



Part two

Deuxième partie

Segunda parte

COMMENTS ON THE REPORTED STATISTICS ON PSYCHOTROPIC SUBSTANCES

Summary

The analysis contained in the present section of the technical publication is based on statistical data furnished by Governments. The quality of the analysis depends on the data provided.

Use of substances included in Schedule I of the 1971 Convention should be limited to scientific research and, in certain cases, the manufacture of psychotropic substances in other schedules. The isolated use of some substances in Schedule I for the manufacture of other substances has declined in recent years.

Manufacture of methylphenidate and its use for the treatment of attention-deficit hyperactivity disorder (ADHD) continue to increase worldwide. Although the number of countries reporting manufacture of methylphenidate has increased in recent years, the United States of America remains the leading manufacturer. In 2011, per capita consumption of methylphenidate (calculated by the Board or reported by Governments, pursuant to Commission on Narcotic Drugs resolution 54/6) was highest in Canada, Costa Rica, Iceland, Israel, the Netherlands, Norway, Sweden and the United States.

Manufacture of amphetamines, the other central nervous system stimulants in Schedule II of the 1971 Convention, increased slightly in 2011 compared with 2010. Nevertheless, in 2011 the combined total of global manufacture of these substances amounted to only half of the amount reported about a decade ago. The United States remained the largest consumer of amphetamines in 2011 in absolute terms, as well as in terms of per capita consumption.

Buprenorphine, an opioid analgesic listed in Schedule III of the 1971 Convention, has been increasingly used in the treatment of pain and substitution treatment for opioid addicts since the late 1990s. In 2011, global manufacture of buprenorphine increased from the previous year. Global calculated consumption of the substance has continued to grow, with over 60 countries reporting imports of buprenorphine in 2011.

A total of 35 benzodiazepines are currently under international control. Of those, 34 are classified as anxiolytics and sedative-hypnotics and are used in medical practice for pre-medication and the induction of general anaesthesia. Clonazepam is the only benzodiazepine that is used mainly as an anti-epileptic. A lack of data for 2011 from some major manufacturing countries, in particular Brazil and India, affected the analysis of the information and the resulting findings with respect to the developments related to benzodiazepines. In 2011, the benzodiazepine-type anxiolytics alprazolam and diazepam remained, in that order, the most manufactured psychotropic substances in terms of defined daily doses for statistical purposes (S-DDD). Reported manufacture of benzodiazepine-type sedative-hypnotics in 2011 increased compared with 2010, reaching 7.1 billion S-DDD. Italy continued to be the leading manufacturer of all benzodiazepines in 2011.

Of the 12 barbiturates listed in Schedules II, III and IV of the 1971 Convention, five substances—phenobarbital, butalbital, pentobarbital, barbital and amobarbital (in that order)—together accounted, on average, for 99 per cent of total reported manufacture of those barbiturates during 2007-2011. Phenobarbital continued to be the most widely manufactured barbiturate in 2011, accounting for 72 per cent of total manufacture of all 12 barbiturates. China, the United States, Denmark, Germany and Japan (in descending order) were the leading manufacturers of barbiturates in 2011. International trade in most barbiturates has been declining during the past five years.

The 14 stimulants listed in Schedule IV of the 1971 Convention are used mainly as anorectics or for the treatment of ADHD. Despite the lack of data from Brazil, a major manufacturer of such stimulants, total reported manufacture of this group of substances reached 2.5 billion S-DDD in 2011, the highest value reported since 2002, owing to a sharp increase in manufacture of

phentermine in the United States. Phentermine continues to be the most used substance in this group. In 2011, the United States accounted for almost 80 per cent of global use. The differences in consumption levels among countries and regions that have been observed for these substances became more pronounced in 2011.

Substances for which global manufacture or international trade in recent years amounted to less than 1 kg are not mentioned separately in the analysis below; however, the data on those substances are included in the relevant group totals, as applicable.

Substances in Schedule I of the 1971 Convention

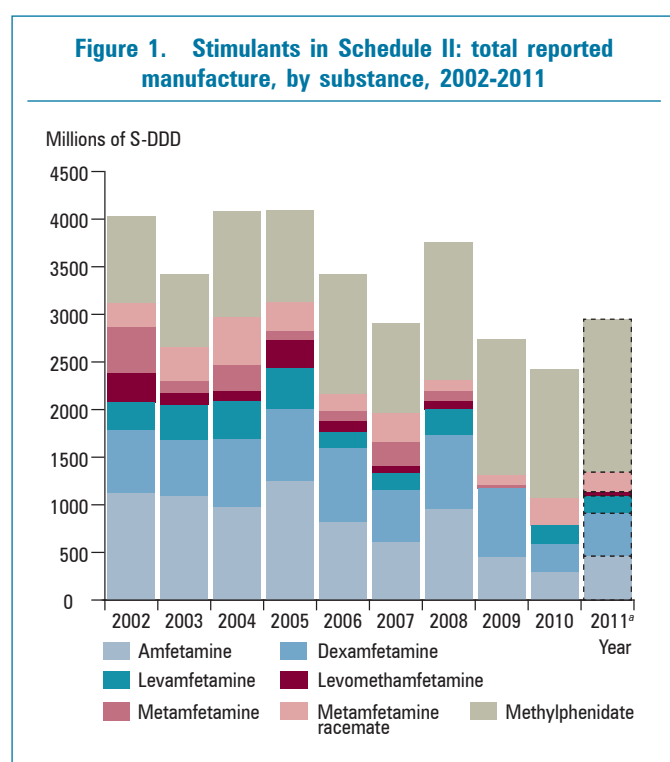
1. Twenty-eight substances are listed in Schedule I of the 1971 Convention. The use of those substances should be prohibited, pursuant to the provisions of article 7 of the Convention, except for scientific and very limited medical purposes by duly authorized persons in medical or scientific establishments that are directly under the control of or specifically approved by their Governments. This restriction results from the fact that all substances in Schedule I are hallucinogens and/or central nervous system stimulants with very limited or no medical use. In line with this restriction, manufacture and stocks of, as well as trade in, those substances have been extremely limited, with the exceptions noted in the following paragraphs.
2. The 1971 Convention does not foresee use of the psychotropic substances in Schedule I by industry for the manufacture of non-psychotropic substances or products. However, until 2002, annual manufacture of 2,5-dimethoxy-amphetamine (DMA) in the United States of America, exclusively for use in the manufacture of a non-controlled film dye, exceeded several tons. Manufacture of DMA started to decline in 2002, owing to a decrease in the demand for photographic film, and stopped entirely in 2007. Global stocks of DMA, which have been depleted since 2008, stood at 82 grams at the end of 2011.
3. *para*-Methoxy-*alpha*-methylphenethylamine (PMA) is another substance in Schedule I that is used by industry for the manufacture of non-psychotropic substances. During the past decade, Denmark reported intermittent manufacture of PMA, with quantities ranging from 24 to 71 kg, for use in the manufacture of tamsulosin, an active pharmaceutical ingredient that is not under international control. In 2011, there was limited manufacture of PMA in Denmark and the United States, amounting to 406 grams in total.
4. Use of the psychotropic substances included in Schedule I for the manufacture of psychotropic substances that are included in other schedules was reported only by the United States. In that country, isomers of tetrahydrocannabinol (THC) listed in Schedule I are used in the manufacture of *delta*-9-Tetrahydrocannabinol (*delta*-9-THC), a psychotropic substance listed in Schedule II. *delta*-8-Tetrahydrocannabinol is the main substance among the isomers in Schedule I manufactured in the United States. During the past decade, reported manufacture in the United States of isomers of THC listed in Schedule I fluctuated between 327 kg in 2005 and 53 kg in 2010. In 2011, the total amount of isomers of THC manufactured in the United States reached 288 kg. At the end of 2011, global stocks of such isomers stood at 538 kg, the vast majority of which were held in the United States.

Substances in Schedule II of the 1971 Convention

5. Listed in Schedule II are 17 substances that have little to moderate therapeutic usefulness and whose liability to abuse constitutes a substantial risk to public health. The substances belong to the following groups: central nervous system stimulants; anti-emetics; hallucinogens; sedative-hypnotics; antitussives; and antidepressants. In addition to their various applications in human and/or veterinary medicine, some of these substances are used in industry for the manufacture of other psychotropic substances or for conversion into non-psychotropic substances.

Central nervous system stimulants

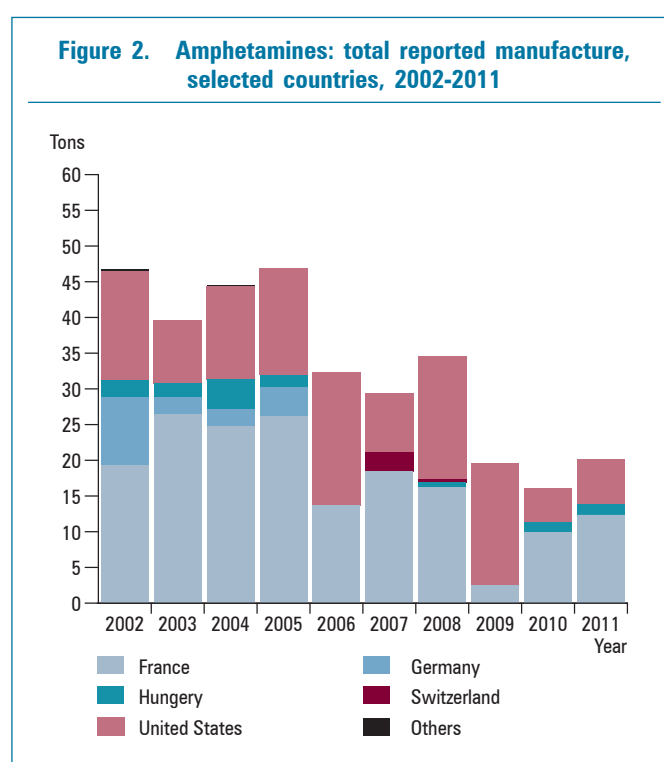
6. Total manufacture of central nervous system stimulants in Schedule II fluctuated in the period 2002-2011, as can be seen in figure 1. After decreasing for two consecutive years (2009 and 2010), total reported manufacture of this group of substances picked up again in 2011, amounting to 3 billion defined daily doses for statistical purposes (S-DDD), mainly as a result of increased manufacture of both amphetamine and dexamfetamine. Nevertheless, manufacture of amphetamines followed a declining trend during the past decade and methylphenidate's share of total output of stimulants in Schedule II increased from 22.5 per cent in 2002 to 54 per cent in 2011. In 2011, amphetamine and dexamfetamine accounted for 16 and 15 per cent, respectively, of total output. Together with methylphenidate, these substances accounted for 85 per cent of total combined output in 2011.



Amphetamines

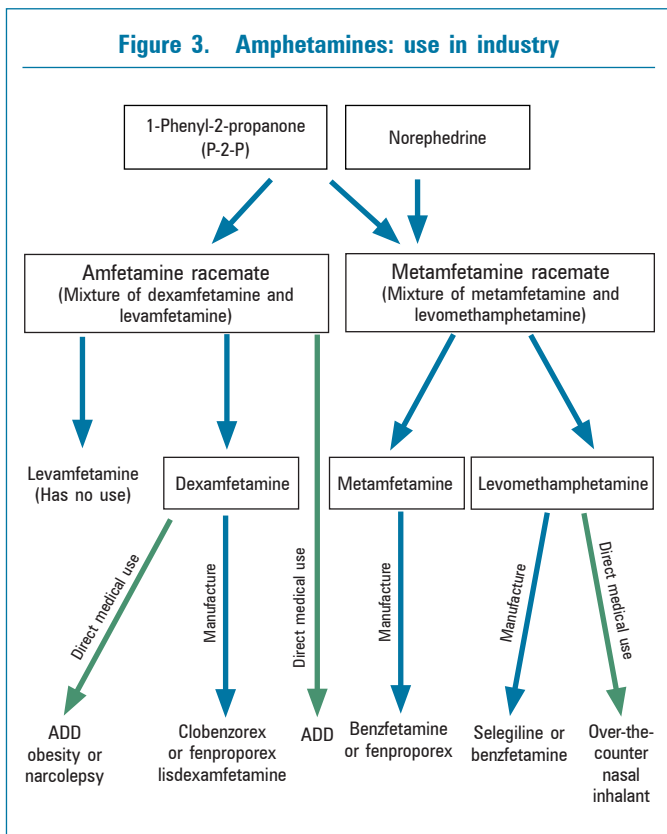
7. Both optical isomers of amphetamine (levamfetamine and dexamfetamine) and their racemic mixture (amphetamine), as well as both optical isomers of metamfetamine (levomethamphetamine and metamfetamine) and their racemic mixture (metamfetamine racemate), are listed in Schedule II. Statistical reports on amphetamine, dexamfetamine and metamfetamine have been received by the International Narcotics Control Board from Governments since the 1970s. Statistics for levamfetamine and levomethamphetamine have been available since 1986, and statistics for metamfetamine racemate since 1988, owing to the different dates on which those substances were brought under the control of the 1971 Convention.

8. In 2011, the quantity of amphetamines listed in Schedule II that were manufactured worldwide increased to 20 tons (1.3 billion S-DDD), in contrast with the decline of the previous two years (see figure 2). In 2011, dexamfetamine and amphetamine comprised almost the same share of total output of amphetamines (34 per cent), while metamfetamine racemate and levamfetamine represented 15 and 13 per cent, respectively. In 2011, France accounted for 62 per cent of total manufacture of amphetamines, the United States for 31 per cent and Hungary for the remainder. France continued to be the sole manufacturer of levamfetamine in 2011; the substance was used in that country for reversion into amphetamines.



Use as intermediate substances

9. Amphetamines in Schedule II of the 1971 Convention are frequently used in industry as intermediary products for the manufacture of other substances (see figure 3). The new substances manufactured from amphetamines may be divided into two groups: other psychotropic substances, including those which are optical isomers of the original substance; and substances not controlled under the 1971 Convention. In France and in the United States, amphetamines in Schedule II are widely used in industry for conversion into other amphetamines included in that Schedule. In the United States, amphetamine is also used in the synthesis of lisdexamfetamine (L-lysine-d-amphetamine), a prodrug of dexamfetamine, which is used in the treatment of attention-deficit hyperactivity disorder (ADHD). In addition, amphetamines have mainly been converted to substances used as anorectics (benzfetamine, clobenzorex, fenproporex and levopropylhexedrine) and antiparkinsonian drugs (selegiline).



Direct medical use

10. For direct medical purposes, amphetamines are used mainly for the treatment of ADHD in the United States. In addition, they are used to treat narcolepsy and obesity, although the widespread use of those substances for the

treatment of obesity has been considerably reduced or discontinued in most countries. While France has traditionally been a major manufacturer of amphetamines, there is very limited medical use of amphetamines in that country, as almost all the amphetamines manufactured there are destined for export.

11. The countries with the highest levels of reported (i.e. furnished by Governments) consumption and of calculated medical and industrial¹ uses of amphetamines, calculated on the basis of statistics provided for 2011² and expressed in S-DDD per 1,000 inhabitants per day,³ are listed in tables 1 and 2 respectively, in order of their rate of use in 2011.

