

# The Flow of Precursor Chemicals for Synthetic Drug Production in Mexico

#DarkChemistry



# **The Flow of Precursor Chemicals for Synthetic Drug Production in Mexico**

May 2023

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# 1

## Executive Summary

Precursor chemicals pose an unprecedented challenge for governments and multilateral organizations seeking to mitigate the development, manufacturing, production, and distribution of illicit synthetic drugs. As opposed to most legacy drugs -- which rely on plants, harvests, favorable weather, significant and varied manual labor, and transport of bulk amounts of illicit substances across heavily-policed terrain -- synthetic drugs can be produced in laboratories all year-round using a wide variety of mostly sparsely or unevenly regulated chemicals, which can be employed at different stages of the process in rudimentary laboratories and transported in large or small amounts, often without the knowledge of the transporters themselves.

The sources for these chemicals span the globe. They are currently concentrated in China, where a relatively small number of companies appear to be producing precursor chemicals, in mainly two provinces. These chemicals are marketed and sold on the internet, where an army of online providers offer well-regulated and unregulated chemicals via the Clearnet and the dark web. These marketers are sometimes extensions of these same production companies and sometimes independent. Some are also clans, which appear to own numerous production and marketing companies.

The precursors are transported to Mexico via cargo ships or air cargo, traveling direct or via circuitous routes. Cargo is often mislabeled, camouflaging the contents, purpose, or amount of their shipment. In Mexico, brokers and independent buyers facilitate this trade, filing paperwork, creating fictitious companies, or bribing officials. The chemicals then make their way to small producers. Often referred to as “cooks,” these producers synthesize the precursors into illicit synthetic drugs that are then sold to large buyers and transport specialists.

Two large criminal networks buy and move synthetic drugs in bulk: the Sinaloa Cartel and Jalisco Cartel New Generation (Cartel de Jalisco Nueva Generación – CJNG). These networks are responsible for bringing this product across the most difficult part of its journey and thus charge a premium for their services. After they sell the drugs wholesale, they are largely absent, leaving the distribution and retail sales to other local criminal networks.

The precursor industry -- and the synthetic drug industry writ large -- is so challenging to disrupt precisely because it works across legal and illegal spheres, involves many layers and different criminal networks, and has many means to obtain its final objective: the sale of synthetic drugs to an increasing number of consumers. Those consumers are not just in the United States. Places

like Mexico are experiencing a dramatic uptick in synthetic drug consumption -- mostly methamphetamine but also fentanyl. The synthetic drug industry is also having ill effects on the environment in Mexico and is behind a surge in violence in the corridors where it is trafficked and sold on the local market.

The problem requires governments to rethink their traditional strategies for fighting illicit drugs. In addition to developing regional and global coalitions to monitor and regulate the chemicals, governments must enlist private industry to play a much more active role in mitigating the trade and limiting the spread of these destructive substances.

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## Major Findings

- A vast number of what are termed “precursor” chemicals assist in the production of synthetic drugs. However, the precursor market for synthetic drugs is comprised of at least three different markets: precursors, pre-precursors, and essential chemicals. Each one faces a different regulatory regime, putting strain on a slightly different part of global and local regulatory systems. This means there is not a one-size-fits-all solution but a multi-layered, broad approach towards mitigating its impact.
- The precursor and pre-precursor markets are the focus of the most intense efforts of regulators and law enforcement. But the lack of a unified, international legal framework, a lack of information sharing and cooperation between nations, and a lack of resources and training in these nations mean these efforts are largely feckless. The proof is in the availability and prices of illicit synthetic drugs in the world’s most lucrative drug market, the United States, and the limited number of criminal cases made against these networks in their major areas of operation: China, Mexico, and the United States.
- The importance of numerous essential chemicals to various parts of the economy also makes them extremely difficult to regulate. These essential chemicals include some of the most widely produced and traded products in the world. Any disruption in their flow, therefore, could be extremely disruptive to the licit economies that depend on them. At the same time, their availability means creating a supply-side strategy is very difficult.
- The supply chain for the most strictly regulated precursors is shaped like an hourglass with numerous producers, distributors, and transporters at the top; a smaller number of independent buyers, brokers, and drug processors in the middle; and a larger number of transporters, wholesalers, and retail distributors at the bottom. This means there may be some opportunity to squeeze the middle where there is the most obvious bottleneck.



- Nonetheless, the methamphetamine industry in Mexico is so advanced as it relates to the varied methods of production and chemicals needed that it will be difficult for any law enforcement to catch up. This means authorities should be thinking about novel ways to track the production and movement of the chemicals used to produce methamphetamine (and other synthetic drugs) and ways to shift their resources toward the demand side of the equation.
- What's more, fentanyl is an illicit drug market the likes of which we have never seen. The concentrated potency of this drug and correspondingly tiny amounts being trafficked make effective controls of its precursors and of the drug itself next to impossible. So warped is the market that traffickers will send upwards of 95% adulterants and additives across heavily policed borders, despite the risks. The barriers to entry are also far lower, which has made the incentives along the supply chain different from other drugs, such as methamphetamine.
- Although the Mexican government claims the contrary, it appears a sizeable amount of fentanyl is produced in Mexico. While it is impossible to quantify, it seems to be significant, given the various ways in which we have found fentanyl precursors entering the country and the ways criminal networks are manufacturing it. Rather than making it from scratch, Mexican "cooks" appear to synthesize fentanyl using precursors and pre-precursors that require only a few, relatively simple steps.
- Still, fentanyl production in Mexico is in its infancy. If methamphetamine production is any indication, it likely the beginning of a process whereby Mexican criminal networks seek autonomy to evade global restrictions on the chemical trade and avoid being at the mercy of international producer-nations, such as China. What's more, given the small amounts needed to satisfy demand, fentanyl offers an opportunity for smaller producers and sellers to enter the market, thus creating a more "democratic" marketplace that is much harder to police.
- Criminal organizations like the Sinaloa Cartel and the CJNG are only one part of the supply chain, so focusing enforcement efforts on them will not significantly impact the synthetic drug trade. In general, they do not get heavily involved in the precursor chemical trade until these substances have been sourced to Mexico and are

ready to distribute amongst producers. Production of synthetic drugs is also outsourced to various semi-autonomous cells, which sometimes work under the supervision of these larger groups and sometimes operate independently, creating a vibrant, flexible, and resilient market.

- In both the places they are produced and where they are sold on the open or the black market, precursor sellers are getting relatively small returns. The size of the precursor market, in relation to the size of the overall chemical market, makes regulating precursor chemicals extremely difficult. Given the size of this market, it also has proven difficult to get this topic to the top of security and regulatory agendas. Paltry resources have so far meant paltry results.
- The private sector has a relatively significant (and unprecedented) role in the supply chain of precursor chemicals, challenging the traditional paradigm of drug trafficking in Mexico. While plant-based drug markets mostly included large criminal organizations operating in rural areas and employing farmers to cultivate illicit crops, synthetic drug trafficking networks are multi-layered, involve many legal industries, can operate from virtually anywhere, rely heavily on licit supplies, and thus generate an important overlap between the legal and the illegal spheres.
- The speed and adaptability of the precursor market may require a completely different type of law enforcement approach, particularly one that emphasizes voluntary compliance by the private sector, connects with trade agreements and wider North American cooperation, is more transparent with the public, and -- to the greatest extent possible -- pushes the boundaries of existing legal procedures such as the “rebuttable presumption” concept, by which companies have to prove that a substance has a viable dual use, rather than making the government prove it does not.

# 3

## Introduction

This report aims to understand better the precursor chemical market and how Mexican criminal networks source these chemicals to manufacture synthetic drugs, which are mainly distributed in the United States. We focused our resources on researching the flow of precursors used in developing methamphetamine and fentanyl. Both synthetic drugs are wreaking havoc on the United States and Mexico. After marijuana, methamphetamine is the most widely consumed illicit drug in the United States and Mexico; fentanyl is now a multibillion-dollar trade, helping to foster organized crime in Mexico, and the cause of tens of thousands of overdose deaths per year in the United States.

In developing this report, we found numerous ways governments, crime researchers, academics, scientists, and others described the precursor chemical business and the state and multilateral efforts to regulate the chemical industry. What's more, in discussions about precursors, some interlocutors conflated various parts of the business or compressed aspects of the value chain. Therefore, we wanted to begin this report by giving our terminology and conceptual framework for understanding this illicit trade, as well as our terminology for the multi-layered, multilateral regulatory efforts of the chemical industry.

The process of making synthetic drugs involves various steps, but it must include a key ingredient we are calling a **precursor**. For this report, we discuss four main precursors for the two illicit drugs we are studying: For methamphetamine, these precursors are 1-phenyl-2-propanone (P2P)<sup>1</sup> and methylamine; for fentanyl, these are 4-anilino-N-phenethylpiperidine (ANPP)<sup>2</sup> and norfentanyl.

Furthermore, since P2P, methylamine, ANPP, and norfentanyl are heavily regulated, synthetic drug producers have turned to what we are terming **pre-precursors** to manufacture them. For the purposes of this report, we refer to pre-precursors as any precursors that are at least one step behind in the production chain from P2P, methylamine, ANPP, or norfentanyl. In other words, pre-precursors are themselves precursors used to manufacture any of the four chemicals mentioned above.

