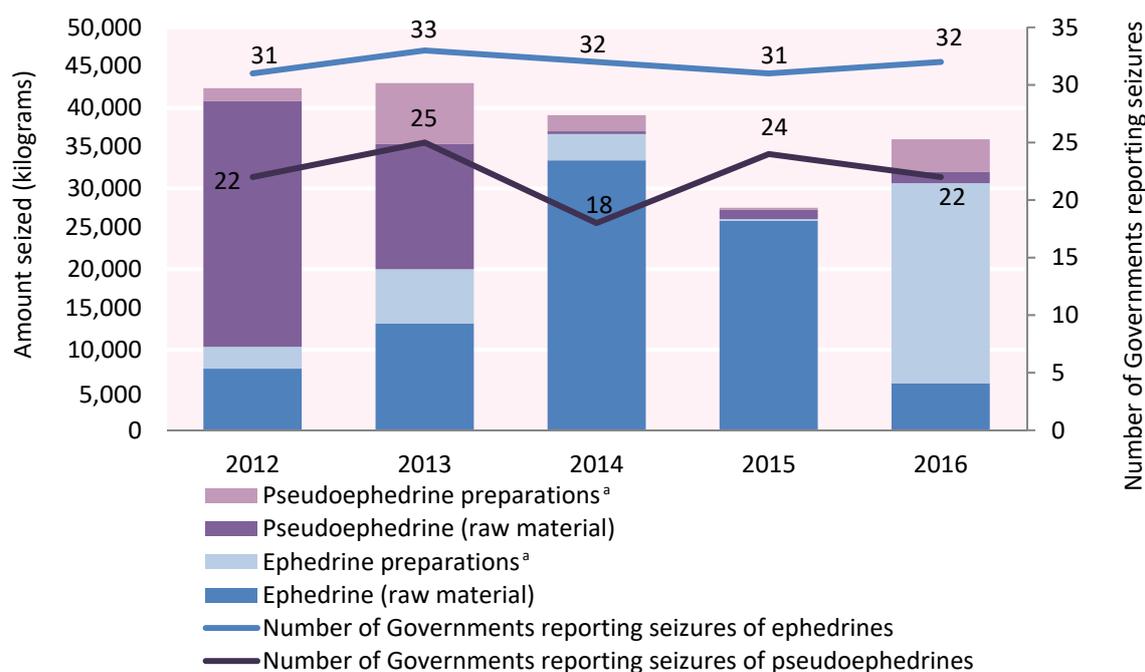
that reason. On its form D for 2016, India reported stopped shipments of a total of 1.1 tons of pseudoephedrine that had been destined for Iraq and northern Cyprus.

72. Canada was the only country that reported thefts of ephedrine and pseudoephedrine on form D for 2016.

### Trafficking

73. The amounts of ephedrines seized in 2016 continued to fluctuate between 35 and 40 tons, much lower than the amounts reported seized in the preceding five-year period. At the substance level, there continued to be significant fluctuations in the statistics for different types of ephedrines (see figure VII).

Figure VII. Seizures of ephedrine and pseudoephedrine reported by Governments on form D, 2012–2016



<sup>a</sup> Excludes preparations reported as tablets.

74. In 2016, 23 countries and territories reported, on their form D, seizing raw (bulk) ephedrine amounting to more than 5.8 tons, and 14 countries and territories reported seizures of nearly 25 tons of ephedrine in the form of pharmaceutical preparations. India reported seizing a record amount of more than 21 tons of preparations containing ephedrine. The second-largest amount of preparations containing ephedrine seized was reported by China (more than 3.3 tons). China also accounted for the largest amount of ephedrine raw material seized (more than 1.4 tons), followed by New Zealand (1.2 tons) and Australia (1.1 tons). The amount of ephedrine (raw material) seized in China in 2016 was the lowest in 15 years.

75. Seizures of pseudoephedrine were reported by 22 countries and territories. Australia reported seizures of 1.1 tons, while the total amount of all pseudoephedrine raw material that was reported seized in other countries was less than 400 kg. By contrast, seized preparations containing pseudoephedrine

amounted to more than 4 tons. A single country, Thailand, accounted for more than 95 per cent of those seizures.

### East and South-East Asia

76. During the period 2012–2016, global seizures of ephedrines were dominated by seizures in East and South-East Asia. Within the region, China accounted for by far the largest proportion of seized ephedrine (both as raw material and in the form of pharmaceutical preparations). During that period, China noted widespread illicit manufacture of ephedrine from 2-bromopropiophenone, an internationally non-scheduled substance that was placed under control in China in May 2014. In 2016, China dismantled 27 clandestine ephedrine laboratories and warehouses where ephedrine and 2-bromopropiophenone were being illicitly manufactured or stored; the authorities also noted an expansion of such activities north of the Yangtze River.<sup>15</sup>

<sup>15</sup> China, National Narcotics Control Commission, *Annual Report on Drug Control in China 2017* (Beijing, 2017), pp. 30 and 59.

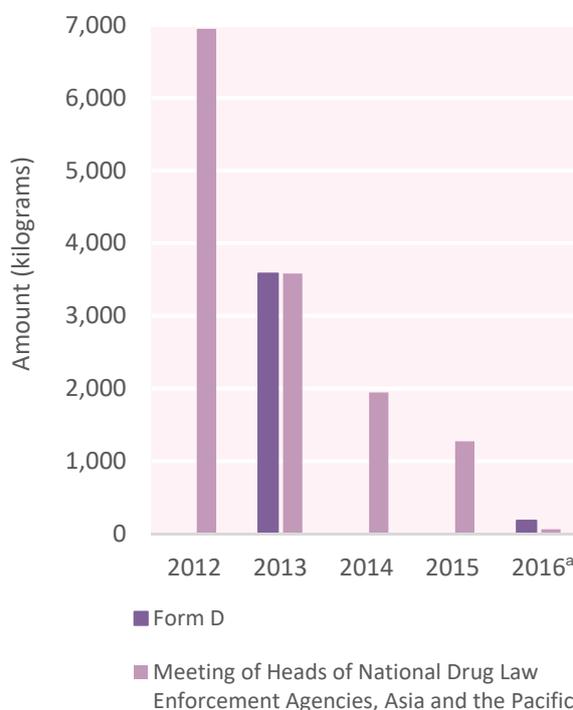
77. The Philippines reported seizures of ephedrine every single year during the period 2012–2016; however, amounts fluctuated between less than 1 kg (2013) and more than 500 kg (2014). In addition, authorities in the country regularly dismantle illicit methamphetamine laboratories. In recent years, those authorities have observed a move away from large-scale (industrial) manufacture to smaller-scale (“kitchen”) laboratories and a trend of splitting the manufacturing process into different stages in different locations. Laboratories where ephedrine-based methamphetamine is manufactured also continued to be dismantled in East and South-East Asia in 2017. In one illicit laboratory in Malaysia, more than 100 kg of ephedrine were seized; the chemicals used for processing were believed to be from domestic sources.

78. With 55 per cent of global seizures of pseudoephedrine preparations reported for the period 2012–2016 taking place in the subregion, countries in East and South-East Asia also accounted for the majority of seizures of such preparations, as a result of the high number of seizures in Myanmar and Thailand. Those two countries accounted for 42 per cent and 45 per cent, respectively, of the amounts of pseudoephedrine preparations seized in the subregion during the period.

79. The largest seizure of pseudoephedrine preparations ever reported in Thailand was a seizure of 3.8 tons that was made in 2016. It should be seen against the classification of such products as psychotropic substances in category II of the Psychotropic Substances Act as of April 2012. Unfortunately, no information was shared on the sources of the preparations and the methods of diversion, limiting the value of the information provided; this applies to the information submitted by most countries.

80. INCB is concerned that authorities in several countries in East and South-East Asia appear to seize amphetamine and methamphetamine precursors, or have information about their use in illicit laboratories, but do not submit a form D for the relevant year or do not systematically report all seizures, even though such reporting is an obligation under article 12, paragraph 12, of the 1988 Convention. That situation is demonstrated by data from Myanmar (see figure VIII), but is also applicable to other countries in the region.

**Figure VIII. Seizures of pseudoephedrine (raw material and preparations) reported by Myanmar on form D and to the Fortieth Meeting of Heads of National Drug Law Enforcement Agencies, Asia and the Pacific, 2012–2016**



<sup>a</sup> Data provided to the Fortieth Meeting cover only January–June 2016.

81. Although Viet Nam only reported seizures of ephedrine and pseudoephedrine and their preparations in 2013 and 2014 (totalling about 50 kg each year), the country has regularly been identified as a point of embarkation for consignments of ephedrine and pseudoephedrine smuggled into Australia. On form D for 2016, the authorities of Hong Kong, China, also identified Viet Nam as the origin of seized ephedrine.

82. The low number of reported seizures of ephedrine and pseudoephedrine and the limited amounts reported seized in countries in East and South-East Asia continue to contrast sharply with seizure data for methamphetamine end products (both crystalline methamphetamine and methamphetamine tablets), for which there is a large and growing market in the region. With a few exceptions, most countries in East and South-East Asia do not seize (or report the seizure of) other methamphetamine precursors (see paras. 114–124 below), which could explain the availability of illicitly manufactured methamphetamine from substitute chemicals.

### West Asia

83. In West Asia, seizures of ephedrine and pseudoephedrine, as raw material and in the form of pharmaceutical preparations, have rarely been reported on form D; the amount seized totalled less than 165 kg for

the entire region during the period 2012–2016. Although no seizures of ephedrine and pseudoephedrine were reported by the Islamic Republic of Iran during the period 2012–2016, authorities in the country reported the dismantling of 181 “kitchen” laboratories in 2016, in which methamphetamine was being manufactured from ephedrine, iodine and red phosphorous. That figure represents a further decline from the 216 laboratories dismantled in 2015<sup>16</sup> and may be partly the result of the relocation of illicit methamphetamine manufacture to different places along the country’s border with Afghanistan. Concerns about methamphetamine trafficking, abuse and illicit manufacture have led the Afghan authorities to reduce the annual legitimate requirements for imports of ephedrine and pseudoephedrine (see figure II above) and introduce import and export controls for pharmaceutical preparations containing those substances. In 2016, Afghanistan reported a seizure of pseudoephedrine for the first time; it was suspected that the 16 kg that were seized had originated in the Islamic Republic of Iran.

84. Pakistan is another country in the region regarding which INCB has expressed concern about unusually high annual legitimate requirements but, unlike other countries, they have remained unchanged in recent years (see figure II above). A court case on the alleged domestic diversion of significant amounts of ephedrine in Pakistan has been ongoing since March 2012,<sup>17</sup> with no conclusion as at the finalization of the present report. The country was also identified as the origin of some 7,000 ephedrine tablets reported seized by authorities in Hong Kong, China.

85. During 2016 and the first 10 months of 2017, countries in the Gulf area were identified as transit countries for shipments of ephedrine and pseudoephedrine from India bound for destinations in Africa.

### South Asia

86. South Asia, in particular India, remains a source of ephedrines for countries in Africa, East and South-East Asia and Oceania. On form D for 2016, India reported 9 seizures of ephedrine preparations, amounting to nearly 22 tons, and 11 seizures of pseudoephedrine preparations, amounting to 155 kg; the origins in all instances were unknown. No seizures of ephedrine or pseudoephedrine raw materials were reported in 2016, which contrasts with information about a seizure of almost 20 tons of ephedrine and pseudoephedrine in April 2016.<sup>18</sup> INCB has requested clarification about that

seizure; however, no reply has been received from the authorities. Seizures of ephedrines in India also continued to be communicated through PICS in 2017. They typically concerned amounts of less than 20 kg that had been diverted from domestic distribution channels and were destined for countries in Africa and East and South-East Asia. Incidents also included two large seizures that took place during the first 10 months of 2017: a seizure at Bangalore Airport of a consignment of 475 kg of ephedrine hidden among bags of ammonium chloride bound for Malaysia, and a seizure of 260 kg of ephedrine in an illicit laboratory located at the premises of a manufacturer of basic chemicals.

87. No other country in South Asia reported any seizures of ephedrines on form D for 2016, or in fact during the last 15 years. That includes Nepal, where, in 2016, authorities had provided information relating to a case of domestic diversion of nearly 500 kg of pseudoephedrine from the premises of a company in Kathmandu.<sup>19</sup> **INCB would therefore once again like to remind all Governments of the importance of thoroughly investigating all seizures and diversion attempts, and of communicating relevant findings to INCB and any other countries concerned so that the underlying weaknesses in domestic monitoring systems or shortcomings at the international level can be addressed.**

### Oceania

88. Of the countries in Oceania, only Australia and New Zealand submitted form D for 2016. Both countries remained significant targets for trafficking in ephedrines. While ephedrine seized in Australia was reported to have typically originated in countries and territories in East and South-East Asia, the origin of most seized pseudoephedrine was unknown. Authorities in both countries noted a trend towards fewer seizures being made, but larger amounts being seized in each incident. In June and September 2017, Australian authorities seized, respectively, 1.4 tons of ephedrine and about 3.9 tons of liquid ephedrine at the port in Sydney, the largest ephedrine seizures on record in Australia and the biggest seizures of precursor chemicals at the Australian border; investigations are ongoing.