Table 1. Amphetamines: reported consumption rate, selected countries, 2010 and 2011

Country	(S-DDD per 1,000 inhabitants per day)	
	2010	2011
United States	15.74	18.67
Iceland	–	0.51
Sweden	0.29	0.31
Netherlands	–	0.22
Chile	2.84	0.16
Germany	0.04	0.13
Israel	0.03	0.08
Denmark	0.06	0.07
Austria	0.02	0.01
United Kingdom	0.02	–

Table 2. Amphetamines: calculated consumption rate, selected countries, 2011

Country	(S-DDD per 1,000 inhabitants per day) 2011
Canada	1.58
Australia	1.41
Switzerland	0.40
Norway	0.39
Belgium	0.18
Finland	0.08
United Kingdom	0.06
New Zealand	0.04

¹ Excluding use for the manufacture of other amphetamines and non-psychotropic substances.

² The method used for calculating levels of consumption of psychotropic substances is explained in the explanatory note to table IV of the present publication.

³ The list of defined daily doses for statistical purposes (S-DDD) used in these calculations is presented in table III of the present publication.

Comments on amphetamines, by substance

12. The manufacture of amphetamine gradually increased until it reached a peak of 30 tons in 1998, before falling gradually to 4.3 tons in 2010. In 2011, global manufacture of amphetamine rose again to 6.9 tons, with France and the United States accounting for 65 and 34 per cent, respectively. Amphetamine is used mainly in combination with dexamphetamine in the United States. In 2011, about 82 per cent of global stocks (7 tons) of amphetamine were held in the United States; the rest were held in France. The United States and France, in that order, also remained the main exporters of the substance. Total exports of amphetamine in 2011 amounted to 480 kg, the main importers being, in descending order, Canada, Germany and Chile.

13. The trends in manufacture of dexamphetamine reflect developments in the United States. During the 1980s, total output was fairly stable, at approximately 350 kg annually. It increased afterwards, although with many fluctuations, to 11 tons in 2009 and then decreased sharply to less than 5 tons in 2010. In 2011, however, the United States doubled its output, to 4 tons; with the output of France (2.8 tons), total manufacture of that substance reached 6.8 tons. The United States remained the main user of dexamphetamine for medical purposes, although such use was also noted in a number of other countries, including, in descending order, Australia, Canada, Norway, Sweden, Belgium and Switzerland. Global stocks of dexamphetamine increased from 1 ton in 1995 to a little over 10 tons in 2011. Almost 30 countries reported imports of the substance, amounting to 577 kg in total in 2011. Canada, Australia and Germany were the main importers, accounting for 40, 28 and 23 per cent, respectively, of the total.

14. Global reported manufacture of metamphetamine, which amounted to 9.5 tons in 1999, has decreased since that year. The decline has been even more pronounced since 2008, after France and Switzerland ceased manufacturing the substance, with total output reaching less than 3 kg in 2011. The main regular user of metamphetamine (mainly for industrial purposes) was the United States. International trade in metamphetamine has been limited in volume; in 2011, total exports amounted to 362 grams.

15. During the period 2002-2011, total reported manufacture of levomethamphetamine fluctuated between no output (in 2009 and 2010) and 4.6 tons (2002). While Germany, France, the United States and the Czech Republic were the main manufacturers of levomethamphetamine in the past, France was the sole manufacturer of the substance (624 kg) in 2011. The main user of levomethamphetamine for industrial purposes until 2008 was Germany, followed by the United States, France and the Czech Republic. In recent years, about 470 kg of levomethamphetamine have been used annually in the United States for the manufac-

ture of nasal inhalants for domestic use, which are exempted in that country from certain control measures in accordance with article 3 of the 1971 Convention.

16. A total of 3.1 tons of metamphetamine racemate was manufactured in 2011. During the period 2007-2011, France and Hungary accounted for on average 77 and 23 per cent of global output, respectively. The substance has mainly been exported to the United States, where it has either been converted into non-controlled substances or divided into levomethamphetamine and metamphetamine. Global stocks in 2011 stood at 2.6 tons. International trade averaged 1.38 tons during 2007-2011, with the United States accounting for all imports. Levomethamphetamine has been used mainly for export and has also been converted, in smaller quantities, into selegiline. Metamphetamine obtained during the process of separating levomethamphetamine has been added to stocks.

Methylphenidate

17. The use of methylphenidate⁴ for medical purposes has increased significantly since the 1990s. Methylphenidate is used for the treatment of ADHD, primarily in children. It is also prescribed for the treatment of narcolepsy. The increase in the manufacture and use of methylphenidate is mainly the result of developments in the United States, where the substance is heavily advertised, including directly to potential consumers. Since 2000, however, the use of methylphenidate for the treatment of ADHD has been rising sharply in many other countries.

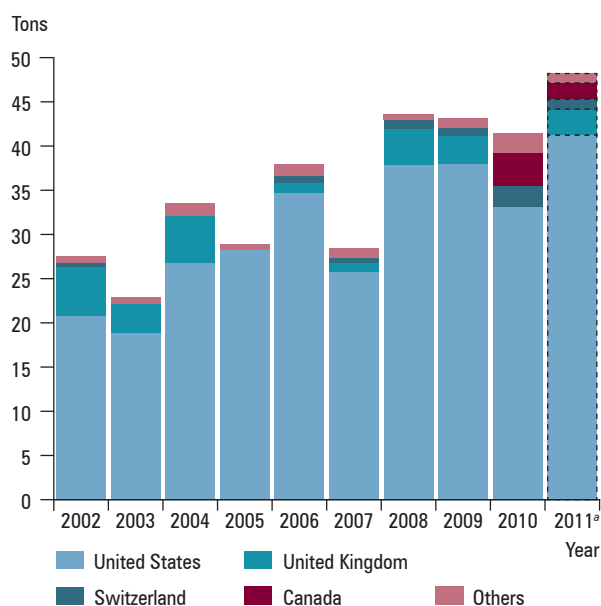
18. Global manufacture of methylphenidate started to increase rapidly in the 1990s, although with some fluctuations, reaching 48 tons in 2011, the highest amount ever reported (see figure 4). Since the 1990s, the United States has been the leading manufacturer of methylphenidate, increasing its output from 1.8 tons in 1990 to 41 tons in 2011, which represented 86 per cent of global output. Until 2009, the United Kingdom was the second largest manufacturer of the substance. In 2010, however, manufacture of methylphenidate in that country amounted to only a few grams. In 2011 that country again became the second largest manufacturer, with output of 3 tons of the substance. The other countries reporting manufacture of amounts of methylphenidate exceeding 1 ton in 2011 were Canada (1.8 tons), Switzerland (1.1 tons) and Spain (1 ton); their combined output accounted for 8 per cent of global manufacture. Most of the methylphenidate manufactured in the United States continued to be used domestically, although exports from that country have increased in recent years. Global stocks of methylphenidate have increased in tandem with the rise in manufacture, increasing

⁴The data for 2011 are incomplete.

to 43 tons in 2011. The United States accounted for 72 per cent of global stocks at the end of 2011.

19. Despite the fact that manufacture of methylphenidate has spread to several other countries, the medical requirements for methylphenidate outside the United States continue to be met mainly by imports. International trade in methylphenidate increased during the period 1992-2011 from 530 kg to 22 tons. Switzerland was the main exporter of methylphenidate until 2006. Since 2007, however, the United States has been the leading exporter; in 2011, it accounted for 40 per cent of total exports. Other major exporting countries in 2011 were, in descending order, Switzerland, the United Kingdom, Spain and Germany. The number of countries and territories importing methylphenidate continued to rise gradually during the period 2002-2011. In 2011, 40 countries and territories reported imports of methylphenidate in amounts exceeding 10 kg.

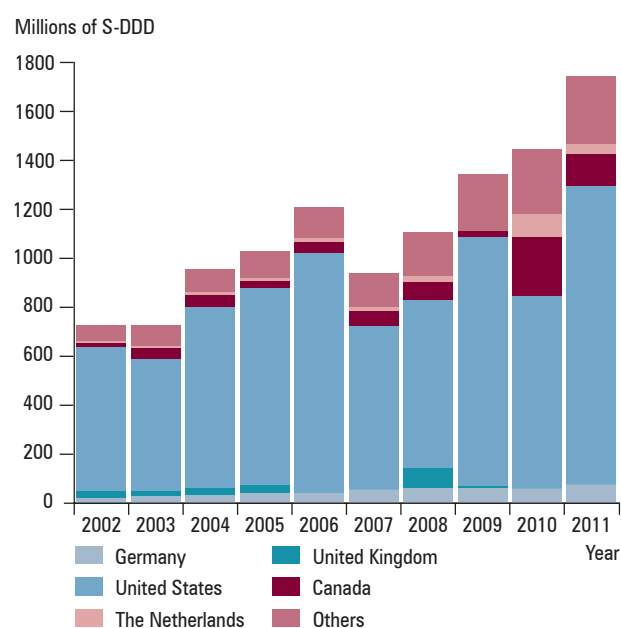
Figure 4. Methylphenidate: total reported manufacture, selected countries, 2002-2011



^aThe data for 2011 are incomplete.

20. The calculated global consumption of methylphenidate has followed an upward trend, reaching 52 tons (1.7 billion S-DDD) in 2011 (see figure 5). The United States has traditionally been the country with the highest calculated consumption of methylphenidate. In the three-year period 2009-2011, use in that country averaged 1 billion S-DDD, accounting for, on average, 66 per cent of the calculated worldwide use of methylphenidate. The main users of methylphenidate in 2011 outside of the United States were Canada, Germany, Spain, the Netherlands, Israel, Sweden and Australia.

Figure 5. Methylphenidate: calculated medical consumption, by country 2002-2011



21. The countries and territories with the highest levels of reported (i.e. furnished by Governments) and calculated consumption of methylphenidate (calculated on the basis of statistics provided for 2010 and 2011) are listed in tables 3 and 4, respectively, in order of their level of consumption (expressed in S-DDD per 1,000 inhabitants per day) in 2011.

Table 3. Methylphenidate: reported consumption rate, 2010 and 2011

Country	(S-DDD per 1,000 inhabitants per day)	
	2010	2011
United States	15.50	19.93
Iceland	14.72	14.07
Israel	7.38	7.40
Netherlands	–	6.63
Sweden	4.92	6.22
Denmark	5.09	5.87
Germany	1.98	1.97
Chile	1.10	1.53
Norfolk Islands	–	0.96
Saint Helena	0.58	0.76
United Kingdom	0.15	0.50
Austria	0.44	0.30
Palau	–	0.18
Estonia	0.06	0.15
El Salvador	–	0.10

Table 4. Methylphenidate: calculated consumption rate, 2011

Country	(S-DDD per 1,000 inhabitants per day) 2011
Canada	12.34
Costa Rica	10.92
Norway	6.51
Portugal	4.04
Spain	3.02
New Zealand	2.61
Andorra	2.50
Belgium	2.47
Australia	2.24
Chile	1.54

Anti-emetics

delta-9-Tetrahydrocannabinol and its stereochemical variants

22. During the period 2008-2011, global manufacture of *delta*-9-THC gradually decreased from 233 kg (7.8 million S-DDD) in 2008 to 66 kg (2.2 million S-DDD) in 2011, led by a decrease in manufacture by the United States, the largest manufacturer of the substance worldwide. In 2011, the United States manufactured 58 kg of *delta*-9-THC, the majority of which was for domestic consumption. Germany remained the second largest manufacturer in 2011, reporting 8 kg of manufacture. Stocks held in the United States amounted to 127 kg, accounting for 75 per cent of the global total (170 kg) at the end of 2011, followed by Germany (15 per cent of global stocks) and Switzerland (9 per cent).

23. International trade in *delta*-9-THC remained at a low level in 2011 (14.4 kg). The largest exporter was Germany, with the United Kingdom, Austria, Malaysia, Switzerland and Canada being the main importers. Germany and the

United States were the main users of the substance, reporting consumption of 110 kg and 17 kg, respectively.

Sedative-hypnotics

Secobarbital

24. Since 2000, Germany has been the major manufacturer of secobarbital. In 2011, its output amounted to 816 kg, accounting for about 80 per cent of total global manufacture (1,031 kg). The United States reported manufacture of 207 kg, while Japan and Canada accounted for the rest. In 2011, global stocks of secobarbital stood at 671 kg; the majority (86 per cent) were held in Germany.

25. In 2011, global trade volume of secobarbital reached 830 kg (8.3 million S-DDD), an increase of 30 per cent from 2010. Germany continued to be the leading exporter of the substance, while the United Kingdom was the main importer. The United Kingdom, the United States, Sweden and Germany (in descending order) were the major users in 2011.

Antitussives

Zipeprol

26. The Republic of Korea, which had stopped manufacturing zipeprol in 1999, resumed its manufacture in 2008 and 2009 mainly for domestic consumption. For 2011, neither manufacture nor international trade of the substance was reported. The Plurinational State of Bolivia, the main importer of the substance in previous years, reported consumption of 91 kg for 2011

Substances in Schedule III of the 1971 Convention

27. Nine substances are listed in Schedule III. According to the scheduling criteria adopted by the World Health Organization, substances in Schedule III are those whose liability to abuse constitutes a substantial risk to public health and which have moderate to great therapeutic usefulness. One substance, cathine, belongs to the group

of central nervous system stimulants. Six substances belong to the group of sedative-hypnotics: four barbiturates (amobarbital, butalbital, cyclobarbital and pentobarbital), glutethimide and flunitrazepam. The two remaining substances, buprenorphine and pentazocine, belong to the group of analgesics.

Central nervous system stimulants

Cathine

28. Cathine is used as a stimulant and for industrial purposes. Manufacture of cathine fluctuated considerably during the period 2002-2011, varying between no output and a peak of 5.9 tons, reached in 2007. Until 2003, Germany was the only manufacturer of the substance. Other countries reporting manufacture of cathine in recent years were China and India. From 2007 to 2009, manufacture of cathine declined sharply to 55 kg, all of which was reported by China. In 2010, global output reached 800 kg, of which 500 kg was manufactured in India and 300 kg in China. No manufacture of the substance was reported in 2011. Global stocks of cathine decreased to 1,548 kg in 2011; these were held mainly in Germany and Mexico.

29. India and Germany were the main exporters of cathine in the period 2007-2011. Global exports of the substance averaged 2 tons during that time, with a maximum of 4 tons in 2007 and a minimum of 871 kg in 2011. The main importers of cathine during that same period were Italy, Mexico and South Africa.

Sedative-hypnotics listed in Schedule III

30. Classified as sedative-hypnotics, barbiturates used to be prescribed for the treatment of anxiety and stress, and, in some cases, as anaesthetics for short surgery interventions (ultra-short-acting substances). Nowadays, they are used mainly as anti-epileptics or for their selective anticonvulsant property. Barbiturates differ in speed of onset, duration of action and potency. Like benzodiazepines, barbiturates encountered on the illicit market have usually been diverted from licit circuits rather than synthesized in clandestine laboratories.

Amobarbital, butalbital, cyclobarbital and pentobarbital

31. During 2002-2011, total reported manufacture of amobarbital, butalbital, cyclobarbital and pentobarbital fluctuated between 0.82 billion S-DDD and 1.69 billion S-DDD (see figure 6). Since 2009, global manufacture of these substances has gradually increased, owing to increased manufacture reported by China and the United States. For 2011, a global total of 1.11 billion S-DDD was reported. As in previous years, manufacture in China, Denmark, Germany and the United States accounted for over 96 per cent of the total. Figure 7 shows the share of the main manufacturing countries, in total output, during the period 2007-2011.