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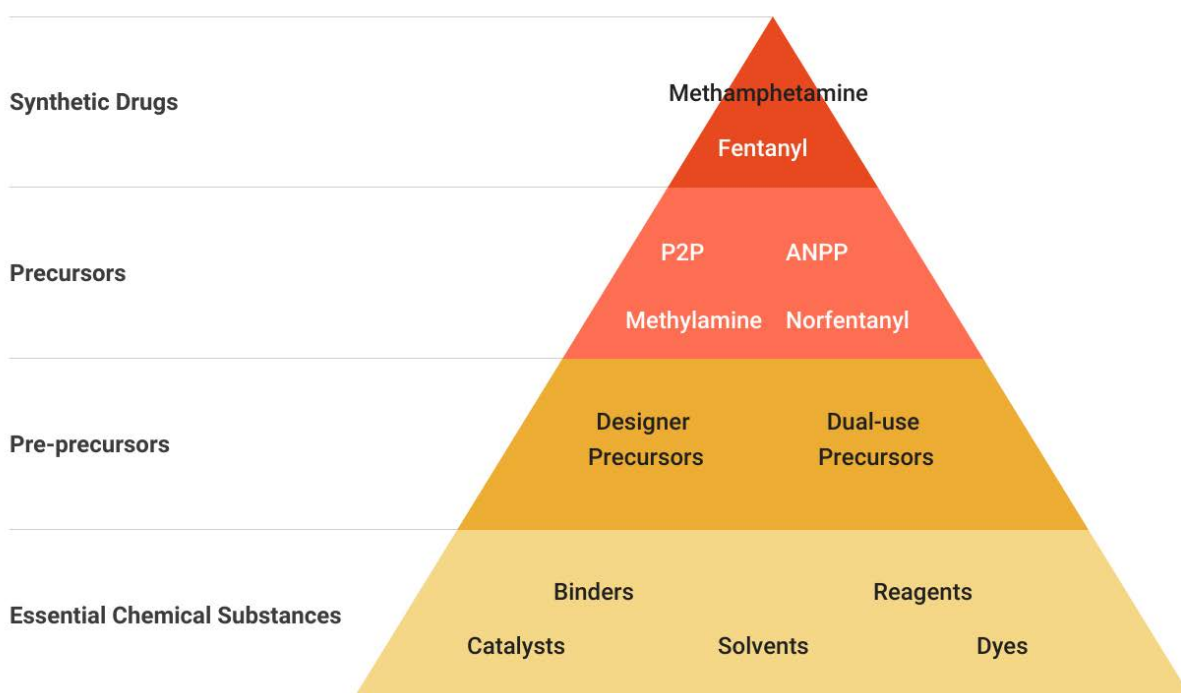
1 This substance can also be referred to as phenylacetone or benzyl methyl ketone (BMK).

2 This substance can also be referred to as 1-phenethyl-N-phenylpiperidin-4-amine or despropionylfentanyl.

These pre-precursors come in two forms: **designer precursors** and **dual-use precursors**. Designer precursors are made specifically to produce illicit synthetic drugs. These have no known legal purposes and are created to avoid international controls. Hence, they are not heavily regulated -- often because authorities have not yet detected these or have not gone through the process of regulating them -- and can thus be produced and moved with greater ease between countries. Dual-use precursors have more than one use -- commercial, academic, medical, etc. -- and can also mostly move more freely between nations, as long as the trade complies with international regulations.

Some pre-precursors, however, are subject to harsher controls, and are therefore more difficult to obtain. An example of this is N-Phenethyl-4-piperidinone (NPP), a chemical that is used to develop ANPP. This substance's only legal use is for the licit production of fentanyl, and its commercialization is thus tightly controlled across the world. Phenylacetic acid is another example. It is a chemical used to produce P2P, but is also employed in the cosmetic and pharmaceutical industries.

## Chemical Substances Used for Synthetic Drug Production *insightcrime.org*



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Sources: InSight Crime, INCB, UNODC

Other chemicals are also essential for the development of methamphetamine and fentanyl. These include binders, dyes, solvents, catalysts, and reagents. Binders connect the chemical compounds permanently or partially. Dyes add

or modify the color of the products. Solvents dissolve or disperse chemicals. Reagents are substances that mediate a chemical reaction, and catalysts are required to accelerate the reaction. None of these are part of the final product but are needed for the manufacturing of the precursors and/or pre-precursors.

In general terms, we see the process of obtaining chemicals and synthesizing them into illicit synthetic drugs as a pyramid like the one depicted in the graphic below. At the base are essential chemical substances, which are widely available and traded and, thus, the most difficult to regulate. Moving up the pyramid, these chemicals become more important to the criminal organizations, and are both harder to find and more important to regulate.

But the pyramid also illustrates the paradox of this illicit trade. For Mexican criminal organizations to obtain synthetic drugs, they can subvert regulations by going down a level on the pyramid, drawing from the huge pool of less-regulated chemicals. If governments police those chemicals too much, they risk inhibiting commercial activity and trade. The potential balance between these imperatives is something we address in the recommendations section.

In addition, there is no uniform, global system of controls and legal frameworks. Instead, these regulatory efforts are generally guided by the United Nations (UN), which has issued various protocols concerning the manufacturing and movement of precursor chemicals. These are also covered in the recommendations section and in an annex to this report, so here we will only mention the most important. The 1961 UN convention created two lists of narcotic drugs and psychotropic substances, Schedule I and Schedule II.<sup>3</sup> More were added in the 1971 UN convention.<sup>4</sup> And in its 1988 convention, the UN established a list of “controlled substances” that could be considered precursors and essential chemical substances in the production process of these drugs.<sup>5</sup>

However, each member country establishes its own regulatory and legal frameworks, which sometimes complement and sometimes ignore the UN conventions and the UN lists of controlled substances. For example, chemicals scheduled by the UN may not be scheduled by the United States and vice-versa. And other countries, most notably China and India, often ignore the international chemical control regime established by the UN. To add to the confusion, these UN conventions and lists are modified on a semi-regular basis. As we note in our recommendations, consolidating global and regional efforts will be key to mitigating this illicit trade, and the near-term target should be a seamless North American legal regime for Mexico, the United States, and Canada.

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3 United Nations, “The International Drug Control Conventions: Schedules of the Single Convention on Narcotic Drugs of 1961 as amended by the 1972 Protocol, as at May 2022,” 2022.

4 Ibid.

5 International Narcotics Control Board (INCB), “United Nations Convention against Illicit Traffic in Narcotic Drugs and Psychotropic Substances,” 1988.

We have also tried to address some of the regulatory challenges in a few countries. For our purposes, we will focus on regulatory efforts in the United States, Mexico, and China. In each of these countries, there are lists of chemicals and drugs that are regulated or scheduled, the two terms we use most when speaking of these efforts.

We use the term **regulated** as a catch-all to refer to substances whose production and movement have been subject to oversight, monitoring systems, or watchlists. In the Mexican context, we will often use the term “monitor(ed)” to refer specifically to those substances that have been added to the government’s watchlist<sup>6</sup> -- given their dual use -- but that are not hard to commercialize legally. Companies and individuals dealing with regulated substances must report to authorities about this use, justifying it in some business, academic, or medical fashion. Non-compliance, as explained in detail in a later section dedicated to Mexico’s regulatory efforts, usually leads to little or no consequences.

We refer to **scheduled** substances as those classified as a drug or chemical based on potential for harm, use, and sale of which could lead to penalties such as fines, sanctions, or prison. It is important to note that not all these countries use the term scheduled, nor do they break these substances into multiple categories as the UN and the United States do. Mexico, for example, has two lists of banned substances under its General Health Law (Ley General de Salud - LGS), which are termed “narcotic substances” and “psychotropic substances” (*estupefacientes y sustancias psicotrópicas*).<sup>7</sup> This is equivalent to the US Drug Enforcement Administration’s (DEA) lists of Schedule I and Schedule II substances, which are covered under the Controlled Substances Act.<sup>8</sup> Mexico also has a list of regulated substances under the Law of Precursor Chemicals and Essential Chemical Substances<sup>9</sup> -- equivalent to the DEA’s List I and List II chemicals, covered under the Chemical Diversion and Trafficking Act<sup>10</sup> -- which are more tightly regulated than the ones in the dual use list and thus harder to obtain.

All of this is covered in greater detail in Parts V and VI, but to clarify our usage of these terms and references to these regulatory and legal efforts, we have included a glossary of terms and a list of abbreviations as annexes to this report.

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6 Mexico’s Interior Ministry, “ACUERDO CSG CCC 4/15.04.2021,” 15 April 2021.

7 Mexico’s Health Ministry, “Ley General de Salud. Título Decimosegundo Control Sanitario de Productos y Servicios y de su Importación y Exportación,” 16 May 2022.

8 United States Drug Enforcement Administration (DEA), “Drug Scheduling,” 5 January 2023.

9 Mexican Congress, “Ley Federal para el Control de Precursores Químicos, Productos Químicos Esenciales y Máquinas para Elaborar Cápsulas, Pastillas y/o Comprimidos,” 20 May 2021.