89. Not including those seizures, air cargo (44 per cent), followed by sea cargo (35 per cent), international mail and air passengers and crew accounted for the largest proportion, by weight, of amphetamine and methamphetamine precursor detections at the Australian border during the period 2015/16.<sup>20</sup> The most common point of embarkation for those precursors

<sup>16</sup> Islamic Republic of Iran, Drug Control Headquarters, *Drug Control in 2016* (Tehran, 2017), p. 39.

<sup>17</sup> E/INCB/2012/4, para. 22.

<sup>18</sup> E/INCB/2016/4, para. 69.

<sup>19</sup> *Ibid.*, para. 70.

<sup>20</sup> Australian Criminal Intelligence Commission, *Illicit Drug Data Report 2015-16* (Canberra, 2017), p. 158.

during that period was China (including Hong Kong); however, Viet Nam, Malaysia and India, in that order, were also identified as points of embarkation.

90. According to the Australian Criminal Intelligence Commission, forensic profiling indicated that about 78 per cent of the methamphetamine samples seized at the Australian border in the first six months of 2016 had been illicitly manufactured from ephedrine or pseudoephedrine, the largest proportion in five years; only about 10 per cent were found to have been manufactured using P-2-P-based methods. When considered on a weight basis, the corresponding figures are 62 per cent and 1.4 per cent, respectively. Similarly, analysis of samples of methamphetamine seized on Australian territory showed that the substances had been predominantly manufactured from ephedrine and pseudoephedrine, typically using the hypophosphorous method of manufacture. Overall, there was a decrease in the number of clandestine amphetamine and methamphetamine laboratories dismantled in Australia, although there was an increase in the number of laboratories being dismantled where pseudoephedrine was being manufactured from preparations. Although remaining at a low level, authorities also noted an increase in the proportion of laboratories that could be classified as industrial-scale laboratories in 2015/16.

91. In New Zealand, the amount of ephedrine seized in 2016 totalled more than 1.2 tons, the largest amount ever reported, reflecting a shift in substances seized, from pseudoephedrine to ephedrine; that shift started in 2013. Almost the entire amount of ephedrine (98 per cent) was seized at the border, with the bulk reported to have originated in China, including Hong Kong. International mail and air freight remained the most common means for those methamphetamine precursors entering New Zealand.

92. In the first six months of 2017, the volume of methamphetamine precursors (ephedrine and pseudoephedrine) seized at the borders of New Zealand decreased significantly, according to information from the National Drug Intelligence Bureau.

### Africa

93. In 2016, Namibia and Nigeria were the only countries in Africa that reported seizures of ephedrines on form D. Seizures

in Nigeria were mostly of ephedrine being shipped to other countries in Africa, in particular Mozambique and South Africa. Totalling more than 440 kg, individual amounts varied from 1 kg to 144 kg; seizures were typically effected at Nigerian airports or seaports and the substance had been either misdeclared or mingled with other goods. An amount of 100 kg of ephedrine was seized on a highway to Cameroon; one seized consignment was destined for Malaysia. As in the past, the amounts of ephedrine seized in Nigeria were initially diverted from domestic distribution channels. INCB is aware that the Nigerian authorities, in cooperation with UNODC, have commissioned a study on estimating national requirements for ephedrine and pseudoephedrine, among other substances, to address concerns about domestic diversion. The study was expected to be finalized in late 2017.

94. Seizures of outbound consignments from Nigeria to countries in Africa continued in 2017; destinations included Mozambique, South Africa and the United Republic of Tanzania. At the only clandestine methamphetamine laboratory dismantled in Nigeria in 2016, ephedrines were not being used as a starting material: it was the first incidence in that country of methamphetamine being illicitly manufactured from benzaldehyde and other chemicals not under international control, using a method now well established in Mexico.<sup>21</sup> There are indications that ephedrine-based illicit methamphetamine manufacture also continues to exist and that such manufacture is closely intertwined with the production of falsified ephedrine medications.<sup>22</sup>

95. In 2016 and the first 10 months of 2017, countries in Africa were also identified as the destination of consignments of ephedrines from India. Once again, destination countries included South Africa and the United Republic of Tanzania, as well as Ethiopia and Zambia.

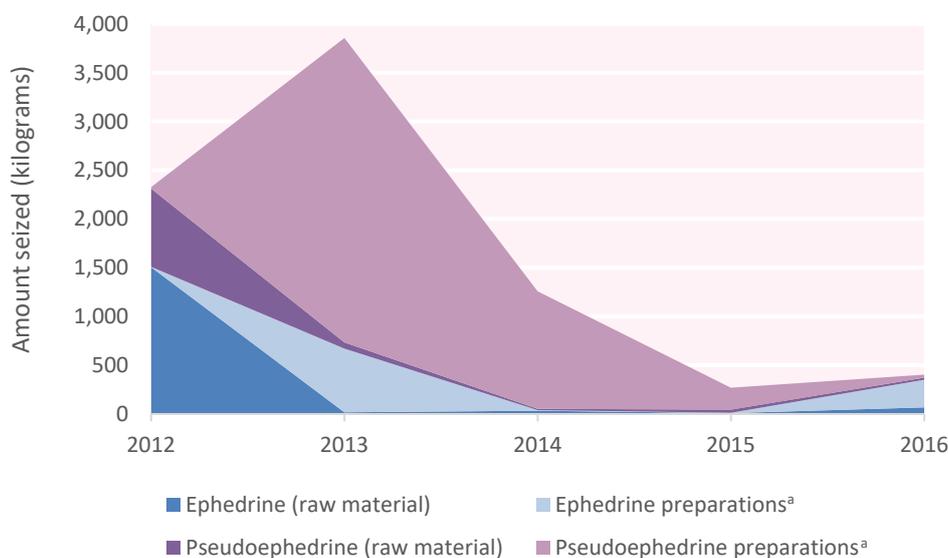
### Europe

96. In 2016, 21 countries in Europe reported seizures totalling about 400 kg of ephedrine, pseudoephedrine and their preparations. This represents a significant decline from just a few years ago (see figure IX). With seizures totalling slightly more than 250 kg of ephedrine preparations, Ukraine accounted for the largest proportion of ephedrines seized in Europe in 2016; the entire amount originated in that country.

<sup>21</sup> E/INCB/2016/4, paras. 67 and 101.

<sup>22</sup> Inter-governmental Action Group Against Money Laundering in West Africa, *Typologies Report: Money Laundering Resulting From the Counterfeiting of Pharmaceuticals in West Africa* (Dakar, 2017), p. 24.

**Figure IX. Seizures of ephedrine and pseudoephedrine and their preparations reported by Governments of European countries on form D, 2012–2016**



<sup>a</sup> Excludes preparations reported as tablets.

97. The decline is particularly apparent in relation to pseudoephedrine preparations; slightly more than 30 kg were reported seized in 2016, less than 1 per cent of the amount reported seized in 2013. Czechia remained the country reporting seizures of such tablets most frequently, including through PICS.

98. The authorities in Czechia also reported the dismantling of 261 illicit methamphetamine laboratories in 2016, almost exactly the number of laboratories dismantled a year earlier. As in the past, most laboratories were small-scale “kitchen” laboratories, although the authorities are concerned about an increase in large-scale methamphetamine production and distribution, with the involvement of organized criminal groups, and with an estimated annual methamphetamine production capacity of several tons. Illicit methamphetamine manufacture in Czechia involves ephedrine or pseudoephedrine extracted from pharmaceutical preparations that are smuggled in from abroad, allegedly from Poland, Slovakia and Turkey; most of the other chemicals used are not scheduled at the international or European Union level and are widely available in specialized chemical supplies stores. Pharmacies in Poland were identified as the source of small amounts of pseudoephedrine preparations seized in 94 incidents in Belarus.

### Americas

99. In 2016, ephedrine seized in North America totalled 665 kg, of which 96 per cent was reported by Canada, while the United States accounted for 96 per cent (127 kg) of all pseudoephedrine seized. For the third consecutive year, Mexico

did not report any seizures of ephedrines. The United States also reported a continuing decrease in small-scale domestic manufacture of methamphetamine. The absence of significant levels of seizures of ephedrines in North America provides further evidence of the complete shift of illicit methamphetamine manufacture in Mexico from methods involving ephedrines to methods involving P-2-P (see paras. 118 and 119 below).

100. A seizure of 250 kg of ephedrine was reported in Argentina in 2016, an amount that was, according to the authorities, imported in 2011 and never collected by the importer. INCB is not aware of any investigations being conducted into the case or of the outcomes. No seizures of ephedrines were reported in 2016 by any country in Central America and the Caribbean.

### (b) Norephedrine and ephedra

#### *Licit trade*

101. Between 1 November 2016 and 1 November 2017, 178 transactions involving norephedrine, a substance that can be used in the illicit manufacture of amphetamine, were recorded through the PEN Online system: 12 exporting countries pre-notified 33 importing countries of shipments, amounting to more than 18 tons of raw material and nearly 9 tons of pharmaceutical preparations. The largest exporters by volume were India and Indonesia, and the largest importers were the United States and Myanmar.

### Trafficking

102. During the period 2012–2016, seizures of norephedrine were reported on form D by only 12 countries; individual seizures were small and the origins mostly unknown. Of those 12 countries, only 3 reported seizures in more than two years (Australia, Philippines and Ukraine); the Philippines also reported the largest amount in that five-year period (nearly 275 kg in 2012; seized in a clandestine laboratory). Seizures reported on form D for 2016 were negligible. In 2017, only one incident was communicated through PICS; it involved a liquid containing norephedrine.

103. There were no seizures of ephedra reported on form D. However, drug treatment service providers in Georgia have noted an emerging trend in that country, involving the crude extraction and processing of an indigenous species of *Ephedra* plant into a methamphetamine-containing product that is administered by injection. The scale of the trend, of which anecdotal reports started to be received in mid-2015, is as yet unknown.<sup>23</sup>

#### (c) 1-Phenyl-2-propanone, phenylacetic acid and alpha-phenylacetoacetonitrile

104. P-2-P, phenylacetic acid and APAAN are precursors used in the illicit manufacture of amphetamine and methamphetamine; P-2-P is an immediate precursor of the two drugs, while phenylacetic acid and APAAN are precursors of P-2-P. Of the three substances, phenylacetic acid is the most widely traded, while trade in APAAN is almost non-existent. Although seizures of illicitly manufactured phenylacetic acid have so far been rare, seizures of P-2-P often involve illicitly manufactured P-2-P. Non-scheduled substitutes for P-2-P used in the illicit manufacture of amphetamine and methamphetamine are discussed in paragraphs 114–124 below.

### Licit trade

105. Legitimate international trade in P-2-P, phenylacetic acid and APAAN differs significantly in volume, extent and the number of countries involved. Between 1 November 2016 and 1 November 2017, there were 20 planned transactions involving P-2-P, from six exporting countries to eight importing countries. As in previous years, the largest exporter was India and the largest importer was the United States. During the same period, there were three transactions involving negligible amounts of APAAN. By contrast, legitimate international trade in phenylacetic acid involved 12 exporting countries that notified 45 importing countries and territories about more than 560 planned shipments of the substance.

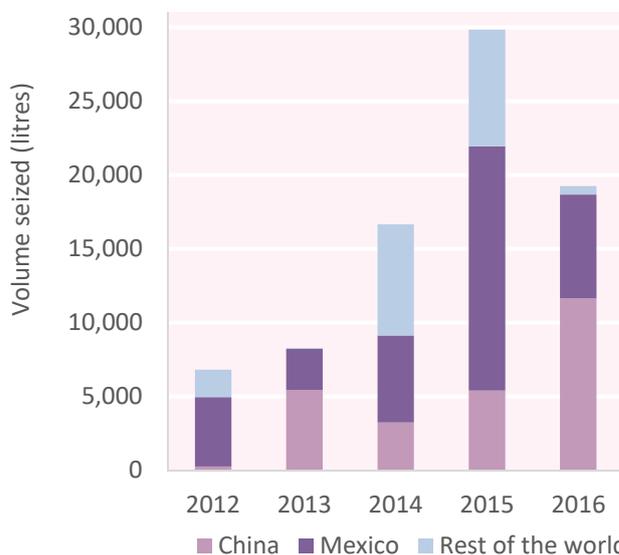
106. India reported having stopped a shipment of 24 tons of phenylacetic acid to the Syrian Arab Republic, following a request of INCB to suspend the shipment and based on the fact that the same Syrian company had already attempted to import P-2-P from India in 2014. INCB welcomes the cooperation of the authorities concerned but remains concerned that traffickers are targeting companies in the Syrian Arab Republic in order to obtain precursors of amphetamine, given that the substance is the main active ingredient in fake “captagon” tablets. There is a possibility that existing manufacturing facilities in the Syrian Arab Republic are misused to illicitly manufacture amphetamine.