Figure 6. Barbiturates listed in Schedule III: total reported manufacture, by substance, 2002-2011

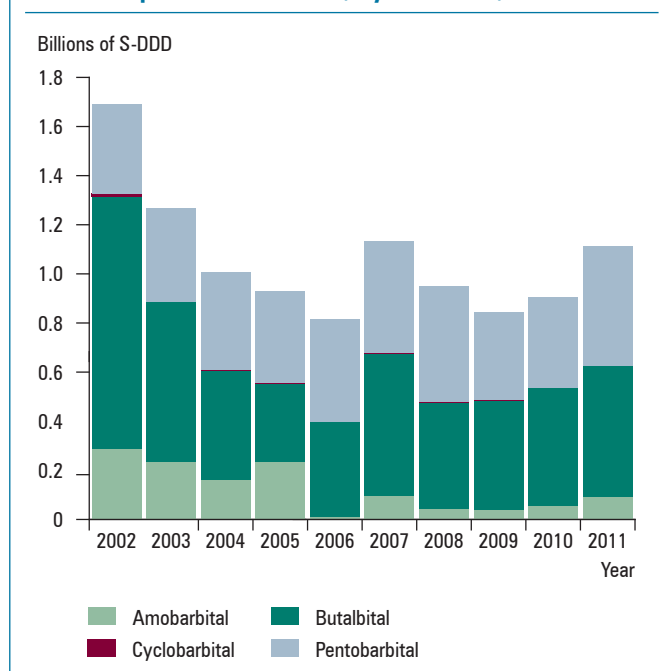
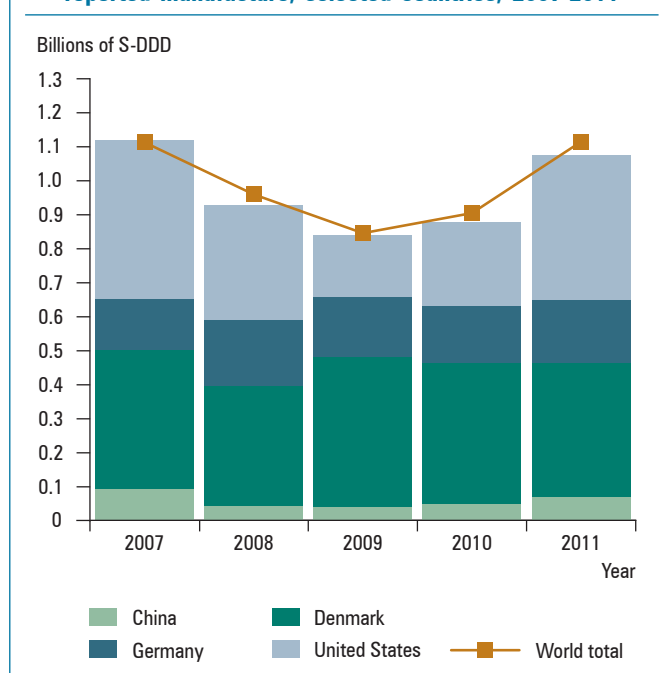


Figure 7. Barbiturates listed in Schedule III: total reported manufacture, selected countries, 2007-2011



32. Total reported manufacture of pentobarbital reached 48.7 tons (487 million S-DDD) in 2011, the highest level since 2002. The United States and Germany, the two major manufacturers of the substance, reported increased manufacture in 2011. Their total output accounted for over 94 per cent of the global total. Other countries that reported manufacture in 2011 included (in descending order)

Denmark, Japan and Canada. Global stocks stood at 26 tons in 2011; about 68 per cent of them were held in Germany and the United States. In 2011, the largest user of pentobarbital continued to be the United States, followed by Germany, France, the United Kingdom, Australia, Canada and the Netherlands.

33. Following a declining trend in international trade in pentobarbital during 2008-2010, the global trade volume of pentobarbital increased from 25 tons in 2010 to 30 tons in 2011. As in previous years, Germany, the United States, Canada, France and Denmark (in descending order) remained the major exporters, together accounting for about 97 per cent of global exports in 2011. Major importers in 2011 continued to be (in descending order) Canada, France, the United States, the United Kingdom, Australia and the Netherlands, each of which imported quantities of more than 2 tons.

34. Following a declining trend during 2002-2005, global manufacture of butalbital has picked up since 2006, reaching nearly 40 tons in 2011. Denmark remained the largest manufacturer of the substance, followed by the United States and Canada. Manufacture in the United States increased significantly in the past three years, from 0.6 tons in 2009 to over 11 tons in 2011. Another major manufacturer, Germany, did not report manufacture for 2011. About 77 per cent of the butalbital manufactured in Denmark in 2011 was for export, whereas the quantities manufactured in the United States were used mainly for domestic consumption. In that country, some of the substance was used for the manufacture of preparations exempted from certain control measures, in accordance with article 3 of the 1971 Convention. In 2011, over 94 per cent of global stocks were held in Denmark and the United States. Global trade volume remained stable at about 21 tons in 2011, with Denmark being the largest exporter and the United States, Italy and Canada (in descending order) being the main importers.

35. In 2011, global manufacture of amobarbital continued to increase, to a total of 9.4 tons, an increase of 62 per cent from 2010. This increase can be attributed to the significant increase in manufacture by China and Japan, the two major countries manufacturing and using amobarbital. China reported having manufactured 7.2 tons of the substance in 2011, accounting for 77 per cent of the global total. The majority of the quantities manufactured in China were for domestic use. Japan reported manufacture of 2.2 tons in 2011, a considerable increase from 0.8 tons in 2010. Total international trade in amobarbital also increased significantly from 2010 to 2011, owing mainly to a large increase in exports from China and Germany. Thailand, the United Kingdom and Belgium (in that order) were the main importers of the substance in 2011. Total calculated consumption of amobarbital reached 8.4 tons (84 million S-DDD) in 2011.

36. Cyclobarbital continues to be manufactured and used mainly in Europe, although the quantities manufactured decreased considerably after 1998. Poland has been the sole manufacturer of cyclobarbital since 2004, after Germany and Latvia stopped manufacturing the substance in 2003. In 2011, manufacture by Poland grew considerably, to almost 400 kg (almost 2 million S-DDD), more than double the quantities manufactured in 2010. Global trade volume of cyclobarbital amounted to 286 kg in 2011. Poland continued to be the major exporter, while Georgia, Latvia and the Russian Federation remained the major importers and users. Global stocks of cyclobarbital stood at 16 kg at the end of 2011; they were held solely in Germany.

Flunitrazepam

37. Flunitrazepam remains one of the most frequently abused benzodiazepines. The substance is diverted mainly from domestic distribution channels. Preparations containing flunitrazepam have often been diverted from the licit market and smuggled into countries where there is an illicit demand for such preparations. Because it had frequently been diverted and abused, flunitrazepam was transferred from Schedule IV to Schedule III in 1995. Several countries, including major manufacturers and importers of the substance, have adopted strict control policies for flunitrazepam, in close cooperation with the pharmaceutical industry. Most of the preparations purportedly containing flunitrazepam that are sold on the illicit market are counterfeit products that do not contain that substance.

38. In medical practice, flunitrazepam, similarly to diazepam, has been used for pre-medication and for general anaesthesia. Prior to 1996, flunitrazepam was manufactured in several countries. After 1996, only Italy and Switzerland reported its manufacture. The manufacture of flunitrazepam in Switzerland, the main manufacturer of the substance, has fluctuated greatly; in some years, such as 2010 and 2011, no manufacture of the substance took place in that country. Those fluctuations are reflected in total global manufacture of flunitrazepam (see figures 20 and 21 and para. 84 below), which in 2011 stood at 516 kg, with Italy accounting for almost the entire output.

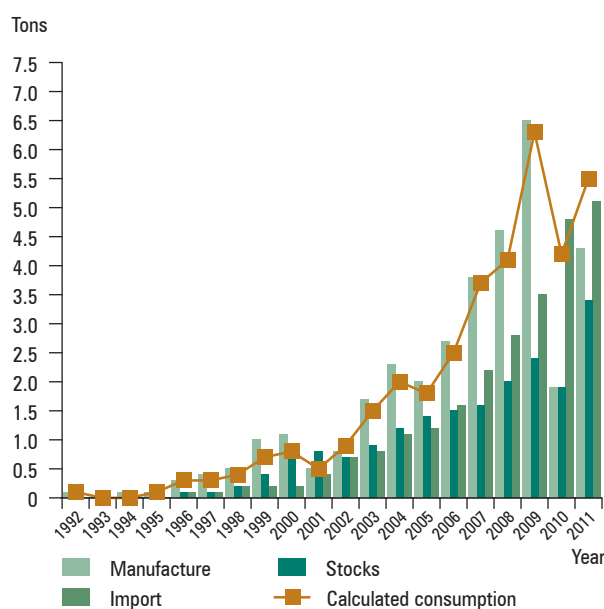
39. International trade in flunitrazepam averaged 1,066 kg per year during the period 2009-2011, and stood at 1 ton in 2011. Italy and Switzerland were the leading exporters of flunitrazepam, together accounting on average for 92 per cent of global exports of the substance during the period 2008-2011. More than 50 countries reported imports or use of flunitrazepam during the period 2009-2011. Japan remained the leading importer of flunitrazepam in 2011, importing 670 kg, or 81 per cent of global imports of the substance. Mexico, Germany and Switzerland reported imports ranging from 25 to 50 kg, accounting together for 12 per cent of global imports of the substance in 2011.

Analgesics listed in Schedule III

Buprenorphine

40. Buprenorphine belongs to the family of opioids used mainly as analgesics. As shown in figure 8, global manufacture of buprenorphine started to increase gradually beginning in the late 1990s, as the substance began to be used in higher doses for the treatment of pain and opioid addiction. In 2010, total manufacture dropped significantly, as some major manufacturers, such as Australia and the United Kingdom, did not report manufacture of buprenorphine for that year. In 2011, global manufacture increased again, with a total of 4,253 kg (532 million S-DDD) reported by nine countries, including the major manufacturing countries: the United States (1,546 kg, a considerable increase from 147 kg in 2010), Belgium (1,250 kg), the United Kingdom (739 kg), Switzerland (406 kg), the Czech Republic (232 kg) and India (72 kg). As was the case for 2010, Australia did not report manufacture for 2011. Global stocks of the substance amounted to about 3 tons in 2011, an increase of 63 per cent from 2010. The majority of the stocks were held in (in descending order) the United States, Germany, the United Kingdom, Switzerland, Australia, the Czech Republic and France.

Figure 8. Buprenorphine: total reported manufacture, stocks, imports and calculated consumption, 1992-2011



41. The volume of trade in buprenorphine has continued to increase since 1992, reaching a total of nearly 5 tons in 2011, with over 60 countries reporting imports of the substance. Major importers in 2011 included the United States (2,872 kg), Germany (821 kg), France

(390 kg), the Islamic Republic of Iran (116 kg), Italy (105 kg) and Spain (105 kg). Among those countries, the United States, Germany and the Islamic Republic of Iran reported significant increases in imports from 2010. The United Kingdom (2,617 kg), Belgium (680 kg), Germany (507 kg), the Czech Republic (221 kg), Switzerland (202 kg) and Australia (175 kg) were the major exporters in 2011, together accounting for nearly 97 per cent of global total exports.

42. Global calculated consumption of buprenorphine increased from 4.2 tons (531 million S-DDD) in 2010 to 5.4 tons (681 million S-DDD) in 2011. As in previous years, calculated per capita consumption of buprenorphine continued to be highest in Belgium, France, Germany, Iceland, Norway, Portugal, Slovenia, Sweden, Switzerland and the United States. The calculated consumption of buprenorphine in S-DDD per 1,000 inhabitants per day is shown in table IV.5 of the present publication. Buprenorphine is used in several countries in detoxification and substitution treatment programmes for opioid dependence, including in Australia, Austria, Denmark, France, Germany, Hungary, Ireland, Malaysia, Switzerland and the United States. Diversions of preparations of buprenorphine, mainly from domestic distribution channels, have been reported by a few countries. Abuse of the substance, particularly among opioid addicts, has also been reported.

Pentazocine

43. Pentazocine is an opioid analgesic with properties and uses similar to those of morphine. Global total manufacture of the substance fluctuated between 2.7 tons (13 million S-DDD) and 8.5 tons (42 million S-DDD) during the period 2002-2011, mainly as a result of fluctuations in the total output of India and Italy, the two major manufacturing countries of pentazocine. In 2011, total manufacture of the substance amounted to 1,369 kg, of which 857 kg was manufactured in the United States, the highest level reported by that country since 2002. The pentazocine manufactured in the United States was mainly for domestic use. Italy and China, the two other major manufacturers in 2011, reported manufacture of 406 kg and 106 kg, respectively. India, which reported the manufacture of 4.7 tons of the substance for 2010, did not report manufacture of the substance in 2011. Global reported stocks of the substance decreased, by 46 per cent from 2010, to 2,645 kg in 2011, as a result of absence of stock data from India and decreased stocks held in the United States. Major users of the substance in 2011 included (in descending order) the United States, Slovenia, Japan and China.

44. Global trade in pentazocine has been declining since 2009. Total exports decreased from 3,166 kg in 2010 to 2,320 kg in 2011. The major exporters continued to be

India (1,168 kg) and Italy (707 kg). Total imports in 2011 also declined, by 47 per cent from 2010, owing mainly to the decrease in imports by the major importing countries. Japan, Switzerland, Portugal and Canada (in descending

order) remained the major importers in 2011, together accounting for 60 per cent of total imports. Nigeria and Pakistan, the two other major importers and users, have not submitted data for 2011 to the Board.

Substances in Schedule IV of the 1971 Convention

45. Sixty-two substances with various applications in medicine are listed in Schedule IV. They belong to the following groups: central nervous system stimulants (14 substances); benzodiazepine-type anxiolytics (22 substances); other anxiolytics (1 substance); benzodiazepine-type sedative-hypnotics (11 substances); benzodiazepine-type anti-epileptics (1 substance); barbiturate-type sedative-hypnotics and anti-epileptics (7 substances); other sedative-hypnotics (5 substances); and analgesics (1 substance).

Central nervous system stimulants

46. Fourteen stimulants are listed in Schedule IV: amfepramone, aminorex, benzfetamine, etilamfetamine, fencamfamin, fenproporex, mazindol, mefenorex, mesocarb, pemoline, phendimetrazine, phentermine, pipradrol and pyrovalerone. The stimulants in Schedule IV are used essentially as anorectics or for the treatment of ADHD.

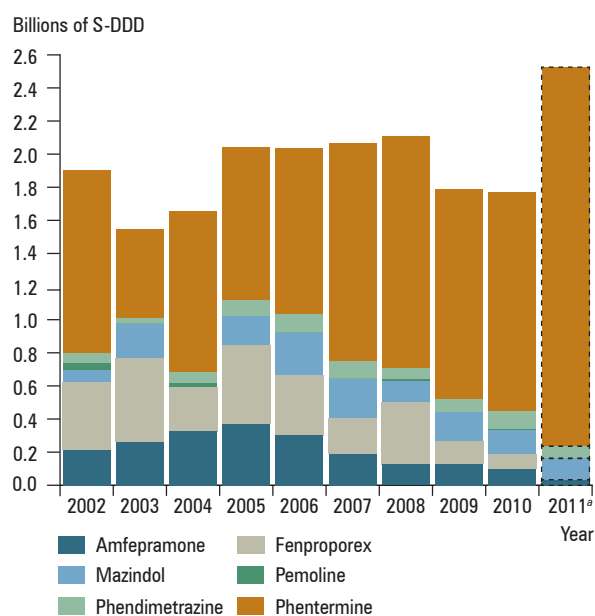
47. Reported manufacture of central nervous system stimulants in Schedule IV has been on the rise during the period 2002-2011, in spite of many fluctuations (see figure 9). Those fluctuations were mainly a result of developments in Brazil, Germany and the United States, which were the main manufacturers during that period. In 2011, global manufacture of this group of substances amounted to 2.5 billion S-DDD, the highest figure reported during the period, in spite of the fact that data for that year have not been received from Brazil, one of the traditional manufacturing countries for this group (see figure 10).