10 United States Drug Enforcement Administration (DEA), “List I and List II Chemicals,” 10 March 2023.



# 4

## Part I: Synthetic Drug Production Methods

The following is a technical analysis of the predominant production methods of methamphetamine and fentanyl in Mexico. The names of the main precursors, pre-precursors, and essential chemicals needed to execute these methods are provided in Annex IV. These methods are dynamic, and the processes may have changed since the research was completed. Moreover, production varies depending on expertise, availability of the chemicals, prices, laboratory conditions, and numerous other factors that are also in near-constant flux. Nonetheless, they provide a foundation to understand these processes, and provide policymakers with an overview of criminal groups' principal methods of synthesizing these drugs, in order to better calibrate policy responses.

### Methamphetamine Production

There are at least a hundred ways to produce methamphetamine.<sup>11</sup> The two most-used methods are derived from synthesizing ephedrine, pseudoephedrine, or phenylpropanolamine (also called norephedrine); and the method derived from a precursor called 1-phenyl-2-propanone, or P2P. For years, the first method dominated for Mexico-based producers.<sup>12</sup> But in 2008, Mexico established firmer controls over the import and use of ephedrine, pseudoephedrine, and phenylpropanolamine.<sup>13</sup>

Since then, traffickers have migrated to the P2P-based method. Although this precursor is not easy to handle and requires some expertise to synthesize

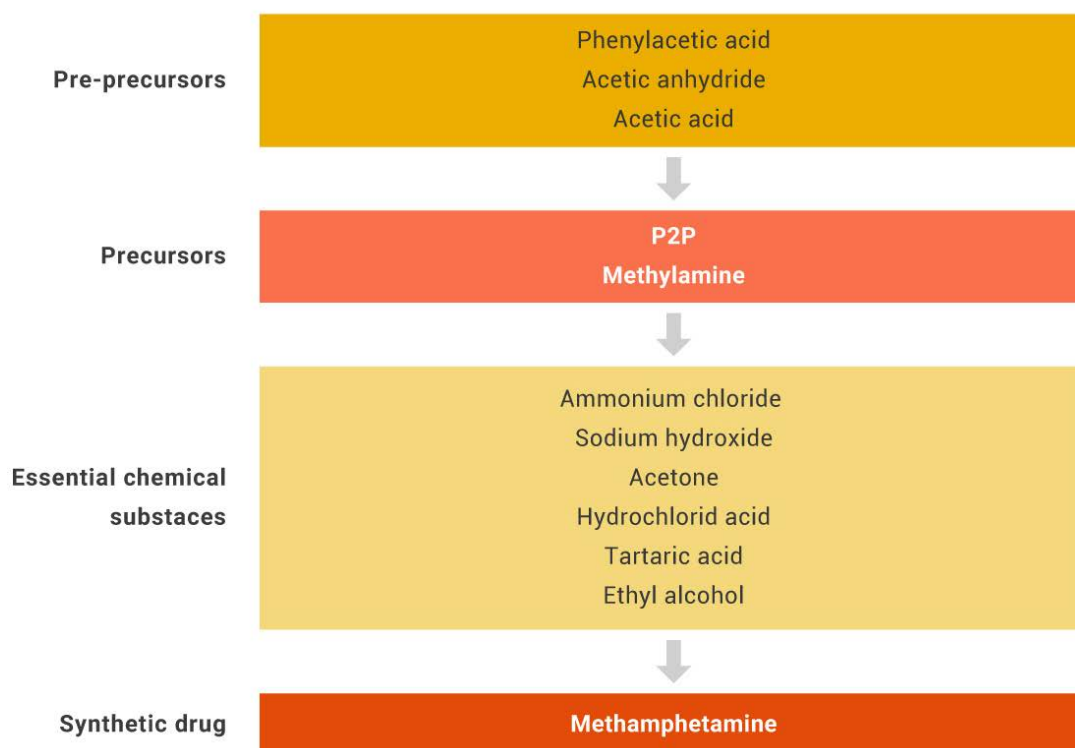
11 InSight Crime interview, officials from the Coordination of Expert Services of the Attorney General's Office, Mexico City, Mexico, 28 June 2022.

12 Ephedrine and pseudoephedrine had a pharmaceutical use in anti-flu drugs, which were available at the nearest drugstore and were easily imported in bulk. Ephedrine, pseudoephedrine, and phenylpropanolamine (which has a similar structure to pseudoephedrine) can produce methamphetamine, if either is mixed with red phosphorus and hydroiodic acid; red phosphorus and iodine; or iodine and hypophosphorous acid. Illegal producers also used the so-called Birch method -- also known as "the Nazi method" -- from which ephedrine or pseudoephedrine is mixed with anhydrous ammonia, sodium, or lithium metal. (See: United States National Drug Intelligence Center, "Methamphetamine Drug Threat Assessment," March 2005.)

13 Mexico's Health Ministry, "ACUERDO por el que se establecen medidas de protección en materia de salud humana para prevenir el uso y consumo de pseudoefedrina y efedrina," 13 June 2008.

and convert into high-quality methamphetamine,<sup>14</sup> it has become the dominant method of illegal methamphetamine production in Mexico.<sup>15</sup>

## Methamphetamine Synthesis Through Reductive Amination



May 2023

*insightcrime.org*

Sources: OAS, DEA, EU.

One of the most popular synthesis routes in the production of methamphetamine using P2P is called reductive amination. This recipe requires P2P and another precursor known as methylamine. In 2019, 99.2% of the methamphetamine samples analyzed by the DEA from suspected Mexican trafficking groups had used the reductive-amination method.<sup>16</sup> Because P2P and methylamine are highly regulated, criminal groups have turned to pre-precursors to synthesize both substances. The P2P synthesis

14 InSight Crime interview, officials from the Coordination of Expert Services of the Attorney General's Office, Mexico City, Mexico, 28 June, 2022.

15 International Narcotics Control Board (INCB), "Precursors and Chemicals Frequently Used in the Illicit Manufacture of Narcotic Drugs and Psychotropic Substances," 9 March 2023.

16 United States Drug Enforcement Administration (DEA), "2020 National Drug Threat Assessment," March 2021.

can be reached through various chemical substances, many of which have legal uses in the chemical, pharmaceutical, and agricultural industries, among others.

An example of this is using pre-precursors, such as benzaldehyde and nitroethane, to synthesize nitrostyrene and then P2P. This route is best known as the nitrostyrene method. In 2014, according to the methamphetamine samples analyzed by the United States government,<sup>17</sup> it was the most widely used method in the synthesis of P2P. But by 2019, its use had almost completely disappeared, possibly after the increase in regulatory controls on the chemicals the method required.<sup>18</sup> This also coincides with the findings of the latest INCB report.<sup>19</sup> After this, illicit producers turned to other pre-precursors such as phenylacetic acid, acetic anhydride, and acetic acid to produce P2P, through a variation of the nitrostyrene method.<sup>20</sup> These substances are all currently regulated by the Mexican government.

Criminal groups also appear to be accessing designer pre-precursors, which are substances created in laboratories for the specific purpose of producing synthetic drugs. Their chemical composition is analogous to those of controlled substances -- and can thus be used to develop precursors, such as P2P -- but they are, in most cases, not yet regulated. For years, the most common example was alpha-phenylacetonitrile (APAAN), a substance with a substantially similar chemical composition to P2P. In 2018, the Mexican government began to regulate APAAN. However, other designer precursors remain unregulated, such as methyl-alpha-phenylacetate (MAPA) and ethyl-alpha-phenylacetate (EAPA), commonly used in Europe for the production of methamphetamine. These substances could potentially be used for methamphetamine production in Mexico, but there is no publicly-available evidence illustrating criminal organizations moving in this direction.

Similarly, traffickers are accessing dual-use chemicals. Benzyl chloride and sodium cyanide, for example, are legally used in chemical and pharmaceutical industries but can also be synthesized to obtain benzyl cyanide, which can create APAAN and then P2P.<sup>21</sup>

Other essential chemicals are also used as the building blocks for the production of synthetic drugs. Acetone, for example, acts as a solvent in the

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17 United Nations Office on Drugs and Crime (UNODC), “Synthetic Drugs and New Psychoactive Substances in Latin America and the Caribbean,” September 2021.

18 International Narcotics Control Board (INCB), “Precursors and Chemicals Frequently Used in the Illicit Manufacture of Narcotic Drugs and Psychotropic Substances,” 9 March 2023.

19 Ibid.

20 United Nations Office on Drugs and Crime (UNODC), “Synthetic Drugs and New Psychoactive Substances in Latin America and the Caribbean,” September 2021.

21 Ibid.

illegal production process.<sup>22</sup> Its prevalence in Mexico will be discussed later in this report. While acetone and other essential chemicals are, in theory, regulated or monitored, they remain some of the hardest to control due to their widespread use across businesses, medical facilities, and academia, and their availability in Mexico and beyond.