107. Spain reported on form D for 2016 having stopped five shipments of phenylacetic acid, amounting to 112 kg, following objections from the authorities of the importing countries.

### Trafficking

108. Eleven countries reported seizures of P-2-P on form D for 2016. The largest amounts were seized by authorities in China (more than 11,500 litres, which was more than twice the amount reported seized in 2015) and Mexico (more than 7,000 litres, which was less than half of 2015) (see figure X), followed by Ukraine (430 litres). No other country reported seizures of more than 110 litres.

Figure X. Seizures of P-2-P reported by Governments on form D, 2012–2016



109. While information on the origin of the P-2-P seized in China is not available, including information on whether the substance was illicitly manufactured or diverted from legitimate sources, reported seizures in Mexico were made at illicit laboratories, suggesting that the P-2-P had been illicitly

<sup>23</sup> David Otiashvili, Irma Kirtadze and Dessa Bergen-Cico, “Exploring the new phenomena of home-made extraction

and injection of ephedra plant product in Georgia”, *Substance Use and Misuse*, vol. 52, No. 6 (May 2017).

manufactured from various pre-precursors (see also paras. 118 and 119 below). The P-2-P seized in Ukraine was reported to have originated in the Russian Federation; other countries did not provide information about the origin of the substance or the *modi operandi* of the traffickers.

110. Negligible amounts of phenylacetic acid and phenylacetic acid derivatives not in Table I or Table II of the 1988 Convention were reported seized on form D for 2016 (see para. 119 below).

111. Seizures of APAAN were reported by three countries in Europe on form D. Together, the amounts seized totalled less than 600 kg, which was less than half the amount seized in 2015 and the lowest amount since 2014, when APAAN seizures were reported on form D for the first time (the substance was scheduled in Table I of the 1988 Convention in October 2014).

112. As a result of Operation “Missing links”, forensic evidence on the use of APAAN in the illicit manufacture of amphetamine for fake “captagon” tablets was provided for the first time. APAAN was identified in a majority (82 per cent) of the samples containing amphetamine that were analysed (about 13 per cent of samples did not contain any amphetamine). The amphetamine in the samples analysed had been manufactured using the so-called “Leuckart method”.

113. In 2017, seizures of all three substances continued to be communicated through PICS. Seizures of APAAN and P-2-P often occurred together in illicit warehouses and laboratories in the Netherlands, suggesting that APAAN may have been the precursor from which the P-2-P had been illicitly manufactured. Incidents involving P-2-P or APAAN were also communicated by the United Kingdom of Great Britain and Northern Ireland; however, they typically concerned international consignments, amounting to between 250 kg and

700 kg and originating in China, including Hong Kong. Australia communicated two incidents involving a total of 500 kg of phenylacetic acid; in one of the incidents, the substance had originated in Chile, in the other, it had originated in China.

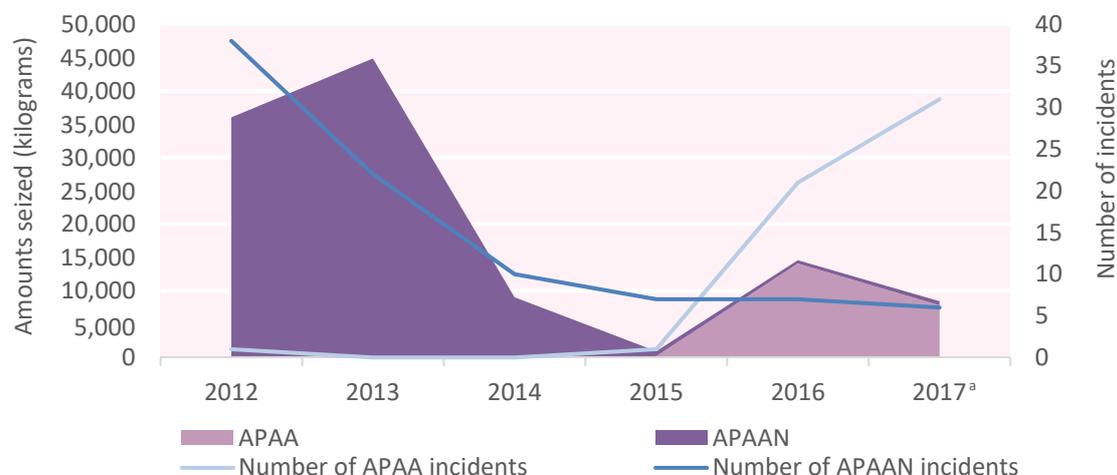
#### (d) Use of non-scheduled substances and other trends in the illicit manufacture of amphetamine and methamphetamine

##### *Alpha-phenylacetoacetamide*

114. APAA is a non-scheduled substitute chemical that has replaced APAAN after the latter was included in Table I of the 1988 Convention in October 2014. Seizures of APAA were reported for the first time on form D in 2013, by the Netherlands (75 kg). In 2016, seven European countries reported seizures that totalled almost 15 tons; where such information was provided, China was reported as the alleged origin of the substance. The majority of incidents had previously been communicated through PICS, along with relevant operational details, and a high level of such seizures, in terms of both number and amounts, continued to be made in 2017.

115. Data from PICS also illustrate the emergence of APAA in parallel with the decrease in incidents involving APAAN (see figure XI below), before such information is submitted on form D. The example of APAAN and APAA shows the value of voluntary, early sharing of information, which can contribute to building a case for coordinated international action, such as the placing of APAAN in Table I of the 1988 Convention in 2014, just two years after the first incidents were communicated through PICS.

**Figure XI. Incidents involving APAAN and APAA, its non-scheduled substitute, communicated through the Precursors Incident Communication System**



<sup>a</sup> First 10 months of 2017.

### *P-2-P methyl glycidic acid derivatives*

116. As a result of Operation “Missing links”, evidence was provided for the first time of seizures of non-scheduled methamphetamine and amphetamine “designer” precursors outside Europe. Specifically, in May and October 2016, two seizures, amounting to almost 3.25 tons of P-2-P methyl glycidic acid derivatives (sodium salt and methyl ester), were made by Lebanese authorities; both seizures were effected at the airport. Dutch authorities reported seizures of more than 3 tons of such derivatives on form D for 2016; the largest individual seizures amounted to 2,275 kg and 520 kg. All incidents had previously been communicated, in real time, through PICS. Seizures of P-2-P methyl glycidic acid derivatives were also reported on form D by Belgium.

117. P-2-P methyl glycidic acid derivatives are purpose-made chemicals that can be converted into P-2-P at an approximate ratio of about 2 to 1. **Governments are reminded once again of the possibility of traffickers approaching legitimate industry actors for customized synthesis of non-scheduled chemicals and of the need to alert relevant actors to that possibility.**

### *Benzaldehyde, nitroethane and 1-phenyl-2-nitropropene*

118. Seizures of benzaldehyde, nitroethane and 1-phenyl-2-nitropropene, key chemicals used in the illicit manufacture of P-2-P using the so-called “nitrostyrene method”, continued to be reported in 2016. Seven countries reported seizures of benzaldehyde on form D; by far the largest seizures were made in North America: Mexico reported amounts of more than 3,500 litres and the United States confirmed a record seizure of nearly 10 times that volume (33,900 litres) in August 2016. The seizure had previously been communicated through PICS. The benzaldehyde was transshipping the United States from India, destined for Veracruz, Mexico. Owing to no notification being made prior to the shipment arriving in the United States, previous instances of a failure to file notification and the use of the chemical in the manufacture of methamphetamine, the shipment was seized.

119. According to the forensic profiling programme of the United States Drug Enforcement Administration Special Testing and Research Laboratory, the proportion of the methamphetamine seized inside the United States and at the country’s border with Mexico that were manufactured using the nitrostyrene method increased from 51 per cent in the first six months of 2016 to 71 per cent in the first six months of 2017. Seizures of esters of phenylacetic acid, which had been the preferred starting materials for P-2-P-based methods for the illicit manufacture of methamphetamine, in particular

in Mexico, declined dramatically from more than 70 tons in 2012 to less than 20 kg in 2016.

120. A seizure of 225 litres of benzaldehyde was reported by Nigeria, in connection with an illicit methamphetamine laboratory dismantled in the country in March 2016.<sup>24</sup> Small seizures of benzaldehyde were reported by four European countries. Seizures of nitroethane were reported on form D by the United States (700 litres) and Germany and Spain (about 20 litres in one incident in each country).

121. When benzaldehyde is reacted with nitroethane, the resulting product is 1-phenyl-2-nitropropene, which can be further converted into P-2-P. The substance is an important intermediary in both licit and illicit trade. Belgium reported seizures amounting to 654 kg in 2016, mostly destined for Italy and with China as the alleged origin; the seizures had previously been communicated through PICS, along with relevant operational details. Small seizures of 1-phenyl-2-nitropropene were also reported by Estonia and Finland. Seizures of the substance continued in 2017, with small amounts seized in Lebanon and the Netherlands.

### *Other chemicals not under international control that were seized in relation to the clandestine manufacture of amphetamine or methamphetamine*

122. The chemicals most frequently reported on form D for 2016 were those associated with ephedrines-based methods of illicit methamphetamine manufacture, such as the so-called “Nagai method” and modifications thereof. They included iodine and red phosphorous and their alternate chemicals, such as hydriodic acid and hypophosphorous acid. Countries that reported seizing one or more of those chemicals included Canada, Czechia, Germany, the Netherlands, New Zealand, Slovakia and the United States. China reported seizures of 420 kg of thionyl chloride, a chemical indicative of the so-called “Emde method” of illicit methamphetamine manufacture, in which chloroephedrine or chloropseudoephedrine are formed as chemical intermediaries. As in previous years, for most of the above chemicals, information about the origin was either not provided or not available.

123. Incidents involving non-scheduled chemicals that can be used in the illicit manufacture of APAAN and phenylacetic acid, and subsequently P-2-P, were reported by Greece, Mexico and the United States. Specifically, Greece stopped an import of 5 tons of benzyl cyanide from China, on suspicion of its use in illicit drug or precursor manufacture; investigations are still ongoing. The United States reported seizures of sodium cyanide amounting to almost 1 ton, and Mexico provided information about incidents involving unspecified amounts of benzyl

<sup>24</sup> E/INCB/2016/4, para. 101.

chloride in illicit methamphetamine laboratories. Information about seizures of benzyl cyanide was also communicated in 2017.

124. Dutch authorities reported a seizure of 100 kg of *N*-methoxy-*N*-methyl-2-phenylacetamide, an unusual precursor of P-2-P, which had previously been communicated through PICS. The shipments was addressed to a newly established sole proprietorship. Unlike most other non-scheduled P-2-P precursors, the substance is a liquid, and conversion to P-2-P requires a certain level of skill. The Netherlands was also identified as the destination for a consignment of 50 kg of 2-phenylacetamide, a precursor of phenylacetic acid, that had originated in China and was seized in Belgium.

125. Tartaric acid, a chemical that is used to increase the potency of methamphetamine manufactured using P-2-P-based methods, continued to be seized in Mexico (almost 6 tons). Nigeria reported seizures of 77 kg, which were made in connection with the first industrial-scale P-2-P-based methamphetamine laboratory dismantled in that country, in March 2016. Seizures of the substance were also reported by the Netherlands (63 kg) and Malaysia (2,800 kg), the latter in connection with illicit ketamine manufacture (see para. 218 below).

126. Seizures of caffeine, an adulterant known to be used in connection with the illicit manufacture of methamphetamine, have been regularly reported on form D. Over the years, the largest amounts were reported by countries in East and South-East Asia, where the substance is controlled in a number of countries. Myanmar reported seizures of nearly 20 tons of caffeine in 2016.

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

127. Despite the apparent resurgence of MDMA in highly potent “ecstasy” tablets and in crystalline or powder form, with a few exceptions, reported seizures of its key precursors remain negligible. This applies to all four MDMA precursors under international control: the immediate precursor, 3,4-MDP-2-P, and its precursors piperonal, safrole and isosafrole (see annex IV). Seizures of 3,4-MDP-2-P may also have included cases in which the substance had been illicitly manufactured from non-scheduled precursors (see also paras. 137 and 138 below).