48. In 2011, phentermine (2.28 billion S-DDD) accounted for 91 per cent of total reported manufacture of all stimulants in Schedule IV, while the reported manufacture of mazindol (130 million S-DDD) accounted for 5 per cent, phendimetrazine accounted for 3 per cent (73 million S-DDD) and amfepramone accounted for 1 per cent (34 million S-DDD) (see figure 11). Reported manufacture of the other central nervous system stimulants in Schedule IV accounted for about 0.3 per cent of total reported manufacture.

49. The fluctuations in total calculated global consumption of central nervous system stimulants listed in Schedule IV (see figure 12) mainly reflect changes in the use of phentermine in the United States and the use of amfepramone and fenproporex in Brazil. A total of 2.25 billion S-DDD of central nervous system stimulants listed in Schedule IV were used in 2011. Of those, phentermine (1.9 billion S-DDD) accounted for 84 per cent, followed by mazindol (188 million S-DDD, or 8 per cent), phendimetrazine (84 million S-DDD, or 4 per cent), and amfepramone (37 million S-DDD, or 1.6 per cent). In the absence of data from Brazil, about 80 per cent of global calculated consumption of stimulants in Schedule IV in 2011 was accounted for by the United States.

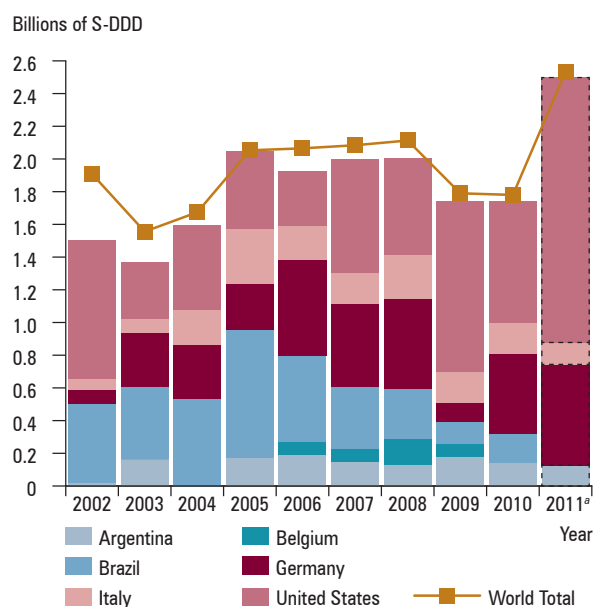
50. Calculated consumption of Schedule IV stimulants in the Americas remained the highest worldwide, at approximately the same levels of a decade ago (see figure 13). Decreases in the use of stimulants in Brazil that have been

Figure 9. Central nervous system stimulants in Schedule IV: total reported manufacture, by substance, 2002-2011



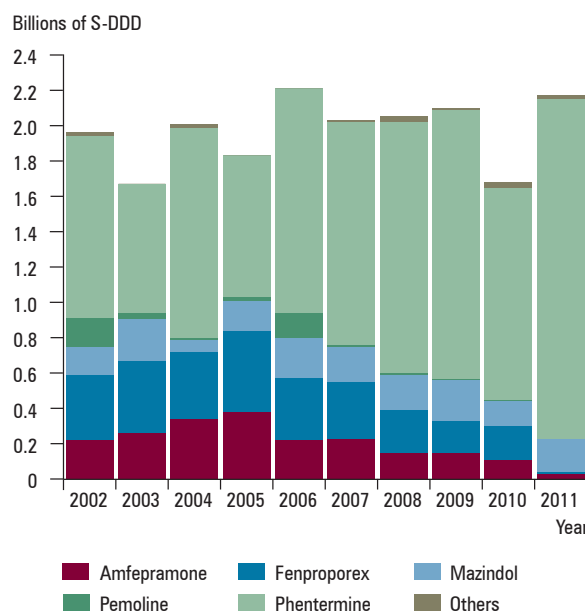
^aThe data for 2011 are incomplete.

Figure 10. Central nervous system stimulants in Schedule IV: total reported manufacture, selected countries, 2002-2011



^aThe data for 2011 are incomplete.

Figure 12. Central nervous system stimulants in Schedule IV: calculated global consumption,^a by substance, 2002-2011



^aStatistical data submitted by Governments are used to calculate the approximate global consumption in a given year, which is expressed in defined daily doses for statistical purposes (S-DDD).

Figure 11. Central nervous system stimulants in Schedule IV: share of total reported manufacture, selected substances, 2011

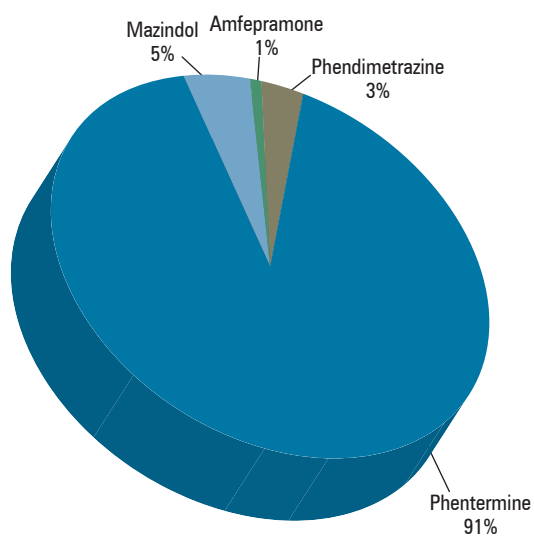
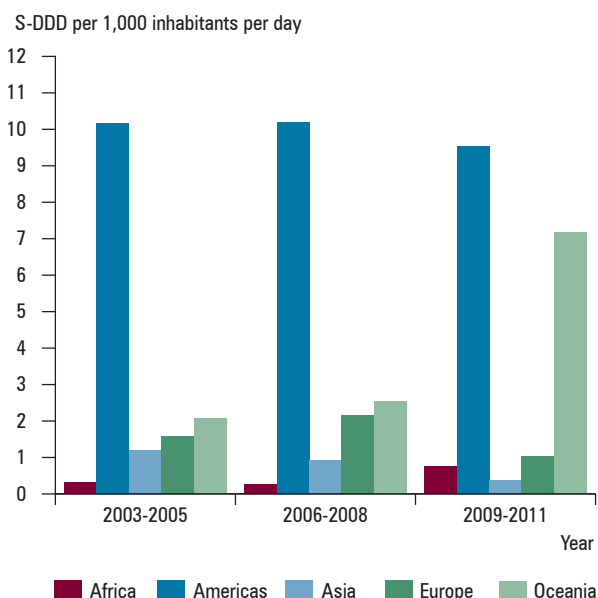


Figure 13. Central nervous system stimulants in Schedule IV: average national consumption,^a by region, 2003-2011



^aStatistical data submitted by Governments are used to calculate average annual consumption for a three-year period.

achieved since 2006 have been nearly offset by rising consumption levels observed in the United States. Levels of consumption decreased in Asia and Europe during the period 2009-2011 compared with the period 2006-2008, although they increased markedly in Africa and Oceania, mainly as a result of developments in South Africa,

Australia and New Zealand. In 2011, the highest calculated consumption rates, expressed in S-DDD per 1,000 inhabitants per day, among the countries and territories that did not report consumption were observed in New Zealand (14.6), Argentina (9), Australia (8.7), the Czech Republic (3.1) and Hong Kong SAR of China (2.4).

51. Phentermine has always been the most manufactured substance in the group of stimulants in Schedule IV, although its share of total manufacture within this group has fluctuated. Total reported manufacture of the substance increased from an average of 9.5 tons annually during the period 1991-1995 to 50 tons in 1996, the highest level ever reported. Manufacture of the substance dropped in 1997 and ceased in 1998. After 1999, global reported manufacture of the substance picked up again and remained volatile. Manufacture of 34 tons of phentermine was reported for 2011, with more than 70 per cent of that accounted for by the United States, followed by Germany and Italy.

52. International trade in phentermine in 2011 amounted to 13.1 tons, a 20 per cent increase from the average of 11 tons reported for the years 2008-2010. In recent years, the main exporter of the substance has been Germany (reporting exports of about 7 tons in 2011), followed by Italy and the United States. In 2011, 25 countries reported imports of phentermine in quantities of more than 1 kg. Major importers of phentermine were the United States (5.66 tons), Australia (2.08 tons), Mexico (572 kg), New Zealand (420 kg), South Africa (350 kg), Austria (297 kg) and Switzerland (296 kg). Some of those countries re-exported a major share of their imports.

53. Italy was the main manufacturer of phendimetrazine in the period 2007-2011. Manufacture in that country amounted to 5.2 tons in 2009, then declined in the following years, reaching 3.3 tons in 2011. Phendimetrazine manufactured in Italy is mainly destined for export. International trade reached 4.7 tons in 2011, of which Italy accounted for 88 per cent. Traditionally, the United States, followed by the Republic of Korea, have been the main importers and users of the substance. In 2011, the United States (3.6 tons), Italy (78 kg) and South Africa (9 kg) were the only countries reporting imports of phendimetrazine in quantities of more than 1 kg.

54. Total reported manufacture of amfepramone has decreased significantly, from 23 tons in 2006 to about 2.6 tons in 2011, owing mainly to a decline in manufacture reported by Brazil until 2010 and the absence of data from that country for 2011. Three countries reported having manufactured amfepramone in 2011: Switzerland (1.6 tons), Italy (746 kg) and the United States (211 kg). Brazil, which reported the manufacture of 7.9 tons of the substance annually on average in the period 2007-2010, submitted no report for 2011. Switzerland was the main exporter of amfepramone during the decade leading up to 2011, and accounted for 71 per cent of global exports of the substance in 2011. The largest imports of amfepramone were reported by the United States (1.2 tons), Germany (688 kg) and Chile (298 kg). Eight other countries reported imports of amfepramone in quantities of more than 1 kg in 2011.

55. With the exception of 2005 and 2006, when manufacture of benzfetamine was reported by Ireland, Italy and Switzerland, the United States was the sole manufacturer of benzfetamine during the decade leading up to 2010. In 2011, the United States and Italy reported manufacture of 318 kg and 136 kg, respectively. International trade in benzfetamine remained limited in 2011, with only the United States reporting imports of the substance, from stocks held by Italy. The United States was also the major consumer of benzfetamine in the period 2002-2011; it reported consumption of 373 kg for 2011.

56. Global reported manufacture of fenproporex has declined steadily since 2005, from 9.5 tons in that year to 1.8 tons in 2010, owing to the decrease in manufacture reported by Belgium and Brazil, which have been virtually the only manufacturing countries since 2007. No manufacture of the substance was reported for 2011, partly owing to the fact that Brazil submitted no report for that year. Total reported imports of the substance, which had averaged 3.4 tons per year during the period 2006-2010, dropped to 344 kg in 2011. Whereas Germany and Brazil were the leading importers of fenproporex during the period 2005-2009, Mexico was the major importer of the substance in 2010 and 2011.

57. Argentina has been the sole manufacturer of mazindol since 2008. It reported an annual average output of 197 kg of the substance during the period 2007-2010. Of the total 130 kg of mazindol manufactured in 2011, 127 kg was manufactured in Argentina, while the United Kingdom manufactured the remaining 3 kg. Reported global stocks of the substance at the end of 2011 amounted to 42 kg, mostly held by Switzerland. That country and the United Kingdom were the main exporters of the substance in 2011, when total reported exports were 6 kg.

58. No manufacture of pemoline was reported from 2005 to 2007. Since 2008, average manufacture of 158 kg annually has been reported by the Netherlands and, in much smaller quantities, Japan. In 2011, total output of the substance fell to 24 kg, all reported by the Netherlands, which has also been the main exporter. Stocks of pemoline have declined steadily, from 7 tons in 2004 to 61 kg at the end of 2011. During the decade ending in 2011, imports of pemoline averaged 434 kg yearly. In 2011, total imports reported by Japan, Chile and Switzerland (in descending order) dropped to 101 kg. In addition to being used as a stimulant, pemoline is used for the treatment of ADHD.

Benzodiazepines

59. Thirty-three benzodiazepines were included in Schedule IV in 1984. Midazolam was added to Schedule IV

in 1990 and brotizolam was added in 1995. Flunitrazepam was transferred from Schedule IV to Schedule III in 1995. During the decade ending in 2010, practically all countries and territories that reported to the Board manufactured or traded in benzodiazepines in quantities of more than 1 kg at least once. Benzodiazepines are frequently diverted for subsequent smuggling and abuse.

Benzodiazepine-type anxiolytics

60. Twenty-two benzodiazepines are generally classified as anxiolytics. Total reported manufacture of this group of substances rose steadily until 2001, when it reached a peak of 28.8 billion S-DDD. During the subsequent decade, global manufacture fluctuated between 18.9 billion and almost 30 billion S-DDD. Global manufacture amounted to 23.4 billion S-DDD in 2010 and 19 billion S-DDD in 2011 (see figure 14). Those fluctuations mainly reflect fluctuations in the manufacture of alprazolam and diazepam, the main substances in this group, which together accounted, on average, for almost 60 per cent of the total in the period 2007-2010. The decline in 2011 is a result of the fact that data on manufacture of this group of substances from some countries, most importantly India, are missing. In 2010, manufacture in India accounted for 17 per cent of global manufacture of benzodiazepine-type anxiolytics.