The variety of chemical substances used to produce methamphetamine in Mexico suggests the methods are increasingly sophisticated. By adapting to increased substance controls and resorting to pre-precursor chemicals, criminal actors in Mexico are also expanding their knowledge and expertise<sup>23</sup> to the point where they are seeking to conquer new markets in Asia and Europe, perhaps at the expense of their long-time alliances.<sup>24</sup>

No matter the method, Mexican traffickers are known to produce extremely high-purity methamphetamine.<sup>25</sup> The most recent samples analyzed and published by the DEA's Methamphetamine Profiling Program yielded a purity of 97.2% and a potency of 97.5%.<sup>26</sup> Some Mexican producers seem to have improved the quality of methamphetamine produced through P2P by introducing the use of a variety of chemicals, illustrating the dynamism and ingenuity in the field. The most recent example of this is the use of tartaric acid, a substance derived from grape residues that is used in the food, pharmaceutical, and chemical industries. Tartaric acid makes it possible to separate the d-methamphetamine molecule, which has stimulant and hallucinogenic characteristics, from l-methamphetamine, its inactive mirror molecule, thus creating a higher-quality drug.<sup>27</sup>

Even so, there is still a range of products on the market. According to two synthetic drug traffickers interviewed in the state of Michoacán, some producers choose quantity over quality by mixing in sodium hydroxide, gasoline, and other substances to increase volume.<sup>28</sup> The product, according to the producers, is sold to one of the myriad criminal organizations operating in that region, then transported principally to the United States -- part of a multi-billion dollar flood of cheap methamphetamine that has helped lower the wholesale price in California from \$14,000 per pound in 2005 to as low

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22 United States National Drug Intelligence Center, "[Chemicals Commonly Used in Methamphetamine Production](#)," 23 July 2004.

23 InSight Crime telephone interview, Drugs and Security Analyst, 6 October 2022.

24 InSight Crime telephone interview, Vanda Felbab-Brown, Brookings Institute, 15 September 2022.

25 InSight Crime telephone interview, officer from a multilateral organization, Mexico City, Mexico, 16 June 2022.

26 United States Drug Enforcement Administration (DEA), "[2020 National Drug Threat Assessment](#)," March 2021.

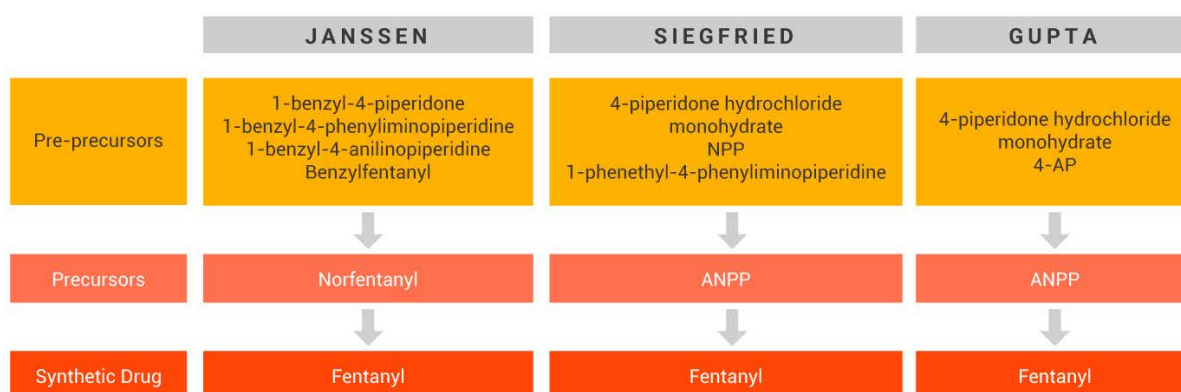
27 International Narcotics Control Board (INCB), "[Precursors and chemicals frequently used in the illicit manufacture of narcotic drugs and psychotropic substances](#)," 9 March 2023.

28 InSight Crime interviews, former methamphetamine trafficker, Michoacán, Mexico, 12 December 2022; methamphetamine and fentanyl trafficker, Michoacán, Mexico, 13 December 2022.

as \$1,400 today.<sup>29</sup> For experts interviewed for this report, the evolution of methamphetamine production in Mexico is a sign of things to come as it relates to fentanyl production in the country.

## Fentanyl Production

### Fentanyl Production Methods



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May 2023  
Source: UNODC

There are three popular methods for synthesizing fentanyl: the Janssen, the Siegfried, and the Gupta. The Janssen method was the first known method for the synthesis of fentanyl. It was derived from Paul Janssen’s work, published in the 1960s. According to the United Nations Office on Drugs and Crime (UNODC), this method is the most complex of all the current methods employed and requires the most time to execute.<sup>30</sup> It may also be the most dangerous.<sup>31</sup> Ninety-four percent of the fentanyl samples analyzed by the DEA in 2018,<sup>32</sup> and 64% of the samples analyzed in 2019, were synthesized using the Janssen method.<sup>33</sup> This method requires pre-precursors such as 1-benzyl-4-piperidone, 1-benzyl-4-phenyliminopiperidine, 1-benzyl-4-anilinopiperidine,

<sup>29</sup> InSight Crime interviews, counterdrug agents, California, United States, July 2022.

<sup>30</sup> United Nations Office on Drugs and Crime (UNODC), “Synthetic Drugs and New Psychoactive Substances in Latin America and the Caribbean,” September 2021.

<sup>31</sup> Bryce Pardo, Jirka Taylor, Jonathan P. Caulkins, Beau Kilmer, Peter Reuter, and Bradley D. Stein, “The Future of Fentanyl and Other Synthetic Opioids,” 2019.

<sup>32</sup> United States Drug Enforcement Administration (DEA), “Designation of Benzylfentanyl and 4-Anilinopiperidine, Precursor Chemicals Used in the Illicit Manufacture of Fentanyl, as List I Chemicals,” Federal Register, vol. 84, no. 178 (2019), pp. 48314-48321

<sup>33</sup> United States Drug Enforcement Administration (DEA), “Fentanyl Signature Profiling Program Report,” October 2019.

and benzylfentanyl, for the synthesis of norfentanyl, its main precursor.<sup>34</sup> Norfentanyl, benzylfentanyl, and benzyl-4-piperidone, are not scheduled but are currently regulated by the Mexican government.

The second method, the Siegfried method, dominated the illicit fentanyl market for years.<sup>35</sup> The Siegfried method obtains fentanyl through synthesizing N-phenethyl-4-piperidinone (NPP) to arrive at 4-anilino-N-phenethylpiperidine (ANPP),<sup>36</sup> one of the main precursors of fentanyl. The recipe was published in the 1990s on the internet,<sup>37</sup> and, around 2010, became the leading method to illegally produce fentanyl. According to its recipe, this method can produce 99.5% pure fentanyl. In 2017, the UN scheduled NPP and ANPP,<sup>38</sup> which appears to have pushed criminal groups towards other methods. However, as will be explained in the coming sections, Mexican authorities have seized NPP in recent years, indicating the continued use of this method.

The third method, Gupta, is currently considered the most widely used to produce illicit fentanyl, according to samples analyzed by the DEA's Fentanyl Profiling Program.<sup>39</sup> This method was patented in 2009 by Pradeep Kumar Gupta, Laxmi Manral, Kumaran Ganesan, Ramesh Chandra Malhotra, and Krishna Murthy Sekhar, members of the Defense Research and Development Organization from India's Ministry of Defense.

The Gupta method requires 4-anilinopiperidine (4-AP), which produces ANPP.<sup>40</sup> What's more, unlike the Siegfried method -- which requires three previous steps to produce ANPP -- Gupta obtains ANPP in two steps in one single vessel, leading to its nickname, the "one-pot method." These shortcuts -- and the inadvertent marketing via its catchy nickname -- may have made the method more attractive for illegal production. Moreover, through the Gupta method, illicit producers can produce over 650,000 different types of fentanyl analogues.<sup>41</sup> As outlined in later sections, the Gupta method is particularly relevant in Mexico where rudimentary chemists, often referred to simply as "cooks," appear to be converting pre-precursors like 4-AP into ANPP, before using that to make fentanyl; or simply getting their hands on ANPP and converting that into fentanyl.

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34 United Nations Office on Drugs and Crime (UNODC), "Expansion of the Synthetic Drug Market - Implications for Precursor Control," March 2020.

35 Ibid.

36 Note: This is sometimes referred to as 4-ANPP.

37 United Nations Office on Drugs and Crime (UNODC), "Expansion of the Synthetic Drug Market - Implications for Precursor Control," March 2020.

38 United Nations Office on Drugs and Crime (UNODC), "Synthetic Drugs and New Psychoactive Substances in Latin America and the Caribbean," September 2021.

39 United States Drug Enforcement Administration (DEA), "Fentanyl Profiling Program Report," August 2022.

40 United Nations Office on Drugs and Crime (UNODC), "Expansion of the Synthetic Drug Market - Implications for Precursor Control," March 2020.

41 United States Commission on Combating Synthetic Opioid Trafficking (CCSOT), "Final Report Technical Appendixes," February 2022.



There are other methods, of course, and illegal groups adapt as laws change and availability changes. The Valdez, Leif, and Mayer (2014) method, for example, combines intermediate steps from different methods to produce NPP and ANPP. Usually, illegal fentanyl producers move between different methods and intermediary steps to produce fentanyl. This allows them to avoid certain precursor or pre-precursor chemicals that are difficult to access because of regulations or to optimize processes to obtain more of the drug.<sup>42</sup> Even the method the cooks in Mexico are using to make fentanyl may be a poor facsimile of the Gupta or some variation thereof.