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

#### *Licit trade*

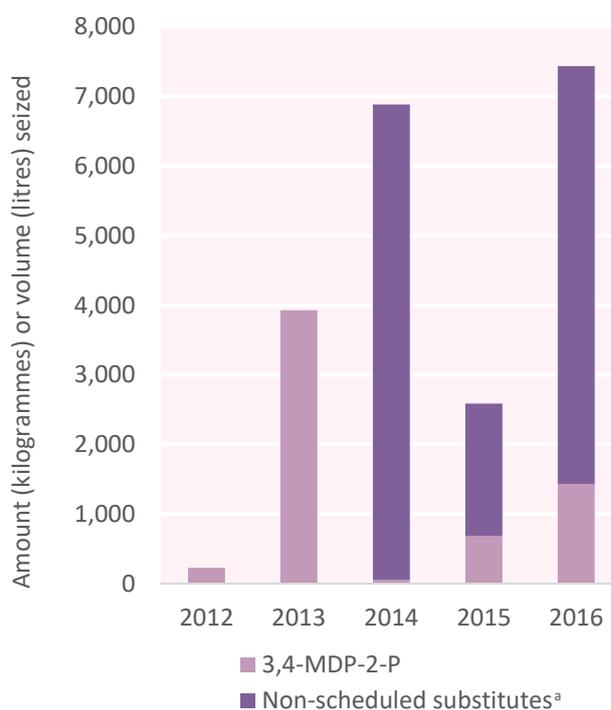
128. Piperonal is the most widely traded of the four MDMA chemicals, while international trade in 3,4-MDP-2-P is nearly

non-existent. Between 1 November 2016 and 1 November 2017, 16 exporting countries and territories notified the authorities of 45 importing countries and territories of almost 610 planned exports of piperonal, amounting to a total of more than 2.6 tons. There was only one pre-export notification for 3,4-MDP-2-P, involving a negligible amount.

#### *Trafficking*

129. The amounts of 3,4-MDP-2-P reported seized on form D for 2016 remained small compared with the amounts of non-scheduled substitute chemicals reported seized (see figure XII, and paras. 137 and 138 below). Only France (about 890 litres), China (about 375 litres) and the Netherlands (nearly 150 litres) reported volumes above 25 litres. As in the past and with other precursors of amphetamine-type stimulants, seizures in the Netherlands were typically made in warehouses and also involved other chemicals needed for MDMA manufacture, or in clandestine laboratories where there were indications that the substance was manufactured in those laboratories.

**Figure XII. Seizures of 3,4-MDP-2-P and non-scheduled 3,4-MDP-2-P substitute chemicals<sup>a</sup> reported on form D, 2012–2016**



<sup>a</sup> 3,4-MDP-2-P methyl glycidic acid methyl ester and sodium salt and 3,4-(methylenedioxy)phenylacetone nitrile

Note: Reporting seizures of non-scheduled chemicals on form D is strongly encouraged, but not mandatory.

130. The majority of incidents reported on form D had already been communicated through PICS in 2016. In addition, PICS data show that incidents involving 3,4-MDP-2-P continued in

2017, with the majority communicated by the PICS focal point in the Netherlands. However, in 2017, incidents also occurred in Bulgaria, Canada and the United Kingdom. While the amounts in most instances were below 200 litres and incidents occurred in warehouses or laboratories and no information on origin was provided, there were three significant incidents, in Bulgaria, Canada and the Netherlands, involving amounts of between 4,000 and 5,000 litres each. Two of those incidents actually involved the same case, in which the substance allegedly originated in the Lao People's Democratic Republic, transited Viet Nam and Bulgaria, and was destined for the Netherlands. At the time of finalization of the present report, it has not been possible to determine whether the Lao People's Democratic Republic was indeed the source of the chemical. **INCB reminds all countries that investigations into seizures and the sharing of information about modi operandi with INCB are critical elements of international precursor control and help identify points of diversion and prevent future diversions.**

131. With the exception of the United States, where about 290 litres were seized, seizures of piperonal reported on form D for 2016 were of negligible amounts, and no significant seizures of the substance were communicated through PICS in 2016 or 2017. Since 2012, the total amount of piperonal seized and reported on form D has amounted to just above 2,000 kg, including six seizures amounting to 1,400 kg that were reported by Spain in 2013.

### (b) Safrole, safrole-rich oils and isosafrole

#### *Licit trade*

132. During the reporting period, seven exporting countries sent 18 pre-export notifications for safrole and safrole-rich oils through PEN Online to nine importing countries. Those notifications concerned a total volume of more than 3,800 litres; only a small portion of trade in safrole was in the form of safrole-rich oils. There were no pre-export notifications for isosafrole.

#### *Trafficking*

133. Seizures of safrole and safrole-rich oils reported through form D in recent years have usually been of small amounts, rarely exceeding 200 litres per country and often less than 15 litres. Since 2012, only Canada (2,025 litres in 2012), the Netherlands (13,825 litres in 2013) and Namibia (2,100 litres in 2016) have reported seizing safrole and safrole-rich oils in amounts larger than 2,000 litres. The country reporting seizures of safrole most regularly on form D, albeit in small amounts, is Australia, where the substance has been the predominant MDMA precursor detected at the border.

134. In the last five years, only Australia, Namibia, the Netherlands and the United States reported seizures of isosafrole on form D; with the exception of seizures in Namibia in 2014 (2,100 litres, the circumstances of which INCB has been unable to clarify) the amounts were negligible. In 2016, there were no reports of suspicious or stopped shipments involving isosafrole, safrole or safrole-rich oils.

135. Seizures of safrole and safrole-rich oils were also communicated by the Netherlands through PICS in the first 10 months of 2017; however, the total volume seized did not exceed 100 litres.

136. It is difficult to assess whether the low frequency of seizures of safrole and safrole-rich oils, and the small amounts seized, is a reporting issue, or whether the widespread availability of non-scheduled chemicals for the illicit manufacture of MDMA and its analogues (see paras. 137 and 138 below) has meant that such chemicals have largely replaced them. In East and South-East Asia, INCB is aware that seizures allegedly involving safrole or safrole-rich oils, in amounts significantly larger than those reported globally on form D in the last two years, were made in Cambodia and possibly in the Lao People's Democratic Republic.<sup>25</sup> However, neither country subsequently reported any of those seizures on form D, although they were reported to other forums.

### (c) Use of non-scheduled substances and other trends in the illicit manufacture of 3,4-methylenedioxymethamphetamine and its analogues

137. Incidents involving pre-precursors for MDMA and its analogues that are not listed in Table I or Table II of the 1988 Convention and were brought to the attention of INCB show significant year-on-year fluctuation, which is likely a reflection of the fact that the reporting of non-scheduled substances is not mandatory. Nevertheless, when incidents are communicated through PICS, a trend can be established in real time, while data on form D for a given year are only submitted to INCB on 30 June of the following year.

138. In the period 2016–2017, eight countries reported such incidents. The seizures occurred mostly in Europe and involved substances that are not usually available off the shelf ("designer" precursors), including derivatives (sodium salt and methyl ester) of 3,4-MDP-2-P methyl glycidic acid, 3,4-(methylenedioxy)phenylacetone nitrile and 1-(3,4-methylenedioxyphenyl)-2-nitropropene; all substances are included in the INCB limited international special surveillance list of non-scheduled substances. Operational details of those seizures were usually shared through PICS. Most trafficking incidents occurred at airports and seaports and the substances

<sup>25</sup> E/INCB/2015/4, paras. 99 and 101.

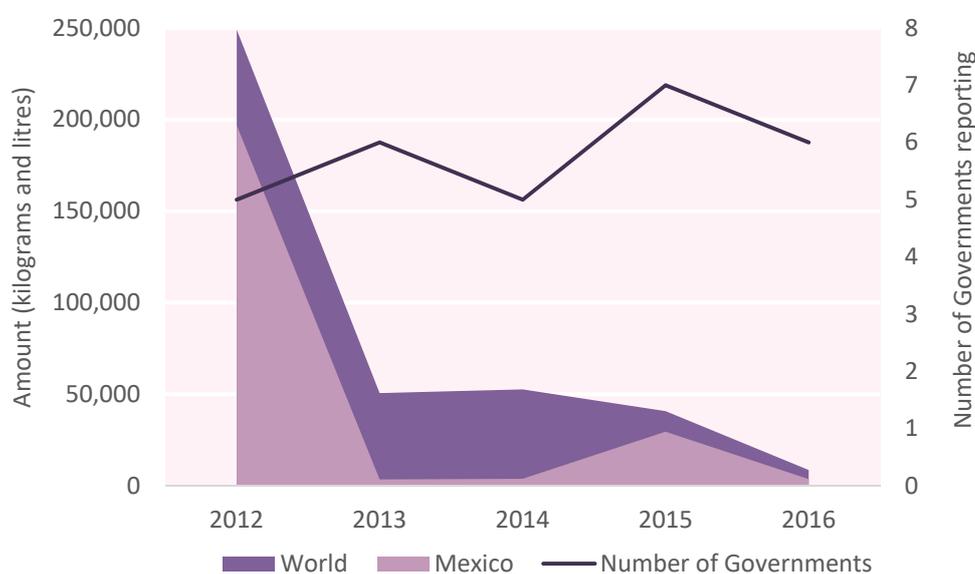
were often mislabelled or misdeclared. Where information was available, the origin was listed as China, including Hong Kong. France seized a shipment of more than 1 ton en route from Spain. Canada reported seizures of helional on form D for 2016, which was the third such incident, following others in 2014 and 2015; however, no further details were provided.

### 3. Other trends in the illicit manufacture of amphetamine-type stimulants

#### *Methylamine*

139. Seizures of methylamine (monomethylamine) continued to be reported. In 2016, six countries reported such seizures,

**Figure XIII. Seizures of methylamine reported by Governments on form D, 2012–2016**



140. Although Mexico accounted for a major proportion of global methylamine seizures in 2016, the amounts seized were only a fraction of what was seized during the period 2010–2012. At the same time, in 2016, Mexican authorities seized record amounts of formaldehyde (more than 14,000 litres) and ammonium chloride (almost 18,000 kg), two chemicals from which methylamine may be illicitly produced.<sup>26</sup> In June 2017, Mexican authorities seized more than 2.7 tons and 7,000 litres of ammonium chloride, partly in a mixture, from a single illicit laboratory.

#### *Hydrogen gas*

141. For the second consecutive year, Germany reported on form D thefts of compressed hydrogen gas, which can be used as a reducing agent in the illicit manufacture of a number of synthetic drugs. Thefts in 2016 totalled 18,720 litres, a volume that was contained in almost 385 gas cylinders, stolen in

with the Netherlands and Mexico, in that order, together accounting for 99 per cent of all seizures, by weight. Seizures of the substance were made every year during the period 2012–2016 (see figure XIII), thus illustrating its central role in the illicit manufacture of methamphetamine, MDMA and a number of new psychoactive substances, especially synthetic cathinones; it is also required in the illicit manufacture of ephedrine, by fermentation from benzaldehyde and from 2-bromopropiophenone, which is the method predominantly used in illicit ephedrine laboratories in China.

10 incidents. In all cases, the empty cylinders were later found in the Netherlands and the contents were presumed to have been used in the illicit manufacture of amphetamine. The Netherlands has reported seizures of hydrogen gas since 2002. In 2016, the country reported having seized 4,150 kg of hydrogen gas in nine incidents, mostly in clandestine amphetamine or MDMA laboratories or in associated warehouses; seizures continued in 2017.

#### *Other substances not under international control*

142. Masked “designer” precursors such as the methyl glycidic acid derivatives of P-2-P and 3,4-MDP-2-P (see paras. 116 and 117 above), which are not under international control or under national control in most countries but can be easily converted into the corresponding controlled precursor, have been encountered for some time. In 2016, the Netherlands

<sup>26</sup> Ammonium chloride may also be used in the illicit manufacture of heroin.

reported a number of masked derivatives of amphetamine-type stimulants end products, namely 875 kg of *N*-methoxycarbonyl-MDA and 123 kg of *N*-*tert*-butoxycarbonyl-MDMA (*t*-BOC-MDMA). Although the substances can technically be considered precursors because they can be converted into the corresponding amphetamine-type stimulant end product, they first require the manufacture of the end product, which is subsequently further converted into a non-scheduled derivative to disguise its identity and minimize the risks associated with drug smuggling. INCB is aware that the substance was first identified in Australia in 2015 and that the corresponding methamphetamine derivative (*N*-*tert*-butoxycarbonyl-methamphetamine, or *t*-BOC-methamphetamine) was also identified in China and, in January 2017, in New Zealand, where it was contained in a consignment from Hong Kong, China. Project Prism and Project Cohesion focal points were alerted to that new development in February 2017.

## B. Substances used in the illicit manufacture of cocaine

### 1. Potassium permanganate

143. Potassium permanganate is an oxidizing agent used in the illicit manufacture of cocaine. In 2015, a minimum of about 225 tons of the substance was required to produce 1,125 tons of cocaine, which was the estimated total global illicit cocaine manufacture in that year.<sup>27</sup> Potassium permanganate is also one of the most widely internationally traded substances in Table I of the 1988 Convention. However, coca-producing countries only account for a limited proportion of that trade. At the same time, a significant proportion of global seizures of potassium permanganate continues to be reported by those countries. Given the high level of oxidation of seized cocaine,<sup>28</sup> diversion from domestic distribution channels and subsequent smuggling into illicit channels, and illicit manufacture of potassium permanganate remain the major sources of the substance for illicit purposes.

### *Licit trade*

144. Between 1 November 2016 and 1 November 2017, the authorities of 32 exporting countries sent almost 1,500 pre-export notifications, relating to a total of almost 25,000 tons of potassium permanganate, to the authorities in 119 importing countries. The proportion of that trade involving the three coca-producing countries in South America — Bolivia (Plurinational State of), Colombia and Peru — remained small, accounting for less than 1 per cent (slightly less than 200 tons) of the amount of potassium permanganate for which notifications were sent through the PEN Online system. The imports by other countries in South America amounted to 1,325 tons of the substance; none of those countries exported or re-exported potassium permanganate in any significant amount.