61. In 2011, alprazolam accounted for 36 per cent (6.6 billion S-DDD) of total reported manufacture of

benzodiazepine-type anxiolytics; diazepam for almost 27 per cent (5.1 billion S-DDD); lorazepam for 19 per cent (3.7 billion S-DDD); bromazepam for 5 per cent (0.88 billion S-DDD); oxazepam, chlordiazepoxide and nordazepam for over 2 per cent each; and clobazam for 1 per cent (see figure 15). The remaining substances in that group together accounted for 6 per cent of total reported manufacture. No manufacture of camazepam, fludiazepam or pinazepam was reported for 2011. As shown in figure 16, China, India and

Figure 15. Benzodiazepine-type anxiolytics: share of total reported manufacture, by substance, 2011

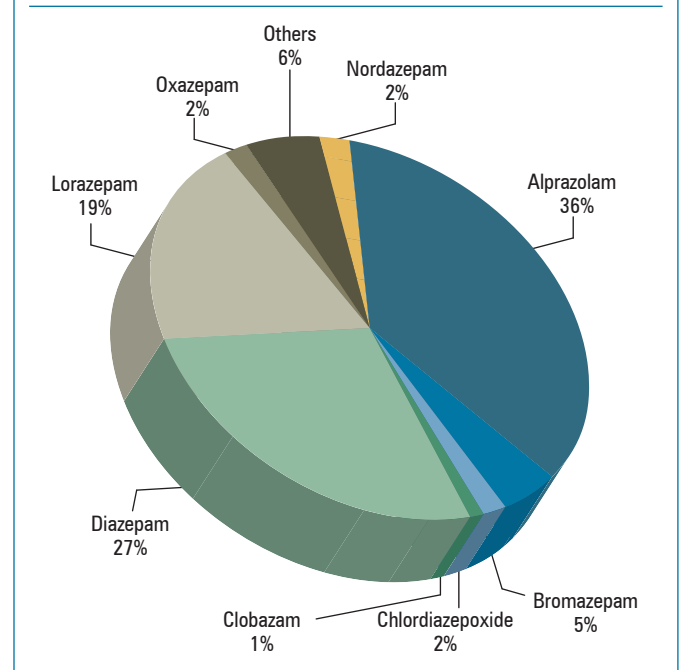
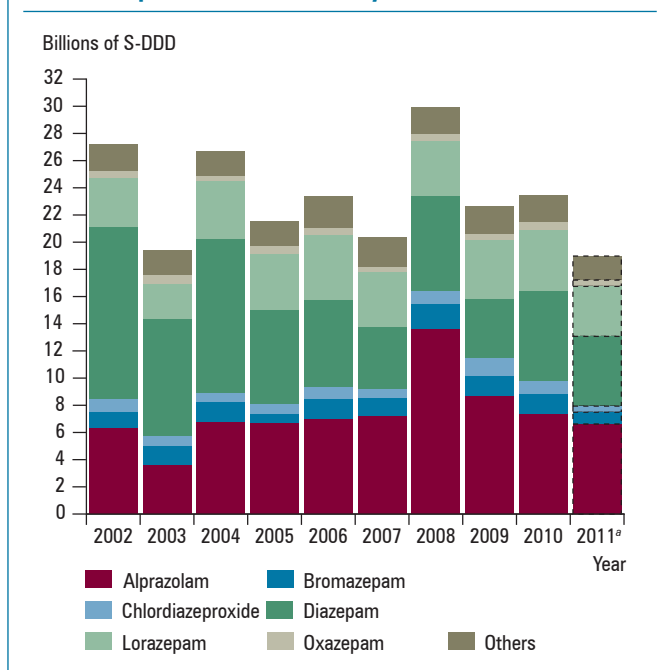
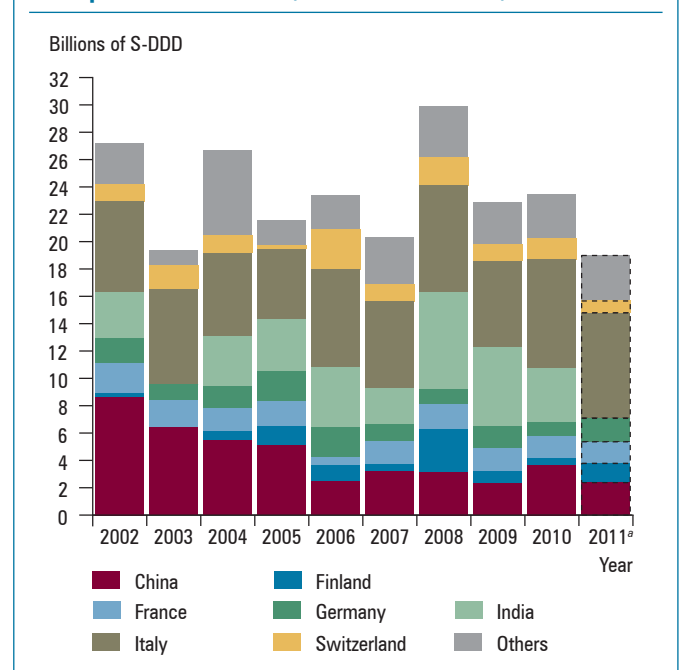


Figure 14. Benzodiazepine-type anxiolytics: total reported manufacture, by substance, 2002-2011



^aThe data for 2011 are incomplete.

Figure 16. Benzodiazepine-type anxiolytics: reported manufacture, selected countries, 2002-2011



^aThe data for 2011 are incomplete.

Figure 17. Benzodiazepine-type anxiolytics: share of total reported manufacture, by country, 2011

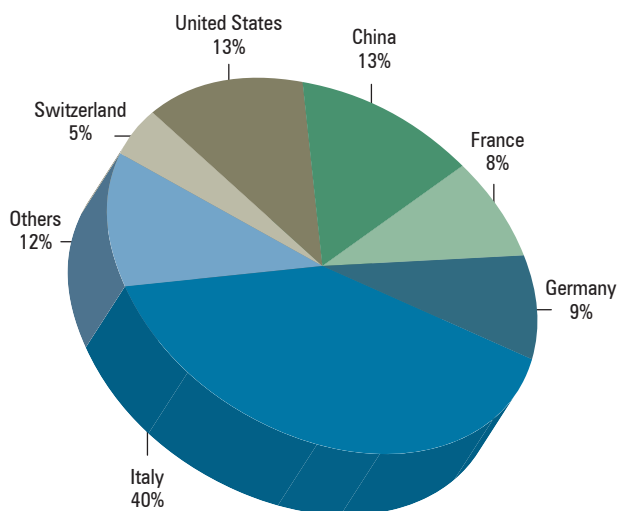
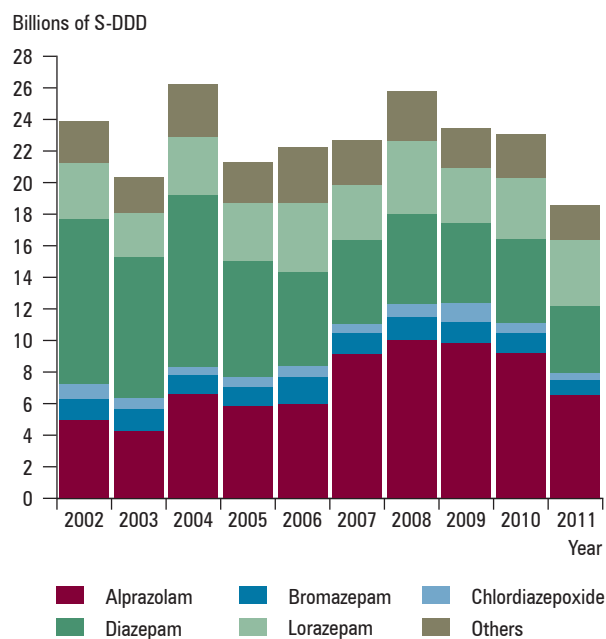
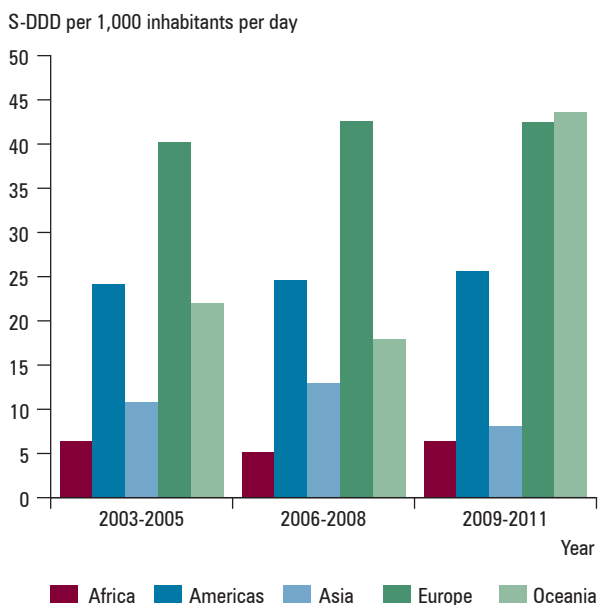


Figure 18. Benzodiazepine-type anxiolytics: calculated global consumption,^a 2002-2011



^aStatistical data submitted by Governments are used to calculate the approximate global consumption in a given year. These consumption figures are expressed in defined daily doses for statistical purposes (S-DDD).

Figure 19. Benzodiazepine-type anxiolytics: average national consumption,^a by region, 2003-2011



^aStatistical data submitted by Governments are used to calculate the average annual consumption for a three-year period.

Italy were the leading manufacturers of benzodiazepine-type anxiolytics in the period 2002-2010. Owing to the absence of data from India, in 2011 Italy, China and the United States together accounted for 66 per cent of global manufacture of that group of substances (see figure 17).

62. Total approximate calculated consumption of benzodiazepine-type anxiolytics has been lower than global manufacture, although it has followed the same overall trend. In 2011, the global total calculated consumption for this group of substances amounted to 18.5 billion S-DDD, a decrease from the average of 23.5 billion S-DDD during the five-year period 2006-2010 (see figure 18). The calculated consumption of benzodiazepine-type anxiolytics, expressed in S-DDD per 1,000 inhabitants per day, is shown in table IV.3 of the present publication. Until 2010, Europe was consistently the region with the highest calculated average national consumption rates for benzodiazepine-type anxiolytics (see figure 19). The sharp increase in consumption levels in Oceania in 2011 is the result of a marked increase in the calculated consumption of alprazolam in Australia.

Alprazolam

63. In 2011, total reported manufacture of alprazolam amounted to 6.6 tons, a decline of 11 per cent compared with 2010 because no data on manufacture were submitted by India for 2011. In 2010, that country reported a total of 2.3 tons of manufacture of alprazolam. The main manufacturers of alprazolam in 2011 were Italy (2 tons), the United States (1.9 tons), Finland (1.1 tons) and France (979 kg), which together accounted for almost 90 per cent

of global manufacture. They were followed by China (272 kg), Japan (94 kg), Canada (44 kg) and the Russian Federation (17 kg). Alprazolam has often been abused and has also been diverted from domestic distribution channels to illicit markets.

64. Alprazolam is available in many countries and all regions. International trade in alprazolam averaged 10 tons during the period 2009-2011. In 2011, more than 100 countries reported import or use of the substance. In that year, global exports of alprazolam stood at 14.3 tons. The main importers of alprazolam continued to be the United States (2.8 tons), Italy (1 ton), Belgium (775 kg) and Australia (715 kg), which together accounted for 53 per cent of total imports of the substance. They were followed by Japan (508 kg), Spain (463 kg), the Islamic Republic of Iran (431 kg), Hungary (420 kg), France (314 kg), Switzerland (355 kg) and Ireland (212 kg). Global calculated consumption, which had averaged 4.8 billion S-DDD during the period 2000-2005, reached an average of 8.5 billion S-DDD during the period 2009-2011. The countries reporting the largest consumption of alprazolam in absolute terms in 2011 were the United States (2.2 billion S-DDD), Hungary (184 million S-DDD) and Portugal (119 million S-DDD).

Diazepam

65. Diazepam continues to be the most traded substance in the group of benzodiazepine-type anxiolytics, and is consumed in all regions of the world. Together with alprazolam, diazepam is among the benzodiazepines most often diverted and abused. Global manufacture of diazepam increased from 43 tons in 2009 to 66.6 tons in 2010, decreasing in 2011 to 51.2 tons. In 2011, Italy (with 27 tons, or almost 53 per cent of global manufacture) and China (with 20.3 tons, or 40 per cent) were the leading manufacturers of the substance. The only other countries reporting manufacture of diazepam in quantities exceeding 1 ton were the United States (1.7 tons) and Switzerland (1.4 tons). Data on manufacture in 2011 from Brazil and India, which in 2010 manufactured 5.4 tons and 3.6 tons of the substance, respectively, are still missing.

66. International trade in diazepam averaged 58 tons during the three-year period 2009-2011. In 2011, global exports were 56.6 tons, with China and Italy remaining the leading exporters of the substance. In 2011, China exported 12.7 tons of diazepam and Italy exported 21.5 tons. They were followed by Switzerland (5.3 tons), India (5 tons), Denmark (3.4 tons), Germany (1.7 tons) and the Czech Republic (1.6 tons), which together accounted for 30 per cent of global exports. An additional 42 countries reported exports of diazepam in excess of 1 kg.

67. Practically all countries and territories imported diazepam at least once in the period 2009-2011. About 95 countries and territories reported imports of diazepam of more than 1 kg for 2011. The main importers of diazepam during 2011 were the United States (6.9 tons), Switzerland (4.8 tons), the Democratic Republic of the Congo (4 tons), Ghana (2.9 tons), the United Kingdom (2.6 tons), Germany (2.4 tons), the Czech Republic (2.1 tons) and Spain (2 tons). Together, those countries accounted for 60 per cent of global imports. Global calculated consumption of diazepam continued to decrease, reaching 4.4 billion S-DDD in 2011. The United States (764 million S-DDD), China (757 million S-DDD), the Democratic Republic of the Congo (407 million S-DDD) and Ghana (295 million S-DDD) had the highest calculated consumption of diazepam in 2011.

Lorazepam

68. Total reported manufacture of lorazepam was fairly stable during the period 2004-2010, averaging 10.7 tons per year. Italy, Germany and India were the three main manufacturers of the substance. In 2011, total output of the substance was 9.2 tons, of which Germany accounted for 45 per cent and Italy for 41 per cent. India had traditionally reported manufacture of lorazepam every year, with output of 1.3 tons reported for 2010; however, no manufacture was reported by that country for 2011. Other countries reporting manufacture of lorazepam in 2011 were the United States (683 kg), Canada (413 kg), Poland (171 kg), China (42 kg) and Spain (14.5 kg).

69. In 2011, total reported exports of lorazepam stood at 11.3 tons, roughly in line with the average value for the period 2006-2011 (10.6 tons). The main exporters of lorazepam in the decade up to 2011 were Italy, Germany, Ireland and India (in that order), which together accounted for approximately 90 per cent of total exports of the substance. The main importers of lorazepam in 2011 were the United States (1.6 tons), Spain (1.3 tons), Ireland (1 ton), Italy (759 kg), Germany (659 kg), France (613 kg), Hungary (500 kg), Argentina (471 kg) and Canada (420 kg), which together accounted for 73 per cent of all imports of the substance. About 50 other countries imported lorazepam in quantities exceeding 2 kg. During the period 2002-2011, global calculated consumption averaged 3.7 billion S-DDD per year; in 2011, it amounted to 4.2 billion S-DDD. In 2011, the calculated consumption of lorazepam was highest in the United States (896 million S-DDD), Spain (517 million S-DDD), Germany (427 million S-DDD), Italy (336 million S-DDD), Canada (277 million S-DDD), Argentina (188 million S-DDD), France (161 million S-DDD) and Portugal (135 million S-DDD).

Bromazepam

70. During the period 2002-2011, total reported manufacture of bromazepam fluctuated significantly. After reaching a peak of 18.3 tons in 2008, it decreased gradually to 8.8 tons in 2011. Italy (5 tons) and Switzerland (3.6 tons) remained the leading manufacturers of the substance in 2011, accounting for 56 per cent and 41 per cent, respectively, of the reported total. No other countries reported significant manufacture of the substance in 2011, including Brazil and India (the other major manufacturers of bromazepam in the recent past), for which data on manufacture for 2011 are missing.

71. International trade in bromazepam was stable during the period 2002-2011, with global exports averaging 16.3 tons annually. In 2011, as in previous years, the main manufacturing countries (Italy and Switzerland) were also the leading exporters of the substance, together with India (1.8 tons) accounting for almost 90 per cent of total exports. Around 80 countries reported imports of bromazepam in 2011, with 21 of those countries reporting imports of more than 100 kg. The main importers of bromazepam in 2011 were France (2.2 tons), Switzerland (1.7 tons), Italy (1.2 tons), Germany (910 kg), Japan (842 kg), Serbia (760 kg), Spain (477 kg) and Belgium (467 kg), which together accounted for 64 per cent of global imports of the substance. Brazil reported imports of 1.2 tons of the substance in 2010; however, the country did not report any data for 2011. Calculated global consumption of bromazepam was fairly stable during the period 2002-2010, averaging 1.3 billion S-DDD. In 2011, it decreased to 1.0 billion S-DDD.