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42 Bryce Pardo, Jirka Taylor, Jonathan P. Caulkins, Beau Kilmer, Peter Reuter, and Bradley D. Stein, “The Future of Fentanyl and Other Synthetic Opioids,” RAND Corporation, 2019.

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## Part II: Size and Scope of the Market

Estimating the size and economic value of this illicit market is a complex task, as there are no reliable sources to estimate supply, and the ones available to estimate demand have significant shortcomings.<sup>43</sup> It is, however, a crucial undertaking for any analysis of drug precursor flows and for developing the most efficient methods to address the problem. Without some estimation of the potential market size for any given drug, it is impossible to estimate the amount of precursors that may be diverted or smuggled for its production and thus calibrate the response.

To tackle this problem, we have developed two models. The first model is a demand-based model that estimates the range of methamphetamine and fentanyl production in Mexico. Based on the results of that model, we developed a second model that estimates the amount of some major precursors, pre-precursors, and essential chemicals needed to produce the drugs to fulfill the demand. These estimates are not meant to be precise, but we believe they provide an adequate sense of the volumes involved, allowing us to consider the challenges of controlling these illicit flows.

### Demand-Based Model

To estimate the total amount of Mexico-produced methamphetamine (MPM) and Mexico-produced fentanyl (MPF), it is necessary to estimate: how much of each is likely to be consumed in the main markets for each drug; how much is likely to be lost to seizures; and how much is likely to end up as inventory. The total amount of drugs produced in Mexico in any given year would be the sum of drugs sold in their destination markets, minus any inventory from previous years, plus the amount seized by the authorities either en route or in the destination markets.

$$(Drugs\ sold) + (Drugs\ seized) - (Inventory) = (Total\ drugs\ produced)$$

Regarding methamphetamine demand, MPM has been seized across all major methamphetamine markets. However, between 2016-2020, international seizure data analyzed by the United Nations Office on Drugs and Crime

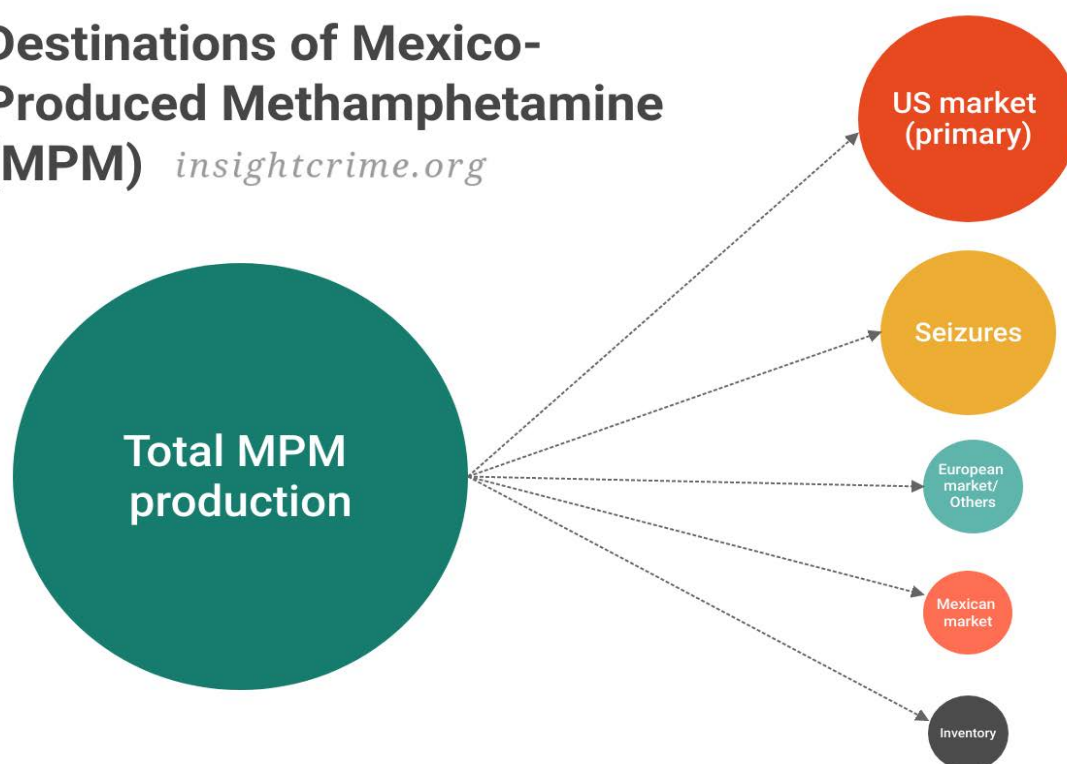
<sup>43</sup> Udrisard R, Esseiva P and Zobel F., "Improving the estimation of the size of the European drug market," Research report N°141, Lausanne: Addiction, Switzerland, 2022

(UNODC) indicated the biggest trafficking flows took place from Mexico to the United States, as well as within Southeast Asia and Western and Central Europe with relatively minor inter-regional flows.<sup>44</sup>

These regions also accounted for most of the amphetamine-type drugs use in the world in 2020,<sup>45</sup> implying that most production of amphetamine-type drugs takes place near the major consumer bases. Furthermore, it appears MPM has made only small inroads in Asian markets; and the latest analysis from Western and Central Europe indicates that Mexican criminal networks appear to rely on strategic partnerships with European networks that operate industrial-production facilities rather than exporting their MPM for sale in the region.<sup>46</sup>

Of course, Mexican criminal networks are constantly attempting to export MPM to new markets. However, these diversification efforts have thus far had a limited impact on the overall market trends and therefore, on the potential production levels.

## Destinations of Mexico-Produced Methamphetamine (MPM) *insightcrime.org*



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44 United Nations Office on Drugs and Crime (UNODC), "[World Drug Report](#)," 2022.

45 Ibid.

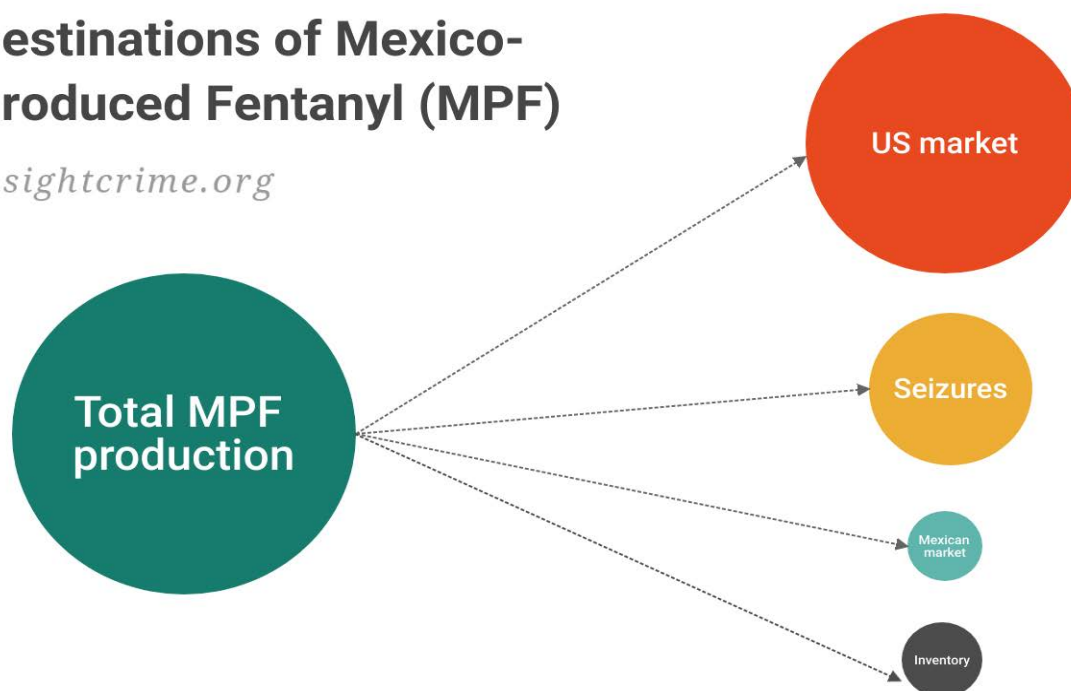
46 EMCDDA-Europol, "[EU Drug Market: Methamphetamine](#)," 2022.

In the case of MPF, the story is more straightforward. There is no evidence of major fentanyl markets outside of the United States, even if synthetic opioids are a growing concern in some countries.<sup>47</sup> Moreover, there is no evidence of significant MPF seizures in other markets. The United States, meanwhile, has the highest reported annual prevalence of use of prescription opioids and the second highest for opioids in general, surpassed only by Afghanistan, a major heroin producer. In fact, the US prevalence of use for opioids is two- to three-times higher than the one reported in European markets and about ten times larger than the Mexican market.<sup>48</sup> This would indicate that the United States is the largest potential market for counterfeit prescription drugs that can include MPF, as well as for the different “street” versions of the drug.