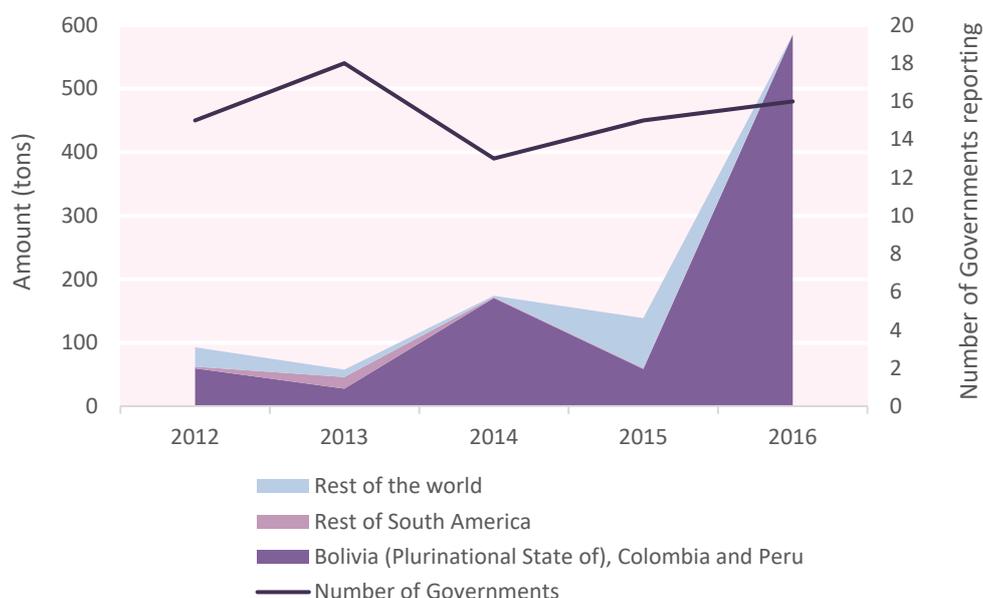
145. Five countries, both exporting and importing countries, reported on form D for 2016 that they had stopped shipments of potassium permanganate, usually for administrative reasons, in particular the lack of an import authorization. The largest amounts were reported by Pakistan, where two imports amounting to about 10 tons were stopped, and Spain, where nine exports to six different destination countries, amounting to more than 30 tons, were stopped; smaller imports were stopped by Jordan, Madagascar and the United Republic of Tanzania.

### *Trafficking*

146. Seizures of potassium permanganate totalling 585 tons were reported on form D for 2016 by 16 countries and territories. Colombia accounted for more than 99 per cent of all the amount reported seized. With the exception of the seizures in the Plurinational State of Bolivia, which amounted to about 2 tons, and unlike in 2015, when significant seizures of potassium permanganate were also reported by countries outside South America, seizures in all other countries together did not exceed 100 kg in 2016 (see figure XIV).

<sup>27</sup> Based on the 2015 estimate by UNODC of total potential cocaine manufacture worldwide (at 100 per cent purity), as published in the *World Drug Report 2017: Market Analysis of Plant-based Drugs — Opiates, Cocaine, Cannabis* (United Nations publication, Sales No. E.17.XI.9), p. 26), and using the approximate low-end potassium permanganate quantities contained in annex IV to the present report.

<sup>28</sup> According to recent results from the Cocaine Signature Program of the United States Drug Enforcement Administration Special Testing and Research Laboratory, 100 per cent of cocaine samples analysed were highly oxidized or reoxidized.

**Figure XIV. Seizures of potassium permanganate reported by Governments on form D, 2012–2016**

147. There were 318 incidents of potassium permanganate seizures in Colombia; the seized substance originated in the country. However, as Colombia also continued to seize non-scheduled precursors of potassium permanganate in 2016 (see para. 154 below), some of the seized potassium permanganate may have been illicitly manufactured.

148. According to the Colombian authorities,<sup>29</sup> the number of laboratories dismantled in 2016 was the largest in 14 years, and increased by 24 per cent compared with 2015, mainly because of a significant increase in the number of cocaine extraction laboratories that were dismantled. By contrast, 229 crystallization laboratories (where the final conversion into cocaine hydrochloride is conducted) were dismantled, slightly below the number dismantled a year earlier (236); no potassium permanganate laboratories were reported dismantled in 2016. Colombian authorities noted an increased sophistication in illicit cocaine manufacture, an optimization of precursor inputs, and shorter manufacturing cycles. At the same time, they noted the increasing involvement of foreign criminal organizations with the resources to purchase coca leaves, precursors and the necessary equipment.

149. In the Plurinational State of Bolivia, the number of crystallization laboratories that were dismantled declined slightly, from 73 in 2015 to 68 in 2016; 57 laboratories for the recycling of solvents were dismantled, compared with 62 in 2015.<sup>30</sup> As at the finalization of the present report, similar data were not available for Peru.

150. Seizures of potassium permanganate continued to be communicated through PICS in 2017. According to media reports, at the end of April 2017, Honduran armed forces detected a coca plantation, the first in the country, and destroyed about 12,000 coca plants. Adjacent to that field, authorities also detected a basic laboratory facility and unspecified precursor chemicals for processing cocaine from coca leaf to the final product, the first such facility in the country. As that incident, if confirmed, would provide further evidence of illicit cocaine manufacture, processing and reprocessing, and related precursor trafficking, in countries outside the traditional coca-producing regions, INCB has sought clarification from the Honduran authorities; as at the finalization of the present report no reply had been received.

151. As the potassium permanganate seized in South American countries continued to have come from domestic sources, **INCB calls on the authorities in those countries to review their domestic control mechanisms, in particular the requirements to declare the end use of the substance, as well as any thresholds that may be exploited by traffickers. The INCB Precursors Task Force stands ready to support any activities in this area.**

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

152. As in previous years, seizures of significant amounts of a variety of chemicals not under international control were reported on form D for 2016 by the authorities of a number of

<sup>29</sup> UNODC and Government of Colombia, *Colombia: Monitoreo de territorios afectados por cultivos ilícitos 2016* (Bogotá, July 2017).

<sup>30</sup> UNODC and Government of the Plurinational State of Bolivia, *Estado Plurinacional de Bolivia: Monitoreo de Cultivos de Coca 2016* (La Paz, 2017).

countries, especially the three coca-producing countries, other countries in South America, and Spain. The chemicals included common acids and bases, oxidizing agents and solvents used for the extraction of cocaine base from coca leaves and for the conversion of cocaine base into cocaine hydrochloride; they also included precursors of and substitutes for potassium permanganate.

153. Several of those chemicals are known to have been used in illicit cocaine manufacture for many years; they are under national control in the countries concerned and, therefore, seizures of them are reported on form D. In 2016, Colombia reported seizures of 24 of the 25 substances that are under national (but not international) control, the Plurinational State of Bolivia reported seizures of 23 substances, and Peru reported seizures of 26 substances. Where such information was provided, in the majority of cases, the chemicals were reported to have come from domestic sources.

*Precursors of and substitutes for potassium permanganate*

154. Reasons for the lack of reported diversions of potassium permanganate in South America might be the illicit manufacture of that substance or its replacement by non-scheduled substitute chemicals. While Colombian authorities have reported seizures of significant, although fluctuating, amounts of different potassium permanganate precursors in the past, the Plurinational State of Bolivia reported seizures for the first time in 2016. Colombian authorities seized more than 9,500 litres of manganese dioxide

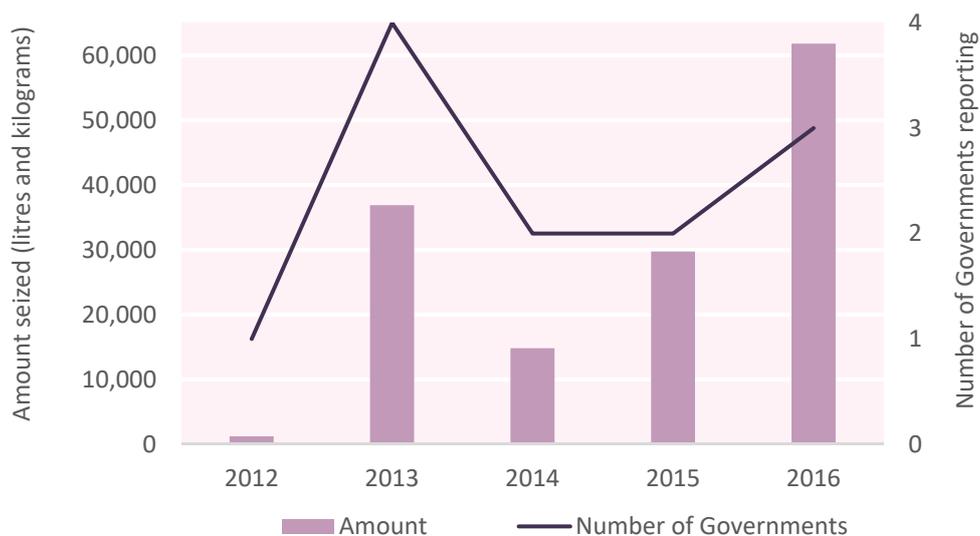
solution and 711 kg of potassium manganate. However, they did not report the dismantling of any potassium permanganate laboratories in 2016;<sup>31</sup> over the previous three years, they had reported increasing numbers of such facilities (3 in 2013, 9 in 2014 and 12 in 2015).

155. Authorities in the Plurinational State of Bolivia reported seizures of 260 kg of sodium permanganate, a direct substitute for potassium permanganate, in three illicit cocaine laboratory incidents. They were the first ever reported seizures of that substance on form D. To the knowledge of INCB, sodium permanganate is under control in only one country, the United States, where it has been controlled since December 2006.

156. The Plurinational State of Bolivia also reported seven seizures of nitric acid, amounting to 845 litres, from illicit cocaine laboratories. Nitric acid can be used as an oxidizing agent in the first stages of the cocaine manufacturing process. Seizures of the substance have also been regularly reported by authorities in Peru, in amounts ranging from 1.8 tons in 2013 to 10 tons in 2016.

157. Bolivia (Plurinational State of) and Peru also accounted for the largest amount of seized sodium hypochlorite, another substitute for potassium permanganate in the purification of coca paste. In 2016, the two countries together accounted for more than 95 per cent of the total amounts reported seized, with the remainder reported by Argentina; amounts had increased for the third consecutive year (see figure XV). Seizures of sodium hypochlorite have never been reported by Colombia.

**Figure XV. Seizures of sodium hypochlorite reported by Governments on form D, 2012–2016**



<sup>31</sup> UNODC and Government of Colombia, *Colombia: Monitoreo de territorios afectados por cultivos ilícitos 2016* (Bogota, July 2017), p. 151.

### *Other substances not under international control, and trends in the illicit manufacture of cocaine*

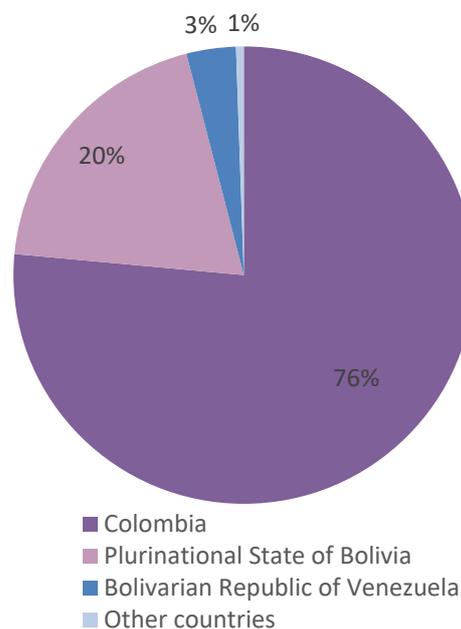
158. In addition to potassium permanganate, several other chemicals used in illicit cocaine processing are reported to be illicitly manufactured or substituted by non-scheduled chemicals. They include hydrochloric acid, sulphuric acid, solvents in Table II of the 1988 Convention (discussed in section E below) and ammonia.

159. Seizures of urea are reported on form D each year. The chemical is used to generate ammonia during the extraction step from coca leaves; it may also be used as fertilizer in coca bush cultivation. Colombia reported seizing massive amounts of urea in 2013 and 2014 but has not reported any seizures since. By contrast, the amounts seized in the Bolivarian Republic of Venezuela, which reported seizing the second-largest amounts over the period 2012–2016, nearly doubled compared with 2015, totalling almost 280 tons in 2016. In Peru and the Plurinational State of Bolivia, 21.5 tons and 200 kg, respectively, were seized.

160. Governments also report on form D seizures of a number of chemicals that are used for improving the efficiency of cocaine processing, for example, by reducing the volume of chemicals needed and/or the processing time. One development in recent years has been the standardization of the oxidation level of cocaine base sourced from different extraction laboratories, prior to further processing.