Chlordiazepoxide

72. In the period 2001-2010, total reported manufacture of chlordiazepoxide fluctuated between 28.4 tons in 2002 and 40 tons in 2009. In 2011, total reported output of that substance was 13.4 tons, about 98 per cent of which was accounted for by Italy (11.8 tons) and China (1.4 tons) together. Only two other countries reported manufacture of the substance in 2011: Canada (148 kg) and Poland (73 kg). Data on manufacture in 2011 were missing from India, which had reported manufacture of 11.6 tons of chlordiazepoxide for 2010. China, India, Italy and Switzerland remained the largest exporters of chlordiazepoxide in 2011. Global exports of the substance declined from 23.5 tons in 2002 to 15.8 tons in 2010. They increased slightly in 2011, reaching 17.7 tons, of which Italy exported 10.3 tons.

73. More than 100 countries reported imports of chlordiazepoxide in the three-year period 2009-2011. The Islamic Republic of Iran (3.4 tons), Switzerland (2.8 tons), Cuba (2 tons) and the United States (1.8 tons) were the main importers of the substance in 2011, accounting together for 67.7 per cent of the global total. Calculated

global consumption of the substance, which decreased from 1.2 billion S-DDD in 2009 to 650 million S-DDD in 2010, decreased again in 2011, to 396 million S-DDD.

Oxazepam

74. During the period 1992-2011, total reported manufacture of oxazepam was fairly stable, averaging 27.2 tons per year. Global reported manufacture of the substance declined to 23 tons in 2011, partly owing to the lack of data from India, which had reported output of 2.6 tons for 2010. Italy, which manufactures the substance mainly for export, and France remained the main manufacturers of oxazepam in 2011, reporting manufacture of 18.7 tons and 2.4 tons, respectively. In addition, Canada reported manufacture of 1.5 tons of the substance in 2011. The volume of trade in oxazepam, which had averaged 40 tons per year from 2001 to 2005, has declined since that time, reaching 22.6 tons in 2011. In 2011, 48 countries reported imports of oxazepam. The main importers, together accounting for almost 67 per cent of total global imports, were France (7.4 tons), Germany (3.8 tons), the Netherlands (1.4 tons), Canada and Australia (1.1 tons each). Those countries were also the countries with the highest calculated consumption in 2011.

Clobazam

75. Total reported manufacture of clobazam fluctuated between 3.2 and 6 tons during the decade leading up to 2011, with France, Germany and India being the main manufacturers. Data on manufacture of the substance for 2011 were missing from India, which had reported manufacture of 822 kg for 2010. As a result, almost 90 per cent of total reported manufacture of the substance in 2011 (4.8 tons) was accounted for by France (2.6 tons) and Germany (1.7 tons). International trade in clobazam also fluctuated during the period 2002-2011, averaging 5.2 tons annually. More than 70 countries reported imports of the substance in 2011, including France (801 kg), India (697 kg), Bangladesh (452 kg), Canada (292 kg), Japan (250 kg) and the United States (223 kg).

Clorazepate

76. Total reported manufacture of clorazepate declined from 12 tons in 1992 to 3.9 tons in 2011. France and Italy were the leading manufacturers during the period 2002-2011. In 2011, those two countries accounted for 97 per cent of global manufacture of that substance. International trade in clorazepate stood at 4.9 tons in 2011. France, Spain and Italy, which reported exports of 2.7 tons, 1 ton and 902 kg, respectively, together accounted for almost 95 per cent of total exports. Spain (2.1 tons), France (492 kg) and the United States (368 kg) remained the largest importers of clorazepate; more than 50 other countries reported import and use of the substance in 2011.

Other anxiolytics

77. Owing mainly to developments in Switzerland, traditionally the main manufacturer of nordazepam, total reported manufacture of that substance varied during the period 2002-2010 between 1.2 tons in 2002 and a peak of 14.2 tons, reached in 2006. In 2011, total global manufacture of nordazepam amounted to 6.2 tons (414 million S-DDD), with Finland (3.4 tons) and Switzerland (2.3 tons) being the largest manufacturers. Use of nordazepam remained limited to a very few countries.

78. In 2011, global manufacture of tetrazepam stood at 219 million S-DDD, all of it manufactured in the United States. In that year, total manufacture of prazepam and ethyl loflazepate amounted to 210 million S-DDD and 199 million S-DDD, respectively. The Czech Republic, India and Italy reported manufacture of pinazepam during the period 2002-2011. The most recent report of India was of 4.6 million S-DDD for 2009; no manufacture of the substance was reported for 2010 or 2011. The combined manufacture of medazepam, ketazolam, halazepam and oxazolam amounted to 99.5 million S-DDD in 2011.

Meprobamate

79. Meprobamate, the only non-benzodiazepine-type substance in Schedule IV used as an anxiolytic, has gradually been replaced by benzodiazepines, leading to a substantial decline in manufacture from 750 tons in the late 1970s to an annual average of 290 tons during the 1990s. After 2000, total manufacture fluctuated around an annual average of 230 tons. Since 2009, total manufacture has declined significantly, from 225 tons (187 million S-DDD) in 2009 to 125 tons (104 million S-DDD) in 2011. This decrease reflects the lower output in Denmark, which reported 40 tons for 2011, a decline of 56 per cent from 2010, and the lack of data on manufacture from India, which had reported output of nearly 10 tons for 2010. China continued to be a major manufacturer of meprobamate, reporting 83 tons of manufacture in 2011. Global stocks have also continued to decrease since 2009. They stood at 119 tons in 2011, 97 per cent of which was held in Denmark (55 tons), South Africa (30 tons), Hungary (14 tons), France (10 tons) and the United States (6.7 tons).

80. International trade in meprobamate has continued to decline. Global exports decreased from 259 tons in 2007 to 134 tons in 2011, owing to a decline in exports from China and Denmark, the major exporting countries, which together accounted for nearly 90 per cent of the global total in 2011. Other major exporters in 2011 included India (9 tons), France (2.2 tons) and Switzerland (1.8 tons). Major importers of meprobamate in 2011 included South Africa (40 tons), France (28 tons), Cuba (21 tons), Turkey (15 tons) and

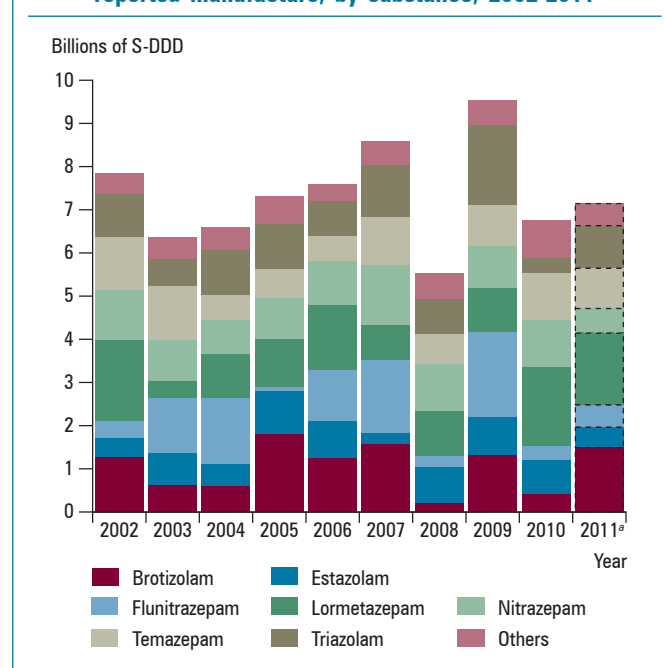
Hungary (12 tons). In 2011, global calculated consumption of meprobamate amounted to 161 tons (135 million S-DDD), with France, South Africa, Cuba and Turkey (in descending order) being the major users of the substance.

Benzodiazepine-type sedative-hypnotics

81. Twelve benzodiazepines are generally used as sedative-hypnotics: brotizolam, estazolam, flunitrazepam, flurazepam, haloxazolam, loprazolam, lormetazepam, midazolam, nimetazepam, nitrazepam, temazepam and triazolam. Comments on flunitrazepam, a substance that was transferred from Schedule IV to Schedule III in 1995, are provided in paragraphs 37-39 above.

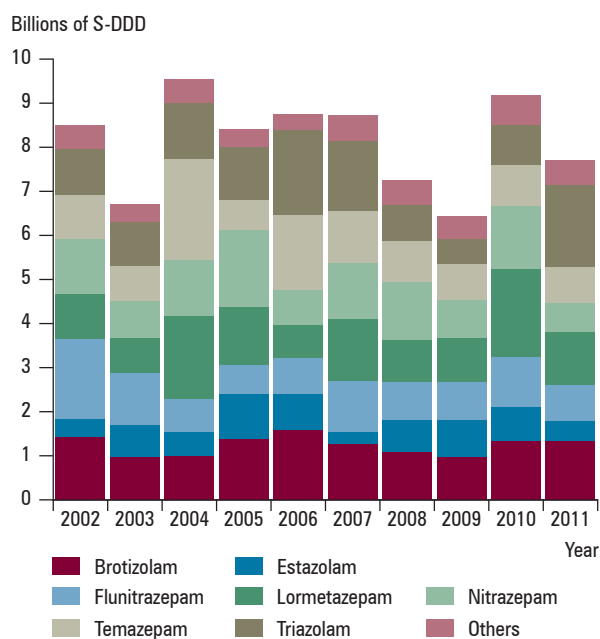
82. During the decade leading up to 2011, total reported manufacture of the 12 substances in this group fluctuated between 5.5 billion S-DDD (in 2008) and 9.5 billion S-DDD (in 2009), owing mainly to changes in output reported by Germany, Switzerland and the United States. In 2011, global reported manufacture of benzodiazepine-type sedative-hypnotics amounted to 7 billion S-DDD (see figure 20). For 2011, data on manufacture were not received from either Brazil or India, which together accounted for 7.1 per cent of total manufacture in 2010. Calculated global consumption of this group of substances was less volatile than manufacture, fluctuating around an annual average of 8.1 billion S-DDD during the period 2002-2011. In 2011, calculated global consumption stood at 7.7 billion S-DDD (see figure 21).

Figure 20. Benzodiazepine-type sedative-hypnotics: total reported manufacture, by substance, 2002-2011



^aThe data for 2011 are incomplete.

Figure 21. Benzodiazepine-type sedative-hypnotics: calculated global consumption,^a 2002-2011

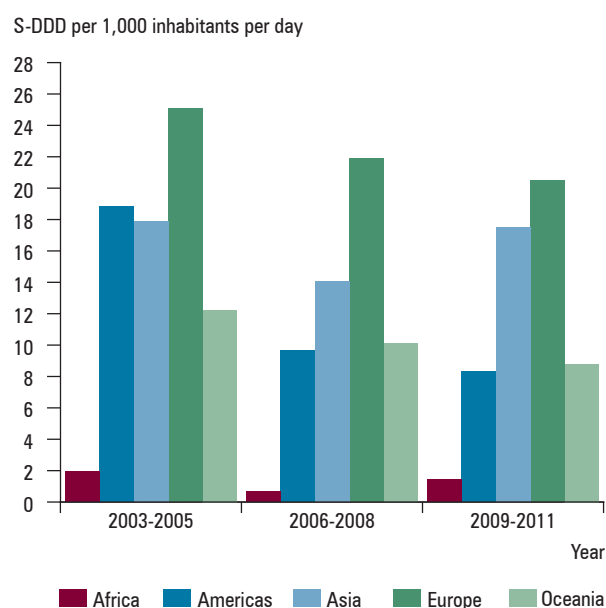


^aStatistical data submitted by Governments are used to calculate the approximate global consumption in a given year. These consumption figures are expressed in defined daily doses for statistical purposes (S-DDD).

83. The calculated average national consumption of benzodiazepine-type sedative-hypnotics, expressed in S-DDD per 1,000 inhabitants per day, has traditionally been higher in Europe and in a few non-European countries, such as Cuba and Japan, than in other regions. As shown in figure 22, average calculated levels of consumption of this group of substances have declined somewhat in Europe, in the Americas and in Oceania compared with 10 years ago. Calculated consumption levels of benzodiazepine-type sedative-hypnotics, expressed in S-DDD per 1,000 inhabitants per day, in individual countries are shown in table IV.2 of the present publication.

84. The reported manufacture of individual substances in this group has varied greatly over the years, since manufacturers tend to produce large quantities of a substance at a time to keep stocks of those quantities on hand for future use. There have been significant fluctuations in total manufacture of brotizolam and flunitrazepam, in particular, which has affected the total for the group as a whole. In 2011, lormetazepam continued to be the most manufactured substance in the group of benzodiazepine-type sedative-hypnotics, accounting for 1.7 billion S-DDD, or 23 per cent, of global manufacture of this group of substances. Brotizolam was second, with an output of 1.5 billion S-DDD, or 21 per cent of global manufacture in 2011. Triazolam was third (987 million S-DDD or 14 per cent), followed by temazepam (931 million S-DDD or 13 per cent), nitrazepam (571 million S-DDD or 8 per cent), flunitrazepam (516 million S-DDD or

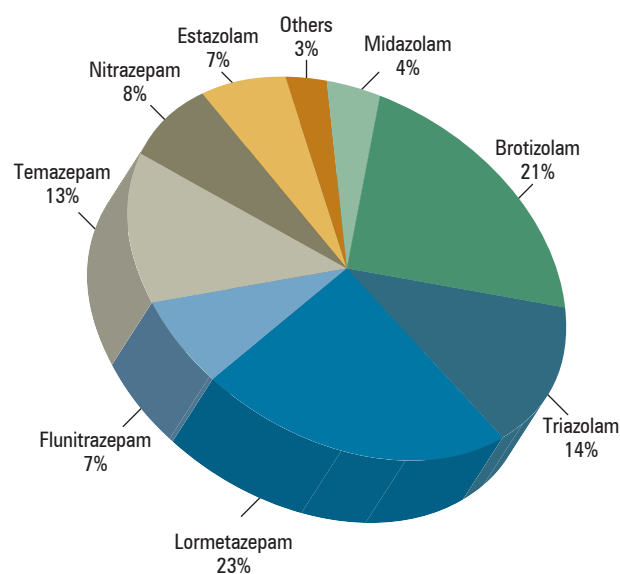
Figure 22. Benzodiazepine-type sedative-hypnotics: average national consumption,^a by region, 2003-2011



^aStatistical data submitted by Governments are used to calculate the average annual consumption for a three-year period.