For the purpose of this analysis, it is therefore possible to assume that the US market is the primary market for both MPM and MPF, with a relatively small amount of MPM diverted to other markets or to local consumption. As such, it is possible to focus on US market trends to provide a first estimate of the total demand for MPF and for the largest percentage of MPM production.

## Destinations of Mexico-Produced Fentanyl (MPF)

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47 Gardner EA, McGrath SA, Dowling D, Bai D. “The Opioid Crisis: Prevalence and Markets of Opioids,” *Forensic Science Review*, vol. 34 no. 1, (2022), pp. 43-70.

48 United Nations Office on Drugs and Crime (UNODC), “[World Drug Report](#),” 2022.

Having identified the United States as the primary market for MPM and MPF, the next step is to estimate the demand for both drugs relative to the total consumption, i.e., the market share of MPM and MPF. This is important because, as will be discussed, it is possible that MPM is dominant in the US market, but MPF is not. More importantly, there is uncertainty as to both the level of total consumption and the relative importance of Mexican producers in fulfilling that consumption.

First, we consider MPM's share of the US market. The most recent estimate of total methamphetamine consumption in the United States in 2016 was 171 tons.<sup>49</sup> For that year, the National Survey on Drug Use and Health (NSDUH) estimated that 1.4 million people used methamphetamine.<sup>50</sup> In 2020, the NSDUH estimated 2.2 million people used the drug, or a 57% increase. Since there are no similar estimates of amounts consumed in recent years, we estimated that the total amount of methamphetamine consumed in the United States would have increased by the same proportion. Using 171 tons as our baseline would imply that consumption in the United States could have risen to as much as 270 tons by 2020. By 2022, if we assume consumption rose at the same rate, the United States would have 2.9 million users consuming 351 tons of methamphetamine.

The assumptions regarding the rise in consumption are bolstered, in part, by the data. Obviously, this is not a precise estimate, but it coincides with a steep rise in the amount of methamphetamine seized by the US Customs and Border Protection (CBP) over that same period: from 23 tons in FY2016<sup>51</sup> to 80 tons in FY2022.<sup>52</sup> All but 7.3 tons of those drugs seized in FY2022 were seized at the Southwest border, the route most closely associated with Mexican criminal networks. Additionally, Mexican authorities seized around 55.3 tons of methamphetamine in 2021.<sup>53</sup>

Prices have dropped in similar fashion. In 2016, a kilogram of wholesale methamphetamine in the United States cost about \$17,000;<sup>54</sup> in 2022, the cost was closer to \$3,500.<sup>55</sup> This is in line with the DEA's estimates that most of

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49 Note: This number was extrapolated from data sources that were discontinued. See: G. Midgette, S. Davenport, J.P. Caulkings, B. Kilmer, "What America's Users Spend on Illegal Drugs 2006-2016," Rand Corporation, 2019.

50 Substance Abuse and Mental Health Services Administration, "National Survey on Drug Use and Health," 2016

51 United States Customs and Border Protection (CBP), "Written testimony of CBP Acting Executive Assistant Commissioner for Operations Support Robert Perez for a Senate Committee on Homeland Security and Governmental Affairs, Permanent Subcommittee on Investigations hearing titled 'Stopping the Shipment of Synthetic Opioids: Oversight of U.S. Strategy to Combat Illicit Drugs,'" 25 May 2017.

52 United States Customs and Border Protection (CBP), "Drug Seizure Statistics," 2023.

53 Data provided by the Mexico Attorney General's Office.

54 Gregory Midgette, et al., "What America's Drug Users Spend on Illegal Drugs, 2006-2016," Rand Corporation, 2019.

55 InSight Crime interviews, counterdrug agents in California, United States, July 2022.

the methamphetamine available in the United States is produced in Mexico and smuggled through the Southwest border.<sup>56</sup> Furthermore, the DEA says that its seizures of methamphetamine also rose even though there has been a registered decline in the number of domestic labs found in the United States, which would point to a growing MPM market share<sup>57</sup> (although it is not enough by itself to calculate the relative dominance of the Mexican producers).

Fentanyl consumption, by contrast, is much more difficult to estimate. This is because it is consumed in such trace amounts, often unwittingly by users who are taking other drugs or via counterfeit pills, which show no signs of being adulterated by the synthetic opioid. Authorities are also just figuring out how to test for it or do not have the will or the equipment to test for it. In addition, it is so cheap and abundant that trafficking groups are experimenting across the drug spectrum, leaving us without any clear pattern of its use or employment. What is obvious, mostly from drug overdoses<sup>58</sup> and law enforcement fentanyl encounters,<sup>59</sup> is that fentanyl use has risen dramatically.



A 4-gram packet of sugar -- the amount of fentanyl a major user would consume in a year (Photo: InSight Crime)

Yet, the only reliable recent estimate of consumption we have is from 2022, when the United States Commission on Combating Synthetic Opiate Trafficking (CCSOT) calculated that between 3.75 and 5 tons of pure fentanyl were consumed each year in the United States.<sup>60</sup> Although it sounds like a lot, consider that cocaine consumption hovers near 100 tons per year.<sup>61</sup> To put the trace amounts into perspective, the CCSOT analyzed how much a major fentanyl user might consume in a typical year. Its conclusion: it would fit into a 4-gram packet of sugar.<sup>62</sup>

The smaller amounts of drugs also make it more difficult to disaggregate production by source nation. This is a sensitive topic, which we will tackle in more detail later in this report. Suffice to say there is a consensus amongst US officials and US-based analysts that MPF is now dominant in the US market,

56 United States Drug Enforcement Administration (DEA), “National Drug Threat Assessment,” 2020.

57 Ibid.

58 United States Center for Disease Control (CDC), “Fentanyl,” no date.

59 National Forensic Laboratory Information System (NFLIS), “2020 Annual Report,” September 2021.

60 United States Commission on Combating Synthetic Opiate Trafficking (CCSOT), “Final Report,” 2022.

61 Gregory Midgette, et al., “What America’s Drug Users Spend on Illegal Drugs, 2006-2016,” Rand Corporation, 2019.

62 US Commission on Combating Synthetic Opioid Trafficking (CCSOT), “Technical Appendixes,” February 2022.



superseding the fentanyl produced in China.<sup>63</sup> There is a lot of data to back up this assertion. However, in various interviews, numerous Mexican officials told InSight Crime they had not found evidence of significant amounts of fentanyl synthesized in Mexico. In public pronouncements, Mexico's President Andrés Manuel López Obrador has also doubled down on this position.<sup>64</sup> In general terms, we think there is significant production of fentanyl in Mexico. It is just much harder to estimate than methamphetamine.

It is also harder to estimate pure fentanyl seizures. That is because authorities on both sides of the border do not provide information on the purity of the seizures. We can, however, make a good-faith estimate using recent seizure data. In Mexico, authorities seized around 5 million counterfeit pills in 2021. If we assume each pill weighs 30 milligrams and has a 5% concentration of fentanyl, which one former Mexican official corresponds to the reality, then this is equivalent to approximately 7.5 kilograms of pure fentanyl. Meanwhile, US authorities seized 5 tons of fentanyl powder across the country in 2021. If we assume that this powder had 10% purity, as was reported by the CCSOT, then the seizures in both countries amount to 507.5 kilograms.

Given these gaps in data and a lack of consensus between the two governments, any estimation of the relative importance of MPM and MPF in the US market -- and therefore of the production required to meet the median demand and compensate for seizures -- is best expressed as a range. This model, therefore, considers three scenarios: 60%, 75%, and 90% market share for both MPM and MPF. It then adds the relevant seized amounts to estimate the minimum total production necessary, and it assumes producers do not keep significant inventories for either MPM or MPF, an assumption that can be modified later should new evidence warrant it.

With these assumptions, it is possible to estimate that Mexican criminal networks produce between 291.16 tons and 434.4 tons of MPM; and produce between 3 tons and 4.5 tons of pure fentanyl. (See below)