161. Sodium metabisulfite, a reducing agent, is used to that end. During the period 2012–2016, Colombia reported seizing the largest amounts of sodium metabisulfite (243 tons, or 76 per cent of all sodium metabisulfite seized in that period, largely as the result of an unusually large amount seized in 2015). In terms of the amounts of sodium metabisulfite seized, Colombia was followed by the Plurinational State of Bolivia (62 tons, or 20 per cent) and the Bolivarian Republic of Venezuela (11 tons, or 3 per cent) (see figure XVI). Seizures of notable amounts of sodium metabisulfite outside South America were reported on form D for 2016 and through PICS in 2017 by the authorities of the Netherlands.

**Figure XVI. Proportion of sodium metabisulfite seizures reported by Governments on form D, 2012–2016**



162. Seizures of calcium chloride, a drying agent for solvents, continued to be reported on form D by the three coca-producing countries, other countries in South America, and the Netherlands and Spain. In 2016, seizures of amounts larger than 1 ton were reported, in descending order, by the authorities of Colombia (nearly 70 tons), Ecuador (24 tons, up from 94 kg in 2015), the Plurinational State of Bolivia (8.1 tons), Peru (nearly 2.4 tons) and the Netherlands (slightly more than 1 ton, up from 50 kg in 2015). Information on the origin of calcium chloride was usually not provided; where it was, it was recorded as being the country in which the seizure took place.

163. A number of cutting agents (adulterants and diluents) are known to be added increasingly frequently to cocaine hydrochloride during the crystallization process itself, in accordance with traffickers' requests. According to information from the Cocaine Signature Program of the United States Drug Enforcement Administration, 87 per cent of uncut cocaine seized in the United States contained phenyltetrahydroimidazothiazole (i.e., levamisole, dexamisole or tetramisole). The Plurinational State of Bolivia reported seizures of 100 kg of the substance in 2016; the country also reported having seized nearly 580 kg of phenacetin.

## **C. Substances used in the illicit manufacture of heroin**

### **1. Acetic anhydride**

164. Acetic anhydride is one of the most widely traded substances in Table I of the 1988 Convention and it is the key

chemical used in the illicit manufacture of heroin. It is also required in the manufacture of P-2-P from phenylacetic acid and its derivatives, and hence in the illicit manufacture of amphetamine and methamphetamine (see annex IV), although this may be a regional phenomenon.

165. In recent years, attempts by traffickers to divert acetic anhydride from international trade were rare, with the exception of attempts during the period 2008–2013 to divert the substance destined for Iraq. Most diversions of acetic anhydride were believed to have occurred at the domestic distribution level, including within the European Union internal market during the period 2008–2011. That situation has changed significantly since the beginning of 2016, when the Board noted a substantial worldwide increase in incidents involving acetic anhydride.

166. Those incidents included a whole range of activities, such as: (a) cross-border trafficking and seizures of acetic anhydride; (b) attempts to divert the substance from domestic and international distribution channels (in particular from the European Union internal market); (c) suspicious requests for supplies of acetic anhydride reported to the national competent authorities by private sector companies in the framework of voluntary cooperation agreements; and (d) suspicious requests for supplies of acetic anhydride posted on trading platforms on the common web (“clear web”).

167. INCB estimates that, between January 2016 and October 2017, the amount of acetic anhydride seized or objected to through the PEN Online system because of suspected diversion attempts could satisfy traffickers’ needs for the substance for between one and three and a half years of potential global illicit heroin manufacture.<sup>32</sup>

168. Apart from the use and stockpiling of acetic anhydride for the illicit manufacture of heroin (and perhaps, on a smaller scale, of P-2-P), the reasons for the increased demand for the substance remain unknown. They may include the financing of illicit activities by profits derived from precursor trafficking and/or illicit manufacture of drugs, or utilization of the substance in the manufacture of explosives.

169. Overall, the number of incidents involving acetic anhydride during the period 2016–2017 was the highest in more than two decades, indicating that there is currently high demand for the substance.

### *Licit trade*

170. During the reporting period, authorities of 25 exporting countries and territories used the PEN Online system to provide over 1,700 pre-export notifications regarding shipments of acetic anhydride. The shipments were destined for 90 importing countries and territories and involved a total of 422 million litres of acetic anhydride.<sup>33</sup> Of those shipments, about 15 per cent (257 shipments) were objected to by the authorities of the importing countries, mostly for administrative reasons or in some cases because of suspected attempts to divert the substance (see paras. 171–173 below).

171. In April and November 2016, Pakistani authorities objected, through PEN Online, to the delivery of two shipments of acetic anhydride, totalling 26,500 litres, from China, because the importing companies were not authorized to import the substance into the country. In November 2016, Iraqi authorities requested their Chinese counterparts to suspend the export of a consignment of about 240,000 litres (259 tons), destined for an unauthorized importer in Baghdad. In December 2016, Afghan authorities objected to, through PEN Online, a proposed delivery of more than 108,000 litres (117 tons) of acetic anhydride from China. The shipment was destined for an Afghan company that could not be located in the country. Moreover, the Chinese exporter was suspected to be the source of acetic anhydride seized in Pakistan earlier in the year. **INCB wishes to remind all Governments that the import of acetic anhydride into Afghanistan is prohibited.**

172. Between November 2016 and October 2017, the authorities of the United Arab Emirates objected to six shipments of acetic anhydride from China, Poland and the United States, amounting to about 103,000 litres (111 tons). Of those six shipments, three were destined for a company that had previously been investigated in relation to a seizure of a sizeable amount of glacial acetic acid, which was suspected to be used later as a cover load for acetic anhydride trafficking.

173. In the first 10 months of 2017, further unsuccessful attempts, stopped through PEN Online, were made to import large amounts of acetic anhydride into Azerbaijan from Germany (15,000 litres) and into Kyrgyzstan from the Netherlands (10,000 litres). The latter case is believed to be linked to another investigation in the country, involving a suspected attempted diversion of ergotamine (see para. 195 below).

174. Another source of information that appears to indicate demand for acetic anhydride is the Internet, namely online

<sup>32</sup> This assumes that potential global illicit heroin manufacture is maintained at the 2016 level of an estimated 448 tons of heroin, which corresponds to a need of between 450,000 and 1.1 million litres of acetic anhydride, at a ratio of 1 to 2.5 (see annex IV).

<sup>33</sup> This does not include trade among the States members of the European Union.

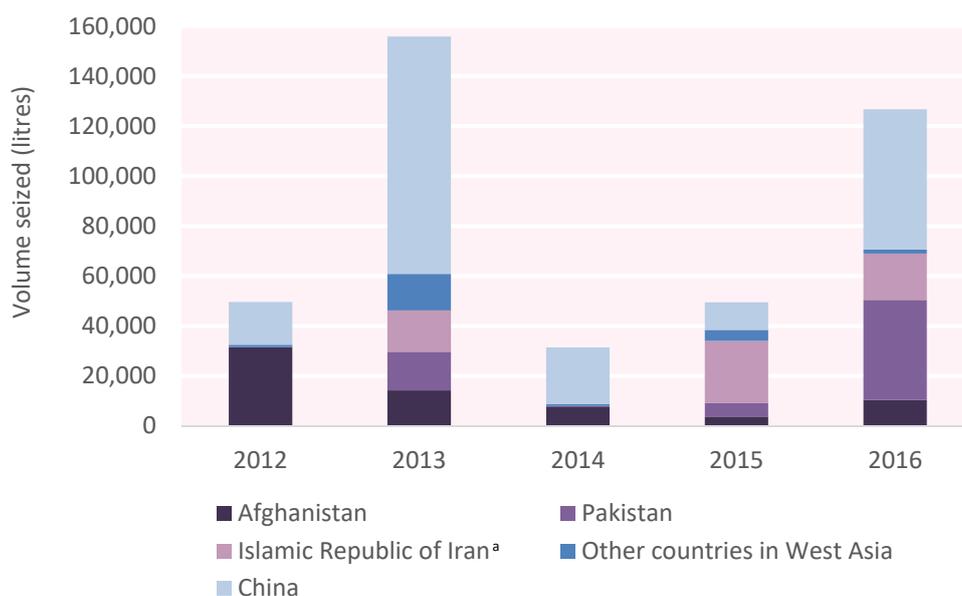
trading platforms (see also chapter IV of the present report). Since 2016, an increased number of suspicious requests for sizeable amounts of acetic anhydride have been posted on some online trading platforms. Such requests are placed by persons or companies claiming to be located either in countries that have indicated no or limited legitimate requirements for acetic anhydride in the past or in countries recently targeted by traffickers. The requests for supplies of the substance have ranged from one-time shipments of several hundreds of litres to monthly supplies of container-sized shipments. Taken together, the quantities of acetic anhydride requested through online trading platforms amounted to between several tons and a few hundreds of tons per year per country. For example, since November 2016, there have been more than 20 requests for acetic anhydride, amounting to at least 180 tons, purportedly needed in Afghanistan. It is not, however, clear how many of those requests have actually been fulfilled by legitimate traders, who might have not been aware that they were targeted by acetic anhydride traffickers.

### Trafficking

175. In 2016, 16 countries reported seizures of acetic anhydride, amounting to more than 116,000 litres. That was almost four times the amount seized and reported by 18 Governments on form D for 2015. The largest amount was reported by China (more than 56,000 litres), followed by Pakistan (40,000 litres), Afghanistan (almost 10,500 litres), Mexico and Peru (nearly 3,000 litres each) and India (nearly 2,500 litres). Seizures of more than 1,000 litres were also reported by Turkey (more than 1,500 litres).

176. Although it is the second-largest opium-producing country,<sup>34</sup> with the potential to illicitly manufacture 70 tons of heroin, an amount that would require approximately 122,000 litres of acetic anhydride, Myanmar reported seizures of only 60 litres on form D for 2015 and none in 2016. Acetic anhydride seizures reported by Mexico, of about 3,000 litres, accounted for just 3 per cent of the estimated 87,500 litres required to satisfy the needs for the potential manufacture of about 50 tons of heroin in the country.<sup>35</sup>

**Figure XVII. Seizures of acetic anhydride reported by Governments of countries in West Asia and by the Government of China on form D, 2012–2016**



<sup>a</sup> Seizures in the Islamic Republic of Iran were not reported on form D but in national reports; for 2012 and 2014, no seizure data for acetic anhydride are available for that country.

177. The year-on-year decline in seizures of acetic anhydride in Afghanistan stopped in 2016, when the seized volume almost tripled compared with 2015, from 3,760 litres to 10,440 litres. Afghan authorities had in the past identified Iran (Islamic Republic of) and Pakistan as entry points for acetic anhydride

into Afghan territory: over the 2012–2016 period, those two countries accounted for 90 per cent and 10 per cent, respectively, of all reported seizures of acetic anhydride entering Afghanistan.

<sup>34</sup> Based on the 2015 estimate of 55,500 ha under opium poppy cultivation, as no estimate of the area in Myanmar in 2016 is available (*World Drug Report 2017: Market Analysis of Plant-based Drugs*, p. 13).

<sup>35</sup> Assuming that all opium produced is converted into heroin using a conversion ratio of opium to heroin (of unknown purity) of 10 to 1.

178. In 2017, the amounts of acetic anhydride seized in Afghanistan increased even further. Through PICS, Afghanistan communicated 13 seizures, amounting to 37,650 litres. The two largest seizures involved 16,140 litres and 15,360 litres of acetic anhydride; in both instances the substance was smuggled into the country through the Islamic Republic of Iran in containers purportedly loaded with barrels containing motor oil. Another shipment of acetic anhydride, which was seized in 2017, amounted to almost 3,000 litres; it is possible that it originated in the European Union and transited the Islamic Republic of Iran.

179. The black market price of acetic anhydride in Afghanistan significantly increased in 2017, according to the country's Ministry of Counter Narcotics, and peaked in August 2017 with a range of \$145 to \$711 per litre, depending on the perceived quality and/or origin of the substance (prices ranged from \$146 to \$236 in August 2016).<sup>36</sup> Officials from the Counter Narcotics Police of Afghanistan estimated an even higher price, of between \$1,000 and \$1,250 per litre.

180. Several countries, including Azerbaijan, Bulgaria, Iran (Islamic Republic of), Iraq, Kyrgyzstan, Serbia, Turkey and the United Republic of Tanzania, which are reported as transit points for heroin trafficking, have also been involved in precursor-related investigations. That might indicate that the routes used for trafficking in heroin are also used in the opposite direction for trafficking in acetic anhydride.

181. Iranian authorities seized two shipments of acetic anhydride that were transiting the country, amounting to 18,520 litres (20 tons), in August and in September 2016.<sup>37</sup> The two seizures had also been communicated through PICS, together with relevant operational details, but once again they were not reported on the relevant form D. In 2017, Iranian authorities communicated three additional seizures of acetic anhydride through PICS, amounting to 23,850 litres. The substance purportedly originated in the European Union and in Taiwan Province of China. While the Islamic Republic of Iran was named as a destination country in investigations into several diversion attempts and seizures relating to acetic anhydride in Europe, the Board is not aware of any response by the Iranian authorities to requests for assistance related to such investigations.