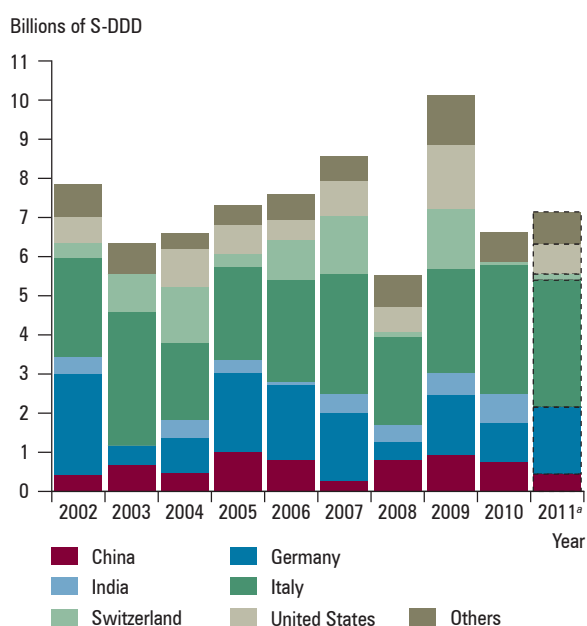
7 per cent) and estazolam (473 million S-DDD or 7 per cent). The remaining substances in this group together accounted for 7 per cent of total manufacture in 2011: midazolam (267 million S-DDD or almost 4 per cent), loprazolam (116 million S-DDD or 1.6 per cent), flurazepam (100 million S-DDD), nimetazepam (16 million S-DDD) and haloxazolam (13.6 million S-DDD) (see figure 23).

Figure 23. Benzodiazepine-type sedative-hypnotics: share of total reported manufacture, by substance, 2011



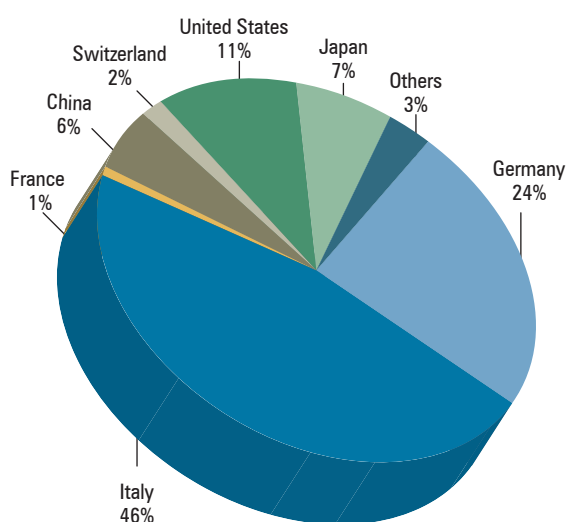
85. The main countries reporting manufacture of benzodiazepine-type sedative-hypnotics during the decade up to 2011 are shown in figure 24. Throughout that period, Italy was the leading manufacturer, accounting in 2003 for more than half of global manufacture of such substances. In 2011, Italy manufactured benzodiazepine-type sedative-hypnotics amounting to 3.2 billion S-DDD, which in the absence of data from India and Brazil accounted for almost 46 per cent of global manufacture of such substances (see figure 25).

Figure 24. Benzodiazepine-type sedative-hypnotics: reported total manufacture, selected countries, 2002-2011



^aThe data for 2011 are incomplete.

Figure 25. Benzodiazepine-type sedative-hypnotics: total reported manufacture, selected countries, 2011



Lormetazepam

86. In the period 2002-2011, total reported manufacture of lormetazepam was consistently above 1 ton, except in 2003 (380 kg) and in 2007 (809 kg). The fluctuations were the result of developments in Germany and Italy, the two main manufacturers of the substance. In 2011, manufacture of lormetazepam amounted to 1.7 tons, a decrease of 11 per cent from the figure reported for 2010. In addition to the main manufacturers, Canada and Poland also reported manufacture of small amounts of that substance in 2011. International trade in lormetazepam reached almost 1.9 tons in 2011. Germany (577 kg) and Italy (576 kg) continued to be the main exporters of lormetazepam, followed by France (211 kg), Finland (174 kg), the Netherlands (159 kg) and Spain (110 kg). The main importers of lormetazepam in 2011 were Spain (489 kg), France (281 kg), Germany (269 kg), the Netherlands (242 kg), Finland (200 kg) and Belgium (163 kg). As in the past, some of those countries imported the substance mainly for re-export. The calculated global consumption of lormetazepam amounted to 1.2 tons in 2011 (1.2 billion S-DDD). Rates of consumption were particularly high in Europe, with the highest calculated rates of consumption, expressed in S-DDD per 1,000 inhabitants per day, recorded for Belgium (39.6), Spain (23.5), Italy (14.4), Andorra (9.8) and the Netherlands (9.4).

Brotizolam

87. Brotizolam is a potent hypnotic. Together with triazolam, it has the lowest S-DDD of all psychotropic substances (0.25 mg). Germany was the first country to report manufacture of brotizolam, in 1997. Since that year, the substance has usually been manufactured by Germany in amounts of several hundred kilograms per year and, to a much lesser extent, by Italy and Japan. Global reported manufacture of brotizolam increased from 99 kg in 2010 to 372 kg in 2011. Germany (291 kg) and Japan (81 kg) remained the main manufacturers of the substance. Germany also remained the main exporter of brotizolam in 2011, accounting for 157 kg, or 83 per cent of total exports of the substance. About 10 countries reported having imported more than 1 kg of brotizolam in 2011. While the number of countries reporting use of brotizolam has continued to grow, in 2011, as in previous years, Japan was by far the largest importer of the substance, accounting for 70 per cent of total imports and around 65 per cent of calculated global use.

Triazolam

88. In 2011, total reported manufacture of triazolam stood at 247 kg (987 million S-DDD). The United States had been the leading manufacturer of triazolam throughout

the period 2000-2009, accounting for over 90 per cent of global manufacture of the substance in 2009. In 2010, the United States did not report manufacture of triazolam and, as a result, the global total dropped to 90 kg. In 2011, the United States was again the largest manufacturer of the substance by far, with output of 185 kg. The other countries reporting manufacture of triazolam in 2011 were Italy and Canada, which reported 57 kg and 5 kg, respectively. More than 40 countries reported use of triazolam in the period 2009-2011. Total global calculated consumption of triazolam stood at 1.9 billion S-DDD in 2011, with the United States (1.1 billion S-DDD) and Japan (545 million S-DDD) being the main consumers in absolute terms. Total exports of triazolam in 2011 amounted to 220 kg. The United States (115 kg) continued to be the main exporter, followed by Italy (56 kg), Switzerland (15 kg), India (14 kg) and Belgium (14 kg). Throughout the decade leading up to 2011, Japan was the largest importer of triazolam, accounting in some years for over 50 per cent of global imports. In 2011, Japan remained the country with the highest calculated per capita consumption rate of triazolam, followed by the United States.

Temazepam

89. During the period 2002-2011, Italy was the leading manufacturer and exporter of temazepam, and Canada, India, Poland, the United Kingdom and the United States reported intermittent manufacture of the substance for some years. In 2011, global reported manufacture of temazepam amounted to 18.6 tons, a decline from 21.6 tons in 2010, with Italy accounting for about 92 per cent of the total. In 2011, Canada, which reported manufacture of temazepam for the first time in 2010, manufactured 1.3 tons of the substance. Poland and the United States manufactured 123 kg and 41 kg, respectively. The United States continued to be the largest importer of temazepam in 2011 (9.1 tons). The second largest importer was Australia (1.18 tons), followed by Finland (1.10 tons), Canada (1 ton), the Netherlands (928 kg), the United Kingdom (907 kg), Ireland (750 kg), Hungary (652 kg), Switzerland (595 kg) and Germany (561 kg). Global calculated consumption of temazepam stood at 822 million S-DDD in 2011. The United States accounted for almost 58 per cent of the total, while Canada, Italy, Australia, the Netherlands, Finland and Germany, in that order, together accounted for about 37 per cent.

Nitrazepam

90. In the period 2002-2010, global reported manufacture of nitrazepam ranged between 4 and 6.8 tons per year. In 2011, that figure dropped to 2.86 tons, of which Italy accounted for 68 per cent. China (805 kg), Canada (126 kg) and the Russian Federation (7 kg) were the other countries reporting manufacture of nitrazepam for that year. No other

countries reported manufacture of the substance in 2011, including India, which had been a major manufacturer of nitrazepam during the period 2002-2010. Exports of nitrazepam, which had averaged about 4.2 tons annually during the period 2008-2010, also fell in 2011, to 3.2 tons. Italy (1.9 tons) and China (705 kg) continued to be the main exporters of the substance, together accounting for 84 per cent of all nitrazepam exports in 2011. More than 30 countries imported nitrazepam in quantities exceeding 2 kg in the period 2009-2011. Imports reported by Japan and Cuba, traditionally the largest importers and users of the substance, increased, with some fluctuations, during the period 2002-2010. Both countries, however, reported a decline in total imports of nitrazepam compared with 2010; in 2011, imports were 1 ton for Japan and 550 kg for Cuba.

Estazolam

91. During the period 2008-2010, unlike in previous periods, global reported manufacture of estazolam was fairly stable, varying between 2.4 and 2.6 tons. In 2011, global output of the substance declined to 1.4 tons, owing to developments in China, which was the major manufacturer of the substance during the period 2002-2011. Other countries reporting manufacture of estazolam in 2011 were, in descending order, Japan, Italy, Poland and the United States. Use of the substance outside the manufacturing countries has increased steadily since the 1980s, with international trade in 2011 reaching the highest value ever reported (405 kg). The leading exporters of estazolam have traditionally been Italy and Japan. About 15 countries reported use of estazolam in quantities exceeding 10 kg during the period 2008-2010. In 2011, Poland (33 kg), Japan (30 kg), the United States and Italy (24 kg each), Mexico (19 kg) and France and the Netherlands (18 kg each) together accounted for 87 per cent of total imports of the substance.

Midazolam

92. Total reported manufacture of midazolam decreased from 6.6 tons in 2009 to 5.4 tons in 2011. Brazil, Israel, India, Italy and Switzerland have been the main manufacturers of the substance; however, data on manufacture for 2011 have not been received from Brazil and India, which may account for the drop in output. Switzerland reported 3.1 tons of manufacture of midazolam in 2011, followed by Israel (1.2 tons), Italy (662 kg) and China (284 kg). Midazolam is used in many countries; over 80 countries reported imports of midazolam in quantities above 1 kg in the period 2009-2011. In 2011, global exports of the substance stood at 6 tons. As in previous years, Switzerland continued to be the main exporter, accounting for 2.4 tons, or almost 39 per cent of the global total. The main importer in 2011 was the United Kingdom (1.4 tons), followed by Germany (936 kg), Switzerland (604 kg), France (514 kg) and the United States

(470 kg). Together, those countries accounted for 60 per cent of global imports of midazolam. Calculated global consumption of midazolam stood at 258 million S-DDD in 2011. The United States, Hungary, Colombia, Portugal, the Netherlands and Chile (in that order) were the countries with the highest rates of reported consumption of midazolam for that year.

Loprazolam

93. Total reported manufacture of loprazolam in 2011 amounted to 116 kg, all reported by France, which has traditionally been the main manufacturer and leading exporter of the substance, although manufacture has occasionally been reported by India, Spain, the United Kingdom and the United States. About 25 countries used loprazolam in the period 2008-2011. Total imports of loprazolam in 2011 amounted to 188 kg, 85 per cent of which were accounted for by Poland (86 kg), France (48 kg), South Africa (14 kg) and Italy (12 kg).

Flurazepam

94. Global reported manufacture of flurazepam stood at 3 tons in 2011. Italy continued to be the largest manufacturer, accounting for 90 per cent of total output, followed by Canada. No other countries reported manufacture of the substance in 2011. Italy also remained the largest exporter of flurazepam in 2011. The main importers of flurazepam continued to be Spain (773 kg), the United States (537 kg), Germany (345 kg) and Canada (315 kg), which together accounted for about 57 per cent of total imports of the substance, which stood at 3.5 tons in 2011. Italy, Japan, Belgium, Ireland and the Islamic Republic of Iran (in that order) imported flurazepam in quantities ranging between 150 and 300 kg during 2011.

Other benzodiazepine-type sedative-hypnotics

95. The remaining substances in this group, nimetazepam and haloxazolam, are manufactured and used almost solely in Japan. In 2011, that country reported manufacture of 79 kg of nimetazepam and output of 102 kg of haloxazolam.

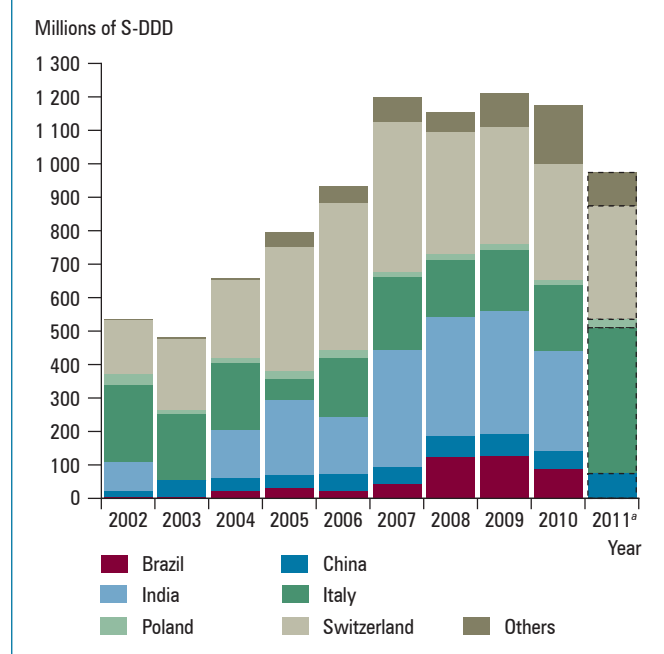
Benzodiazepine-type anti-epileptics

Clonazepam

96. Clonazepam is a benzodiazepine that is used mainly as an anti-epileptic. During the period 1992-2009, global

reported manufacture of the substance increased from 735 kg to 9.6 tons. In 2011, global reported manufacture of clonazepam declined to 7.8 tons (975 million S-DDD), owing to the fact that data from Brazil and India, which had reported output of 702 kg and 2.4 tons, respectively, for 2010, had not been received. Switzerland was the world's leading manufacturer of clonazepam during the two decades leading up to 2010. In 2011, Italy became the largest manufacturer of the substance, reporting output of 3.5 tons or 45 per cent of the global total, followed by Switzerland (2.7 tons), China (590 kg), Canada (251 kg) and Poland (200 kg) (see figure 26).

Figure 26. Clonazepam: total reported manufacture, selected countries, 2002-2011



^aThe data for 2011 are incomplete.

97. Global exports of clonazepam have also followed an increasing trend, reaching 12.5 tons in 2011, with Switzerland, Italy and India together accounting for almost 90 per cent of the global total. In 2011, the United States (1.9 tons) and Switzerland (1.7 tons) remained the largest importers of clonazepam; however, in that year they were joined by Israel, which imported 1.3 tons. Other countries importing more than 400 kg of the substance in 2011 were Spain (948 kg), Mexico (802 kg), Argentina (760 kg), the Islamic Republic of Iran (625 kg), Chile (430 kg) and Canada (408 kg). Use of clonazepam expanded from about 50 countries in 1995 to more than 140 countries in the period 2008-2011. Global calculated consumption of the substance averaged close to 1.1 billion S-DDD annually in the period 2008-2010. In 2011, it stood at 1.01 billion S-DDD. The countries with the highest calculated consumption of clonazepam in 2011 were the United States (233 million S-DDD), Italy (109 million S-DDD), Argentina (87 million

S-DDD), the Islamic Republic of Iran (77 million S-DDD), China (68 million S-DDD), Mexico (59 million S-DDD), Japan (45 million S-DDD), Israel (42 million S-DDD), Bangladesh (37 million S-DDD) and France (37 million S-DDD). Calculated consumption levels of clonazepam, measured in S-DDD per 1,000 inhabitants per day, in individual countries are shown in table IV.4 of the present publication.