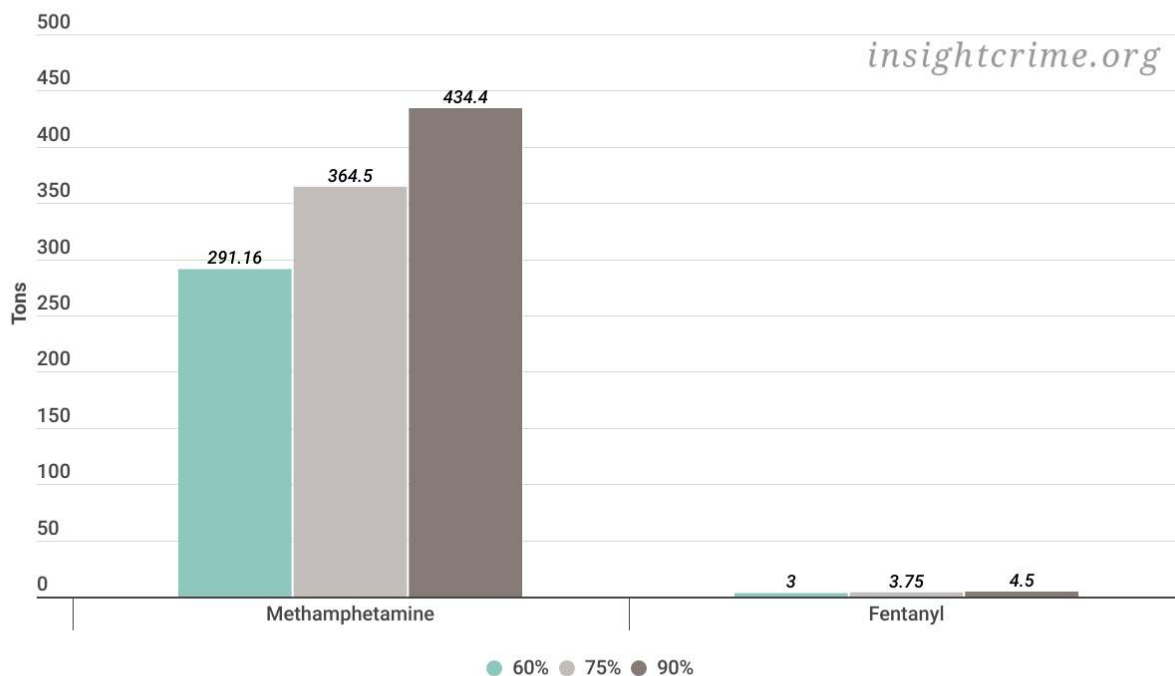
These estimates are, as mentioned, somewhat uncertain given the varying quality of the underlying data and consumption estimates. In fact, in the case of fentanyl, the previous scenarios may overestimate the total level of production significantly due to two factors. First, there is no data about the relative purity of fentanyl seizures in Mexico or the United States. Second, given the lethality of single-digit milligram doses of pharmaceutical-grade fentanyl, the total demand for fentanyl may be overestimated. Even at the lower end of the estimate for consumption, 3.5 tons, more than 1.75 billion potentially lethal doses would be consumed each year.<sup>65</sup>

63 United States Commission on Combating Synthetic Opiate Trafficking (CCSOT), "Final Report," 2022.

64 Mexican Presidency, "Versión estenográfica. Conferencia de prensa del presidente Andrés Manuel López Obrador del 9 de marzo de 2023," 9 March 2023.

65 Health authorities say 2 milligrams of fentanyl qualifies as a potentially lethal dose.

## Estimated Methamphetamine and Fentanyl Production in Mexico, per Level of US Market Share (Tons)



May 2023

Sources: Estimates based on data from CBP, DEA, UNODC, RAND, and the Mexican Attorney General's Office

Despite these issues, the model gives us a broad sense of demand, which will allow us to approximate of precursors they require to produce these drugs at an industrial scale, the subject of our next model.

### Production-Based Model

Having estimated an approximate level of production of MPM and MPF, it is possible to do a production-based model for precursors. This is, as will become clear, a complex task, as there are plenty of potential chemicals available, and the actual yield of illegal labs is mostly unknown, so we will not be able to make estimates of each of the chemicals mentioned in Part I. Still, drawing mostly from the International Narcotics Control Board's ratios of how much precursors and pre-precursors are needed to produce a single kilogram of methamphetamine and fentanyl, we can make some approximations. We can also illustrate that, by tracking these chemicals, authorities can find patterns that assist in understanding the possible flow of these chemicals to criminal networks. Ultimately, however, the sheer variation of the products and usage also points to the policy dilemma of having to balance legitimate trade needs with import bans of dual-use chemicals.

In the case of methamphetamine production, developing these estimates for precursors is relatively straight-forward since there is a consensus in the international community that P2P is currently the primary precursor.<sup>66</sup> P2P also represents a useful standard in terms of determining ratio of precursor-to-finished product. The INCB, in its 2022 report on precursor chemicals, estimates that a typical method would require roughly a 1.5-to-1 proportion of P2P to methamphetamine.<sup>67</sup> Using our previous demand-based model estimates, the estimated amount of P2P required would then range from 437.4 to 651.6 tons.



A container with P2P found in a clandestine laboratory in Sinaloa (Photo: InSight Crime)

From here, it gets more complicated. Even though P2P has long been a scheduled substance, there is reason to believe it is available in the Mexican black market. Mexico is consistently among the top countries with the highest number of P2P seizures,<sup>68</sup> which would be consistent with its position as a major producer of methamphetamine. Most seizures of P2P used in manufacturing MPM occur in clandestine labs rather than at ports of entry, indicating that the majority of the substance is synthesized domestically rather than being imported as a finished product. This finding would coincide with experts and law enforcement InSight Crime consulted, who say Mexican criminal groups have been clandestinely manufacturing P2P for years.<sup>69</sup>

There are several ways to determine how much of this P2P is clandestinely produced in Mexico and how much is imported or diverted. One way would be to track the movement of pre-precursors. Let's consider two pre-precursors widely used in the method outlined in Part I: phenylacetic acid and acetic anhydride. According to the INCB,<sup>70</sup> to produce one liter of P2P, you would need 1.2 kilograms of phenylacetic acid and 1.8 liters of acetic anhydride. If Mexican criminal networks were only using this method, it would be necessary to source 525 to 782 tons of phenylacetic acid and 787 to 1,173 tons of acetic anhydride to meet the methamphetamine production quota estimated above.

66 EMCDDA-Europol, "EU Drug Market: Methamphetamine," 2022; United States Drug Enforcement Administration (DEA), "National Drug Threat Assessment 2020," 2021.

67 International Narcotics Control Board (INCB), "Precursors and Chemical Substances Frequently Used in the Illicit Production of Narcotic Drugs and Psychotropic Substances," 9 March 2023.

68 Ibid.

69 InSight Crime interviews, former UNODC officer, Mexico City, Mexico, 29 June 2022; former Mexican intelligence officer, Mexico City, Mexico, 29 June 2022; officer from Mexico's National Guard, Mexico City, Mexico, 21 July 2022; United Nations Office on Drugs and Crime (UNODC), "Synthetic Drugs and New Psychoactive Substances in Latin America and the Caribbean 2021," September 2021

70 International Narcotics Control Board (INCB), "Precursors and Chemical Substances Frequently Used in the Illicit Production of Narcotic Drugs and Psychotropic Substances," 9 March 2023.

The example is illuminating for many reasons. To begin with, it provides a possible path for authorities to track chemicals. Once they know the typical patterns of consumption, and how imports and local production satisfy that consumption, they can look for anomalies. As noted in the recommendations section below, some of this network analysis can assist in regulating the chemical industry.

For instance, consider the aforementioned chemicals. The amount of phenylacetic acid mentioned would be equivalent to 134% of Mexico's legal import total for that chemical for 2021.<sup>71</sup> It would therefore be challenging to obtain this chemical without raising suspicion, indicating that criminal organizations may be synthesizing it in clandestine laboratories, smuggling it in significant quantities, or both. Conversely, the amount of acetic anhydride mentioned represents only 4% of the total legally imported in Mexico in 2021<sup>72</sup> and 1% to 1.4% of the country's total production,<sup>73</sup> making it more likely that this chemical is being diverted from import stocks or local production.<sup>74</sup>

Doing this exercise with an essential chemical for P2P yields largely the same result. In 2021, seizures of acetone, for example, increased significantly, which suggests that the method of using acetone as a solvent is being employed more frequently. Since the latest INCB report does not provide an estimate for the yield of acetone used in methamphetamine production, we used a P2P-production method widely available on the internet.<sup>75</sup> According to that method, it would take about 9 kilograms of acetone to produce 1 kilogram of P2P. Assuming all P2P in Mexico was produced using this method, traffickers would have to source between 3,936 and 5,864 tons of acetone, which is almost a quarter of the legal imports of acetone in 2021.<sup>76</sup> This too would presumably make any attempt at diversion very noticeable leading to the preliminary conclusion that Mexican criminal organizations are sourcing acetone locally, smuggling it into the country, or both.

Furthermore, the results suggest that criminal networks may be directly sourcing precursors, including highly regulated ones. Take the case of methylamine, a precursor for methamphetamine. The production of one kilogram of methamphetamine, for example, requires just 1.4 kilograms of methylamine, according to the same recipe cited above.<sup>77</sup> This would mean

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71 Data provided by Mexico's National Customs Agency.

72 Ibid.

73 Data provided by Mexico's National Association of the Chemical Industry.

74 To a certain extent, this scenario has already played out in Mexico. In 2011, there was a massive seizure of a phenylacetic acid derivative. As a result, Mexico increased its regulatory efforts, and the criminal organizations shifted their tactics. These days, seizure data in Mexico shows there is demand for a wide variation of pre-precursors that help produce P2P, suggesting a significant level of experimentation.

75 Rhodium, "[Synthesis of Phenyl-2-Propanone \(P2P\)](#)," no date.

76 Data provided by Mexico's National Customs Agency.

77 Rhodium, "[Synthesis of Phenyl-2-Propanone \(P2P\)](#)," no date.

that criminal groups would need between 408 and 608 tons of methylamine to make their MPM. While this is probably too much to source directly -- as it represents about 17% of the legal imports of the derivatives of the product<sup>78</sup> -- it is conceivable that criminal groups are sourcing large quantities. As will be discussed in a later section, some of this sourcing may occur through a hybrid method, in which it is obtained legally overseas and then smuggled into Mexico with relative ease behind a third-party façade. Furthermore, the lack of visibility on the local production and provision of some of the required precursors and pre-precursors might incentivize the diversion of local production.