182. The amount of acetic anhydride reported seized in Pakistan in 2016 was the largest ever reported by the Pakistani authorities on form D, and nearly eight times higher than in 2015. The backtracking investigations related to a seizure of more than 20,000 litres (21.7 tons) of acetic anhydride in January 2016, which were launched in cooperation with

authorities in China and the United Republic of Tanzania, as well as the United Arab Emirates, confirmed that the substance had been diverted in the United Republic of Tanzania.<sup>38</sup> Those investigations subsequently led to the identification and prevention of delivery to criminal organizations of another 130,000 litres (140 tons) of acetic anhydride, and the identification of financial flows related to that diversion. In 2017, Tanzanian authorities communicated an additional seizure of 25 litres of acetic anhydride that had originated in France.

183. India reported, on form D for 2016, a seizure of almost 2,500 litres of acetic anhydride, which was the second-largest amount seized in the past 10 years. The origin of the substance was not known. From media reports, INCB is aware that the seizure was made in connection with a major case of diversion of ephedrine<sup>39</sup> and may therefore have been intended for purposes other than diversion for illicit heroin manufacture. Other media reports mention the alleged illicit manufacture of acetic anhydride in India, in connection with the seizure of 23.5 tons of illicitly manufactured methaqualone in November 2016 (see para. 200]below). INCB has not been able to confirm the information contained in those media reports, especially with regard to their implications for precursor control.

184. With regard to countries in Central Asia that share a border with Afghanistan, the situation regarding acetic anhydride trafficking has not changed since the last reporting period. No seizures of acetic anhydride were reported by Tajikistan, Turkmenistan or Uzbekistan on form D, a situation that has prevailed for the past 15 years. In 2017, Kyrgyzstan, and also Azerbaijan, appear to have been targeted by traffickers for the diversion of acetic anhydride from international trade (see para. 173 above).

185. In Europe, only three countries reported seizures of acetic anhydride on form D for 2016, and they were of small amounts. However, in 2017, the number of suspicious activities involving acetic anhydride increased, with more countries in the region reporting seizures, suspicious queries and orders for the substance. Those countries included Belgium, Bulgaria, Czechia, France, Germany, Latvia, the Netherlands, Poland and Spain.

186. While the Netherlands reported only one seizure of acetic anhydride in 2016 (amounting to 75 litres), there were eight seizures of the substance in the first 10 months of 2017 in the country, amounting to 6,950 litres. That also included a seizure of acetic anhydride together with heroin and material containing traces of morphine, an incident that might indicate the attempted manufacture of heroin in the Netherlands.

<sup>36</sup> Afghanistan, Ministry of Counter Narcotics, and UNODC, "Afghanistan drug price monitoring monthly report" (October 2017), (contains information collected from farmers and traders on a monthly basis).

<sup>37</sup> Islamic Republic of Iran, Drug Control Headquarters, *Drug Control in 2016*, p. 38.

<sup>38</sup> E/INCB/2016/4, paras. 141 and 142.

<sup>39</sup> *Ibid.*, para. 144.

Authorities in the Netherlands also prevented the delivery of acetic anhydride to a number of companies or individuals within the country or elsewhere, including customers allegedly in Iraq and Suriname, whose bona fide could not be established.

187. Suspicious queries and orders for acetic anhydride have also been identified in Germany. On form D for 2016, German authorities reported being notified by the chemical operators concerned of 18 suspicious attempts to purchase acetic anhydride. The purchase attempts involved 53,000 litres of acetic anhydride, in individual volumes ranging from 100 litres to 10,000 litres. The alleged destination countries for the substance included Azerbaijan, Iraq and Turkey.

188. Suspicious attempts by criminal groups to purchase acetic anhydride and trafficking in the substance continued in Europe in 2017. In the first 10 months of 2017, Bulgaria communicated six seizures of acetic anhydride, of amounts totalling more than 11,600 litres; the substance was allegedly destined for Iran (Islamic Republic of), Iraq and Turkey. Bosnia and Herzegovina, Hungary, Poland and Serbia were the suspected source countries, or last-known transit countries, of the substance. Backtracking investigations into one of the seizures in Bulgaria revealed possible links to a seizure reported in the Netherlands.

189. In addition, from activities conducted under Project Cohesion, specifically Operation “Follow me” (see paras. 55 (b) and 58 above), INCB understands that States members of the European Union have identified and investigated more than 100 suspicious queries or requests for supplies of acetic anhydride in a number of countries in 2016 and 2017. While the delivery of hundreds of tons of acetic anhydride to suspicious customers was prevented, some acetic anhydride might nevertheless have found its way into the hands of criminal organizations.

190. Backtracking investigations related to seizures of acetic anhydride and identified diversion attempts also allowed for the identification of the *modi operandi* of traffickers: use of new companies or established “front” companies that only recently applied for registration as precursor operators; use of non-existent companies that cannot be physically located at the address provided; involvement of foreign nationals (often from countries identified as targets of acetic anhydride traffickers); the use of glacial acetic acid as a cover load for, or otherwise to disguise the identity of, acetic anhydride; “smurfing”, i.e., requests for supplies of small amounts of acetic anhydride placed with several suppliers; and submission of forged documents to justify legitimate needs for the substance.

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

191. In 2016, authorities in Afghanistan seized, in 18 incidents, a total of 45.4 tons of ammonium chloride, a

non-scheduled chemical commonly used in the country in the extraction of morphine from opium. That amount was the highest ever reported by the Government. The only other country that regularly reports seizing large amounts of ammonium chloride on form D is Mexico. In 2016, Mexican authorities reported seizures of nearly 18 tons, the largest amount ever reported by the country. The substance had been seized from illicit laboratories where heroin and methamphetamine were being manufactured. In the methamphetamine laboratories, the ammonium chloride might have been used for the illicit manufacture of methylamine (see para. 140 above). Myanmar reported seizures of ammonium chloride for the first time on form D for 2016, totalling almost 9.4 tons. Incidents involving the substance in Afghanistan and Mexico continued to be communicated through PICS in 2017.

192. Another chemical not in Table I or Table II of the 1988 Convention is glacial acetic acid. In 2016 and 2017, investigations into seizures and suspicious queries for supplies of acetic anhydride in Europe and West Asia confirmed the long-suspected use of glacial acetic acid as a cover load or to otherwise disguise smuggled acetic anhydride. On form D for 2016, Mexico reported seizing the largest amounts of glacial acetic acid (almost 18,000 litres); however, those seizures were made in connection with illicit methamphetamine manufacture. Likewise, seizures above 100 litres reported on form D for 2016 by the Netherlands (about 1,000 litres) and Nigeria (about 300 litres) were likely linked to illicit synthetic drug manufacture. Seizures in the Netherlands continued to be communicated in 2017 and included a laboratory where it was suspected that both MDMA and heroin were being manufactured. A purported seizure of 20,271 litres of glacial acetic acid in April 2016 was communicated by Afghanistan through PICS. The seizure was not, however, confirmed on the corresponding form D.

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

### 1. Ergot alkaloids and lysergic acid

193. Ergot alkaloids (ergometrine and ergotamine, and their salts) and lysergic acid are the three chemicals in Table I of the 1988 Convention that can be used in the illicit manufacture of lysergic acid diethylamide (LSD). Legitimately, they are used in the treatment of migraines and as an oxytocic in obstetrics. International trade in these substances is limited, in terms of both the number of transactions and the amounts involved.

*Licit trade*

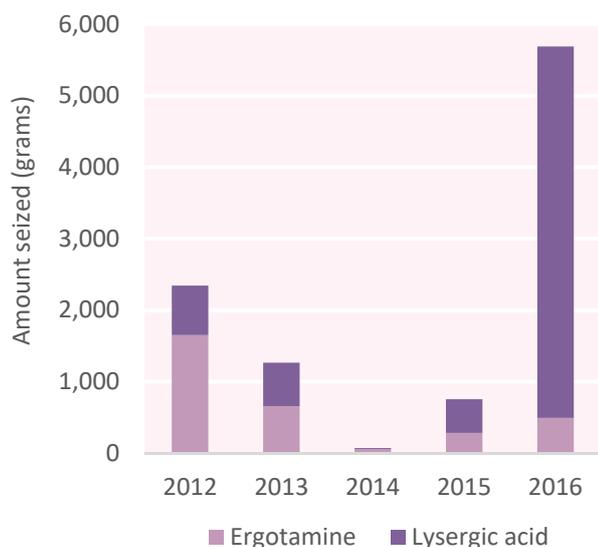
194. Between 1 November 2016 and 1 November 2017, 16 exporting countries sent more than 380 pre-export notifications for ergometrine and ergotamine to 43 importing countries, involving about 23 kg of ergometrine and nearly 960 kg of ergotamine; the number of pre-export notifications was similar to the previous reporting period. There were five pre-export notifications for lysergic acid, totalling 0.2 g.

195. Authorities in the Netherlands stopped the export of 5 kg of ergotamine to Suriname after investigations in Suriname established that the licence of the importing company had been forged, using a licence originally issued to another company. There are also indications that companies in Kyrgyzstan may have been targeted for the diversion of ergot alkaloids in 2017.

*Trafficking*

196. Seizures of ergotamine and lysergic acid are infrequently reported, by different countries; seizures of ergometrine have never been reported. Seizures were consistently reported on form D during the period 2012–2016 by Australia. In 2016, unlike in previous years, global seizures of LSD precursors were dominated by seizures of lysergic acid (see figure XVIII). Specifically, the United States reported seizing almost 3.9 kg, Australia nearly 805 g and France 500 g. More than half of the total amount of lysergic acid seized in Australia was reported to have originated in Poland, while the Netherlands was reported as the country of origin in the largest number of seizure cases. Canada and Honduras reported seizing lysergic acid but did not specify the amounts. Seizures of ergotamine were reported by Australia (290 g) and Germany (200 g); it was the first time that the substance had been seized in Germany.

**Figure XVIII. Seizures of ergotamine and lysergic acid reported by Governments on form D, 2012–2016**



**2. N-Acetylanthranilic acid and anthranilic acid**

197. N-Acetylanthranilic acid and anthranilic acid can be used for the illicit manufacture of methaqualone, a sedative-hypnotic that is also known under its former brand names “quaalude” and “mandrax”.

*Licit trade*

198. Between 1 November 2016 and 1 November 2017, eight exporting countries sent about 300 pre-export notifications to 35 importing countries for shipments of anthranilic acid. Those shipments together amounted to almost 1,700 tons; the main exporters were China and India, followed by the United States. By contrast, trade in N-acetylanthranilic acid continued to be limited to small amounts, typically for analytical and research purposes. The amounts reported through PEN Online in seven transactions totalled just 200 g during the reporting period.

*Trafficking*

199. No seizures of N-acetylanthranilic acid were reported by Governments on form D for 2016; the amounts of anthranilic acid seized were negligible.

200. From media reports, INCB is aware of a seizure of 23.5 tons of methaqualone in India in November 2016. According to the reports, the substance was allegedly illicitly manufactured from anthranilic acid, which had been imported from Indonesia and misdeclared at customs as “malic acid”. Despite the significance of the seizure, INCB was unable to confirm details and obtain relevant additional information that might have enabled investigations into the point of diversion and the modus operandi that had been used by traffickers to obtain the anthranilic acid. **INCB reiterates its request to 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 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**

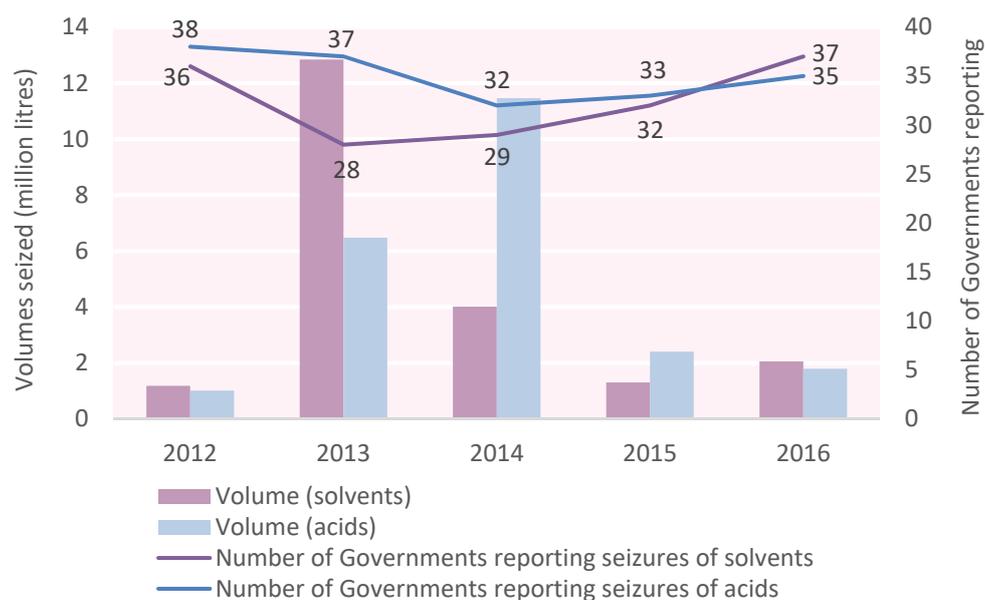
201. Acids, bases and solvents are required at various stages of the manufacture of nearly all drugs. Two acids (hydrochloric acid and sulphuric acid) and four solvents (acetone, ethyl ether, methyl ethyl ketone and toluene) are included in Table II of the 1988 Convention. In most cases, they can be easily substituted, as reflected by the number of non-scheduled acids, bases

and solvents on the INCB limited international special surveillance list of non-scheduled substances and the various country-specific and region-specific lists.