Barbiturate-type sedative-hypnotics and anti-epileptics in Schedule IV

Allobarbital, barbital, butobarbital, methylphenobarbital, phenobarbital, secbutabarbital and vinylbital

98. The seven barbiturates in Schedule IV are pharmacologically related to those in Schedule III. Five of the seven substances, namely allobarbital, barbital, butobarbital, secbutabarbital and vinylbital, are intermediate-acting barbiturates and are mainly used as hypnotics (to induce sleep). They are no longer used as daytime sedatives. The other two substances, methylphenobarbital and phenobarbital,⁵ have additional properties and are also used as anti-epileptics (long-acting barbiturates). Phenobarbital continued to be the most commonly used substance in this group in 2011, followed by barbital.

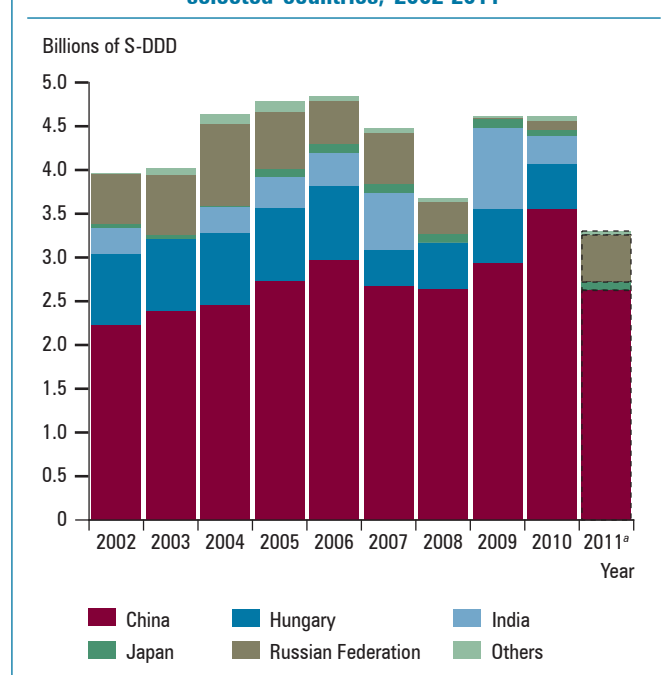
99. Total reported manufacture of those seven barbiturates (for both direct medical use and the manufacture of non-psychotropic substances) rose from 4 billion S-DDD in the period 1999-2000 to an average of 5.1 billion S-DDD in 2006. After that year, reported global manufacture started to decline, with fluctuations, to a total of 3.6 billion S-DDD in 2011, a decrease of 20 per cent from 2010. Changes in the quantities manufactured of phenobarbital, which continued to be the most widely manufactured substance in this group, accounted for the changes in output. In 2011, the share of phenobarbital in total manufacture (expressed in S-DDD) was nearly 92 per cent. Barbital accounted for approximately 7 per cent of total manufacture, and methylphenobarbital and secbutabarbital together accounted for about 1 per cent. No manufacture of butobarbital or vinylbital was reported for 2011. The most recent manufacture of butobarbital was reported by Germany (117 kg) in 2008. No manufacture of vinylbital has been reported since 1996.

⁵ See table IV for details of the calculated consumption levels of phenobarbital.

100. The countries with the highest calculated consumption rates of barbiturate-type sedative-hypnotics in Schedule IV in 2011 were (in descending order) China, Japan, Turkey, Italy, Albania, Thailand and France, which had consumption rates ranging between 0.065 and 0.464 S-DDD per 1,000 inhabitants per day. With respect to the barbiturate-type anti-epileptics listed in Schedule IV, the countries with the highest calculated consumption levels, in S-DDD per 1,000 inhabitants per day, were (in descending order) Bulgaria, Ukraine, Cuba, Vanuatu, the Russian Federation, Benin and Belarus. More information on calculated consumption levels is shown in table IV.

101. Total reported manufacture of phenobarbital fluctuated between 330 and 480 tons during the period 2002-2011. In 2011, total output of phenobarbital amounted to 330 tons (3.3 billion S-DDD), a significant decrease from 461 tons (4.6 billion S-DDD) in 2010. That decrease can be attributed to the decrease in manufacture in China, the leading manufacturer of the substance. Total output in that country decreased from 355 tons in 2010 to 262 tons in 2011; nevertheless, China still accounted for nearly 80 per cent of global manufacture in 2011 (see figure 27). The second largest manufacturer in 2011 was the Russian Federation (54 tons), followed by Japan (9.6 tons). The other two major manufacturers of phenobarbital, Hungary and India, did not report manufacture of the substance in 2011. Total stocks amounted to about 119 tons in 2011, the majority of which were held (in descending order) in Switzerland, the United States, Denmark, Hungary, Costa Rica, France, Ukraine, Italy and Germany. The major users

Figure 27. Phenobarbital: total reported manufacture, selected countries, 2002-2011



*The data for 2011 are incomplete.

of phenobarbital in 2011 included China, the Russian Federation, the United States, Japan and Ukraine (in that order).

102. Phenobarbital continues to be one of the most widely traded psychotropic substances. International trade in phenobarbital ranged between 321 tons and 381 tons during 2007-2011, with an average of 140 countries trading the substance every year. In 2011, total exports of phenobarbital amounted to 321 tons (3.2 billion S-DDD), with China, Hungary, India, Switzerland, Germany and Denmark (in descending order) remaining the largest exporters. Total exports from those countries accounted for about 97 per cent of global exports. More than 120 countries reported imports of phenobarbital in 2011. The major importers continued to be (in descending order) Switzerland, the United States, Germany, the Russian Federation, Ukraine and Japan.

103. Total manufacture of barbital reached 122 tons (245 million S-DDD) in 2011, the highest level since 2002. Manufacture in China, the leading manufacturer of barbital, has been increasing steadily since 2008, and amounted to 120 tons (240 million S-DDD) in 2011, accounting for 98 per cent of the global total. Japan was the other major manufacturer; output in that country in recent years has remained around 2 tons each year. The barbital manufactured in Japan was mainly for domestic consumption, including for use in the manufacture of non-psychotropic substances and preparations exempted from certain control measures in accordance with article 3 of the 1971 Convention. Total calculated consumption of barbital stood at 269 tons (539 million S-DDD) in 2011. China, Japan, Italy, the United States, Thailand and France (in descending order) continued to be the main users.

104. International trade in barbital decreased from approximately 19 tons (38 million S-DDD) in 2010 to 14 tons (28 million S-DDD) in 2011. Exports from China, the leading exporter of the substance, declined significantly, from 11.5 tons in 2010 to 7.6 tons in 2011. Other major exporters in 2011 continued to be Germany (4.9 tons) and Japan (1.1 tons). Those two countries were also the leading importers of barbital in 2011, followed by the United States, France, Thailand and Italy.

105. Manufacture of methylphenobarbital fluctuated considerably during the period 2002-2010, ranging between 0.8 and 22 tons, owing to significant changes in the output reported by the manufacturing countries, namely India, Switzerland and the United States. In 2011, total manufacture amounted to 10 kg (0.1 million S-DDD), almost all of which was reported by the United States. India, which manufactured 21.7 tons of the substance in 2008, did not report any data on manufacture for 2011. Switzerland, traditionally another major manufacturer of methylpheno-

barbital, also did not report manufacture of that substance in 2011. Global stocks stood at 5.6 tons at the end of 2011; over 94 per cent of them were held in Switzerland. Croatia, Italy and Bosnia and Herzegovina (in descending order) were the main users of the substance in 2011.

106. International trade in methylphenobarbital fluctuated during the period 2002-2006 and has been declining since 2007. In 2011, global trade volume reached 1.8 tons, with Croatia, Switzerland and Italy (in descending order) being the largest importers, accounting for 98 per cent of total imports. Switzerland and India (in that order) remained the two major exporters in 2011.

107. Germany, the sole manufacturer of allobarbital during the period 1996-2005, with quantities manufactured ranging between 393 kg and 4 tons, did not manufacture the substance in the period 2006-2008. In 2006, Belgium began manufacturing the substance; it reported an output of 2.5 tons (25 million S-DDD) in 2006 and 1.4 tons (14 million S-DDD) in 2007, mainly for export. Germany resumed manufacture in 2009 (1.1 tons or 11.3 million S-DDD). Since 2010, no manufacture of allobarbital has been reported by any country. As a result, global stocks continued to decrease, from 2.6 tons in 2009 to 0.7 tons in 2011; these were held mainly in Germany and Switzerland. International trade in allobarbital has also continued to decrease significantly since 2008, amounting to 428 kg in 2011. Germany (226 kg) and Switzerland (200 kg) accounted for nearly all exports in 2011, although the quantities exported by Germany declined by more than 50 per cent from 2010. The major importers of allobarbital in 2011 continued to be Switzerland (201 kg) and Turkey (200 kg). Poland and Turkey remained the main users of the substance.

108. Secbutabarbital was manufactured intermittently during the past decade. No manufacture was reported for the years 2000, 2004 and 2005. After Germany stopped manufacturing the substance in 2003, the United States became the sole manufacturer, reporting an average annual output since 2006 of 45 kg. In 2011, it reported manufacture of 61 kg, for both domestic use and export. Global stocks of the substance amounted to 28 kg in 2011; half were held in Germany and half in the United States. In 2011, the United States was the only country that exported the substance, with exports totalling 50 kg.

109. Manufacture of butobarbital was last reported by Germany in 2008 (117 kg). No manufacture of that substance has been reported since then. Global stocks of butobarbital stood at 31 kg at the end of 2011; they were mostly held in Germany and the Netherlands. International trade remained very limited in 2011. Only 4 kg of imports were reported by Belgium and Jordan, the two main users of the substance in 2011.

Barbiturates in Schedules II, III and IV

110. Of the 12 barbiturates listed in Schedules II, III and IV of the 1971 Convention, five substances — phenobarbital, butalbital, pentobarbital, barbital and amobarbital (in that order) — together accounted, on average, for 99 per cent of total reported manufacture of those barbiturates during 2007-2011. The shares of total manufacture of those five substances in 2011 are presented in figure 28. Phenobarbital remained the most widely manufactured barbiturate in 2011, accounting for 72 per cent of total manufacture of the 12 barbiturates. China (63 per cent), the United States (9 per cent), Denmark (8 per cent), Germany (5 per cent) and Japan (3 per cent) together accounted for 88 per cent of total manufacture of the entire group of barbiturates (see figure 29).

Other sedative-hypnotics listed in Schedule IV

111. Five substances from the group of sedative-hypnotics in Schedule IV are neither barbiturates nor benzodiazepines. While ethchlorvynol, ethinamate and methyprylon have been listed in Schedule IV since the adoption of the 1971 Convention, gamma-hydroxybutyric acid (GHB) and zolpidem were added to Schedule IV in 2001.

112. GHB is used in the treatment of narcolepsy and, more rarely, alcoholism. Data for GHB may still be incomplete, as some countries have not extended import and export control measures to this substance. Reported manu-

facture of GHB increased steadily during 2006-2010, reaching a peak of 59 tons in 2010. In 2011, global manufacture declined significantly, to 12.4 tons, owing mainly to decreased manufacture in the United States, a leading manufacturer of the substance. In 2011, reported manufacture of GHB in the United States amounted to 1.3 tons, which represented only 3 per cent of its manufacture in 2010. Other manufacturers of GHB in 2011 were Germany (9.8 tons) and Ukraine (1.2 tons). Global stocks have continued to rise in recent years, reaching 41 tons in 2011. Italy and the United States were the two largest holders of those stocks, together accounting for 88 per cent of global stocks in 2011.

113. International trade in GHB declined slightly from 2010 to 2011. In 2011, total reported imports amounted to nearly 14 tons, with Italy, the United Kingdom and France (in descending order) being the main importers. Germany, the United States, the United Kingdom and Ukraine (in descending order) remained the leading exporters in 2011. France, Germany and Ukraine (in descending order) had the highest calculated consumption of GHB in 2011.

114. Zolpidem is used to induce sleep. Global manufacture fluctuated during the period 2002-2011 between 18 tons and 51 tons, reflecting the changing output of the major manufacturers, including India, Israel and France. In 2011, reported global manufacture of zolpidem amounted to 19.6 tons (1.96 billion S-DDD), 83 per cent of which was accounted for by France (14 tons) and the Czech Republic (2.3 tons). India, another key manufacturer, which accounted for nearly 36 per cent of global manufacture in 2010, had not yet reported any data on manufacture for 2011. Other

Figure 28. Barbiturates in Schedules II, III and IV: share of total reported manufacture, by substance, 2011

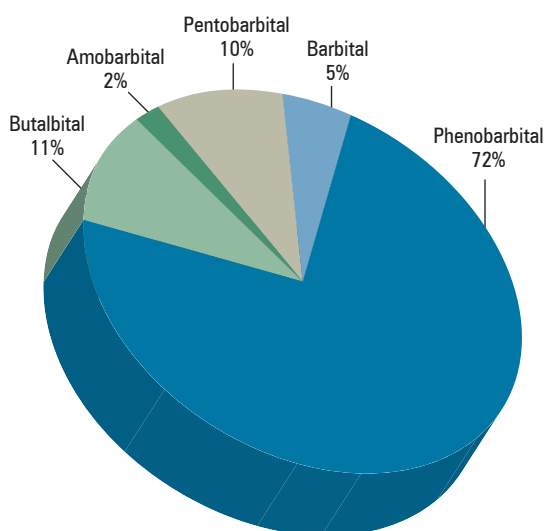
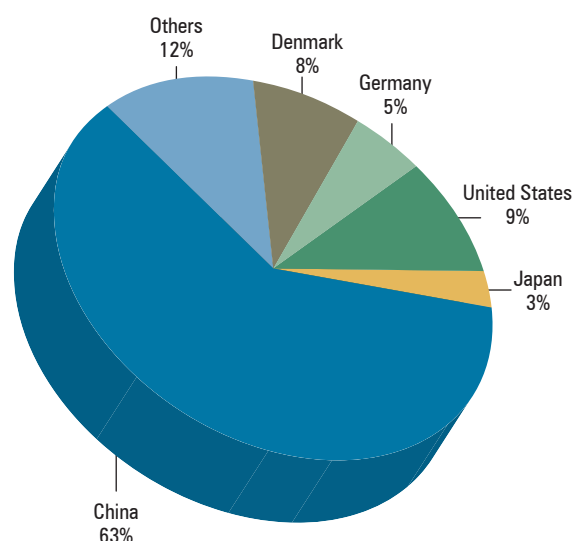


Figure 29. Barbiturates in Schedules II, III and IV: total reported manufacture, selected countries, 2011



countries, including Argentina, Japan, the United States, Canada, Israel, Spain and China (in descending order), also reported manufacture of zolpidem in 2011. Global stocks fluctuated during 2007-2011 between 14 tons and 37 tons. In 2011, global stocks stood at 22 tons, the majority of which were held in France, the United States, the Czech Republic, Israel and Canada (in descending order).

115. Zolpidem is one of the most widely traded and used psychotropic substances. Global trade reached 57 tons in 2011, with about 30 countries reporting exports of the substance to nearly 100 countries. France and India remained the two major exporters in 2011, accounting for nearly 70 per cent of global exports. The Czech Republic, Slovenia and Uruguay had the highest calculated consumption in 2011.