202. Seizures of the four solvents in Table II of the 1988 Convention were reported on form D for 2016 by 37 countries and territories (see figure XIX). The solvent most frequently reported was acetone (34 countries and territories), followed by

toluene (22), ethyl ether (11) and methyl ethyl ketone (9); by volume, acetone was followed by toluene. The largest total amounts of all four solvents were reported by Colombia (nearly 1.35 million litres), China (222,500 litres), United States (122,000 litres) and Peru (117,000 litres). Where such information was provided, the origin of the seized solvents was often domestic, i.e., the country in which the seizure took place.

**Figure XIX. Seizures of solvents (acetone, ethyl ether, methyl ethyl ketone and toluene) and acids (hydrochloric and sulphuric acid), reported by Governments on form D, 2012–2016**



203. A total of 35 countries and territories reported seizures of hydrochloric and/or sulphuric acid on form D for 2016 (see figure XIX). As for solvents, the countries where the largest amounts were seized were, in decreasing order, Colombia, China, Peru and the United States, followed by the Plurinational State of Bolivia, the Netherlands, Ecuador and Myanmar; seizures in other countries did not exceed 30,000 litres each. Hydrochloric acid accounted for about 55 per cent of all the acids listed in Table II that were reported seized in 2016.

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

204. Seizures of solvents not included in Table II of the 1988 Convention are regularly reported on form D. In 2016, seizures of non-scheduled solvents, namely acetate solvents, which can be used as substitutes for solvents listed in Table II, in particular in the final crystallization step when cocaine base is converted into cocaine hydrochloride, were reported by seven countries. As in the past, the largest amounts and greatest diversity of

acetate solvents were reported by Colombia, which accounted for more than 85 per cent (more than 950,000 litres) of the amount of all acetate solvents reported seized (solvents included the following, listed in descending order of the amounts seized: ethyl acetate, n-propyl acetate, n-butyl acetate and isopropyl acetate); about 12 per cent of the total amount seized was reported by the Plurinational State of Bolivia, in the form of ethyl acetate. Acetate solvents in amounts larger than 4,000 litres were also reported by Argentina and the Netherlands. The total amount of acetate solvents seized in 2016 was almost 250 per cent more than those reported seized in 2015.<sup>40</sup> That increase was mainly the result of major increases in Colombia.

205. Methyl isobutyl ketone is another solvent that can be used in the final cocaine hydrochloride crystallization step. Seizures of the substance in 2016 were reported by Colombia (10,732 litres), Peru (2,006 litres) and Argentina (200 litres). Where information was available, all substitute solvents were obtained from domestic sources.

<sup>40</sup> E/INCB/2016/4, para. 162.

206. Seizures of solvents not in Table II of the 1988 Convention are typically reported by countries in which those solvents are under national control. According to information available to INCB, that applies to methyl isobutyl ketone (controlled in 17 countries), ethyl acetate (controlled in 13 countries), n-butyl acetate and isopropyl acetate (both controlled in 6 countries), and n-propyl acetate (controlled in 4 countries).

207. The results of forensic profiling of samples of cocaine seized in the United States, carried out by the United States Drug Enforcement Administration Special Testing and Research Laboratory in 2016, indicate that the solvents most often used to dissolve the cocaine base prior to its crystallization as the hydrochloride salt are solvents not in either Table I or Table II of the 1988 Convention, namely: n-propyl acetate (found in 53 per cent of the samples analysed); ethyl acetate (29 per cent); and a mixture of the two solvents (8 per cent). By contrast, the hydrochloric acid required for crystallization is most typically used as such; where it is dissolved, the solvent of choice is methyl ethyl ketone, a solvent listed in Table II. Of the samples analysed, 14 per cent were found to have been manufactured from recycled solvents.

208. As in previous years, a significant volume of other common solvents or solvent mixtures was reported on form D for 2016, mostly by countries in South America. The solvents included various hydrocarbon mixtures, such as thinners, kerosene, diesel and various types of gasoline, which are predominantly employed<sup>41</sup> in the extraction of cocaine from coca leaves, and chlorinated solvents. Outside South America, seizures of such solvents in volumes larger than 1,000 litres were reported by China, Myanmar, the Netherlands and Spain.

209. Incidents involving acids and solvents included in Table II of the 1988 Convention, as well as substitute chemicals not under international control, continued to be communicated through PICS in 2017.

## 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

### 1. Precursors of fentanyl, fentanyl analogues and other synthetic opioids

210. Over the past year, there has been growing concern about the proliferation of illicitly manufactured fentanyl and highly potent fentanyl analogues in North America and in parts of Europe and other regions, not the least for fear of a high death

toll related to the abuse of such substances. However, despite those concerns and despite the focus on illicitly manufactured fentanyls and their precursors in connection with the international scheduling (which was effective 18 October 2017) of NPP and ANPP in Table I of the 1988 Convention, only Estonia and the United States reported seizures of the two chemicals on form D for 2016.

211. Specifically, Estonia reported two seizures of NPP totalling more than 10 kg. In both instances, the substance had been ordered from China and shipped with a courier service; the larger consignment was destined for an Estonian company that had previously been involved in drug-related criminal activities. The United States reported seizures of ANPP totalling 52 kg in 2016. The seizures had previously been communicated through PICS, together with relevant operational details. Other seizures of the substances, communicated through PICS and reported in connection with the scheduling of them, were not included in the form D reports. Illicit manufacture of fentanyls and other synthetic drugs within the Russian Federation was reported to be on the rise. The United States reported the dismantling of eight illicit fentanyl laboratories.

212. Estonia and Latvia also reported seizures of other precursors of synthetic opioids, reflecting a long-standing problem with abuse and overdose involving such drugs, including, more recently, non-scheduled fentanyl analogues. Specifically, Latvia reported a seizure of almost 4 litres of 1-benzyl-4-piperidone; the chemical is indicative of the originally patented manufacturing method of fentanyl, the so-called “Janssen method”, which does not require the recently scheduled NPP or ANPP. Estonia reported seizing 4-phenylpiperidine, a chemical that the authorities suspected was being used in the synthesis of other opioids such as pethidine or ketobemidone. **INCB commends the provision of that information and would like to reiterate once again that international countermeasures against chemicals used in the illicit manufacture of drugs, including scheduling in the tables of the 1988 Convention, is only possible if sufficient evidence of their illicit use is available. Governments are therefore encouraged to share information about relevant seizures and other incidents involving emerging, non-scheduled chemicals, as well as new trends in precursor trafficking, as soon as practically possible, through PICS or, at the very least, during the annual form D reporting process.**

### 2. Precursors of gamma-hydroxybutyric acid

213. During the reporting period, 14 countries, mostly within Europe, reported incidents involving GBL on form D for 2016. While seizures in individual countries ranged from 1 to more

<sup>41</sup> Certain hydrocarbon mixtures are also abused as such, by inhalation.

than 1,200 litres, Germany reported a total of 29 attempts to purchase GBL during 2016 in amounts that ranged from 20 to 50,000 litres; the substance was allegedly intended for different countries in Europe, either for direct consumption or for resale in small quantities over the Internet disguised as cleaning products. The purchase requests were rejected by the operators concerned, in cooperation with the competent authorities.

214. Countries outside Europe that reported seizures of GBL included Australia, Brazil, Chile and the United States. Those countries often reported that China, including Hong Kong, was the origin of the consignments. No Government reported any seizure of 1,4-butanediol, a precursor of GBL and a pre-precursor of GHB, on form D for 2016.

215. Incidents involving GBL and 1,4-butanediol continued to be communicated through PICS and the Project Ion Incident Communication System (IONICS) in 2017; the largest GBL seizure in that year, involving 16 tons of the substance, was communicated through IONICS. As in the past, the consignments were often mislabelled and shipped by postal or courier service, occasionally through seaports. The 16-ton seizure was made by Polish customs officers at the land border with Lithuania; the shipment had transited Germany and its suspected origin was China. All other individual seizures were of amounts of less than 100 kg or 100 litres.

216. The inconsistent reporting of GBL is a result of the fact that it can be used as a precursor in the illicit manufacture of GHB but is also used as a drug on its own, since it is metabolized into GHB in the body after ingestion. Countries include seizures of GHB in their form D reports depending on how the substance is classified in national legislation.

### 3. Precursors of ketamine

217. In its 2017 report on drug control,<sup>42</sup> China reported 93 cases of illicit ketamine manufacture in 2016, compared with 118 cases in 2015 and 90 in 2014. Disaggregated seizure data on the two major ketamine precursors, “hydroxylimine” and *o*-chlorophenyl cyclopentyl ketone, were not provided, although illicit ketamine manufacture continues to be of concern to Chinese authorities: of the 438 clandestine laboratories destroyed during 2016, 21 per cent were clandestine ketamine laboratories, an amount second only to that of illicit methamphetamine laboratories.

218. Malaysia reported on form D seizing a number of chemicals from an industrial-scale illicit ketamine laboratory that was dismantled in August 2016. The chemicals seized in the laboratory, which was capable of producing 5–10 kg of ketamine per week, included 2,500 litres of bromine and 2,800 kg of tartaric acid; both chemicals were sourced from

India and trafficked to Malaysia by air. Although not seized on site, information provided by the Malaysian authorities suggests that the main precursor was *o*-chlorophenyl cyclopentyl ketone.

219. The Royal Canadian Mounted Police dismantled a sophisticated clandestine ketamine laboratory in November 2016. Several kilograms of ketamine were seized, along with a large volume of unspecified chemicals that had been purchased domestically from a company whose operators had previously been charged with selling chemicals knowing that they would be used to illicitly produce synthetic drugs. On form D for 2016, Canada reported seizures of “hydroxylimine” in unspecified amounts.

### 4. Precursors of new psychoactive substances, including substances recently scheduled under the Single Convention on Narcotic Drugs of 1961 or the Convention on Psychotropic Substances of 1971

220. Belgium, France and the Netherlands reported seizures of 2-bromo-4'-methylpropiofenone, a mephedrone precursor, on form D for 2016. Amounts ranged between 11 kg and 50 kg. A number of the seizures had previously been communicated through PICS. Incidents involving 2-bromo-4'-methylpropiofenone continued during 2017, and included one in a warehouse in the Netherlands in March 2017, during which 1,200 litres of the substance were seized.

221. Precursors of other new psychoactive substances reported on form D for 2016 also included 4-chloropropiofenone, a precursor of 4-chloromethcathinone. Slightly more than 4 kg of 4-chloropropiofenone were seized at the airport in Paris; the seizure was effected using a clause in European Union precursor regulations that prohibits the introduction of consignments of non-scheduled substances into the customs territory of the Union where there is sufficient evidence that those substances are intended for illicit drug manufacture (the so-called “catch-all” clause).

222. Other seizures of precursors of new psychoactive substances reported on form D for 2016 included (2-fluorophenyl)acetone, of which 200 kg were seized in two incidents in Luxembourg. (2-Fluorophenyl)acetone is a precursor of 2-fluoroamphetamine or 2-fluoromethamphetamine. The substances had originated in China and were destined for Suriname. The Netherlands reported having seized 2.5 kg of 2,5-dimethoxy-*beta*-nitrostyrene, a chemical that can be used in the illicit manufacture of 2,5-dimethoxyphenethylamine.

<sup>42</sup> China, National Narcotics Control Commission, *Annual Report on Drug Control in China 2017*.

223. INCB is also aware of seizures, in the Russian Federation in 2016, of 2-bromovalerophenone and pyrrolidine in connection with the dismantling of a clandestine *alpha*-pyrrolidinovalerophenone (*alpha*-PVP) laboratory. Authorities in Slovakia, in cooperation with their Polish counterparts, dismantled an industrial-scale laboratory for the manufacture of 3-chloromethcathinone (3-CMC) and *N*-ethyl(nor)pentadrone. In addition, 5 kg of a potential 3-CMC precursor were also reported seized while transiting Belgium on the way from China to Czechia.

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<sup>43</sup> INCB has previously called attention to the misuse of the Internet by online pharmacies that illegally sell prescription medicines to members of the general public without the required prescriptions. As part of this, INCB actively promotes awareness of the need for suitable controls regarding the sale of pharmaceutical preparations over the Internet.

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<sup>44</sup> E/INCB/2011/4 para 19