A similar exercise can be done with fentanyl. According to the INCB, the ANPP to fentanyl yield is 1.3 to 1. This would mean that criminal networks need between 4 to 6 tons of ANPP. If we move back one step in the process to a pre-precursor, like 4-AP, and use the Gupta method, the yield is almost one-to-one to produce ANPP; this is also the case for the Siegfried method, which uses the pre-precursor NPP and has a yield of one-to-one to produce ANPP. In sum, criminal networks could obtain some combination of these three chemicals to synthesize the amount of fentanyl necessary to satisfy their portion of the US market. As we will explain later in the report, this appears to be the most accepted working theory for how Mexican criminal organizations are synthesizing fentanyl: at the late stages of the process, rather than from scratch.

However, here is where the picture gets murkier and partially helps to explain the lack of consensus among authorities regarding where fentanyl synthesis happens. ANPP, NPP, and 4-AP are highly regulated. There is also no data on domestic production or legal imports in Mexico. And while seizures of fentanyl in Mexico and along the US border have skyrocketed in recent years, seizures of these precursors and pre-precursors -- as well as other pre-precursors and essential chemicals needed to produce fentanyl -- remain rare in Mexico. In 2019, for example, Mexico accounted for just 10% of the total worldwide seizures of ANPP,<sup>79</sup> and in 2022 the country did not report any seizures to the INCB.<sup>80</sup> What's more, as will be explained below, the prices for some of the precursors and pre-precursors on the open market are exorbitant, which would incentivize criminal networks to obtain finished fentanyl. In other words, major gaps and contradictions in the data still exist.

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78 Data provided by Mexico's National Customs Agency.

79 International Narcotics Control Board (INCB), "Precursors and Chemicals Frequently Used in the Illicit Manufacture of Narcotic Drugs and Psychotropic Substances," 2020.

80 International Narcotics Control Board (INCB), "Precursors and Chemicals Frequently Used in the Illicit Manufacture of Narcotic Drugs and Psychotropic Substances," 2022.



## Scope of Profits

Given the limitations established in the production-based model, estimating the scope of profits in this market is difficult. But if criminal organizations sourced their precursors and pre-precursors from the open market, their costs may be low relative to potential profits. Nonetheless, there may be other costs associated with illegal operations and obtaining an illegally-sourced precursor, pre-precursor, or essential chemical. There may also be a significant premium associated with illegal sourcing, but it is still likely very low relative to the product's final price.

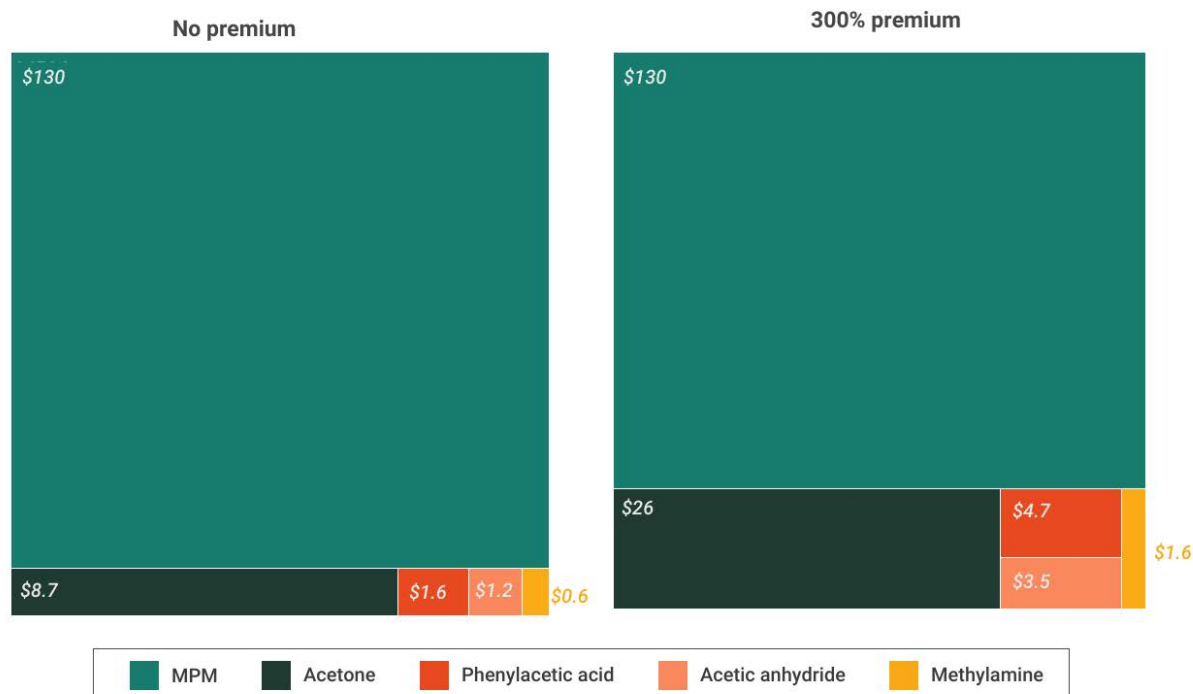
Consider the methamphetamine market and the chemicals cited in the examples in the previous section. According to the data provided by the Mexican National Customs Agency (Agencia Nacional de Aduanas de México – ANAM), the average price for a legally imported ton of phenylacetic acid in 2021 was \$2,000; the price for a legally imported ton of acetic anhydride averaged \$1,000; and the price for a ton of acetone was less than \$1,500. And while the price of methylamine was not available, the value of derivatives like dimethylamine and trimethylamine was around \$868 per ton, according to ANAM's database.

To put these costs into perspective, a ton of MPM in Mexico can sell for between \$200,000 to \$400,000, according to interviews conducted by InSight Crime. From an MPM producer's perspective, even if we assume illegal sourcing includes a 300% surcharge, the cost of the pre-precursors and essential chemicals would still be a fraction of the wholesale cost of the finished product in Mexico. What's more, the final product becomes even more valuable once it crosses the US border.

While the value of the illegal precursor market would be relatively small compared to the value of the MPM market in Mexico -- and certainly in the United States -- it would still be significant for illegal brokers. Based on the previous MPM precursor-cost scenario and the previous production estimates, the illegal acetone market could be worth between \$8.7 million and \$26 million a year for the maximum estimated amount of MPM produced. In the same scenario, the methylamine market could range from \$528,000 to \$1.6 million; the phenylacetic acid market could range from \$1.6 million to \$4.7 million; and the acetic anhydride market could range from \$1.2 million to \$3.5 million. These revenues suggest there would be a vibrant market as it relates to precursors associated with methamphetamine production. (See graphic below)



## Illicit Market Value of Chemical Substances Used in Methamphetamine Production in Mexico (millions, USD)



insightcrime.org

May 2023

Source: Estimates based on data from Mexico's National Customs Agency and InSight Crime interviews with criminal actors

The MPF precursor market appears to be much smaller. Acetic acid, used as an essential chemical in the Gupta method, had an average import price of \$3,300 per ton in 2021, according to the ANAM.<sup>81</sup> About 4 tons of acetic acid would be required to produce a ton of MPF using the Gupta method, according to the original recipe published by the Indian academics.<sup>82</sup> This means the maximum size of the illegal market for acetic acid could range from \$118,800 to \$356,400, assuming all fentanyl was synthesized through the Gupta method.

If we consider a much more controlled precursor such as NPP, the scenarios become more complex. The price of NPP varies significantly across the global licit market. However, if we take one recent price of \$144 for 10 grams of NPP, which we obtained from Chemical Book,<sup>83</sup> the NPP market would be worth as much as \$154 million. Assuming all MPF was produced with the Siegfried method and considering a 300% premium, black market NPP would be worth \$462 million, which is a considerable market by any standards

81 Data provided by Mexico's National Customs Agency.

82 Gupta, P. K. et al, "A method for the preparation of fentanyl," European Patent Office, 2009.

83 Chemical Book, "Nadolone phenylpropionate," 21 December 2022.

However, there is little clarity regarding the prices of these more controlled substances on the black market. The open market prices we found for ANPP analogues, 4-AP analogues, and norfentanyl would make fentanyl production prohibitively expensive in Mexico. However, the Commission on Combating Synthetic Opioid Trafficking analyzed online prices and asserted that precursor providers made between \$1 million and \$10 million from the sale of precursors to Mexican criminal networks.<sup>84</sup> Specifically, the Commission estimated the production costs at a mere \$100 per kilogram of fentanyl, which is a small market compared to working with methamphetamine precursors.

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<sup>84</sup> United States Commission on Combating Synthetic Opioid Trafficking (CCSOT), “[Final Report Technical Appendixes](#),” February 2022.

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## Part III – The Supply Chain

As mentioned in previous reports,<sup>85</sup> the supply chain for illicit synthetic drugs differs significantly from traditional plant-based drug production and distribution chains, underscoring the need for a revamped law enforcement and policy posture well beyond a “cartel” focus. These disparities arise from differences in the production, marketing, and distribution of raw materials to producers, as well as the quantities necessary to produce comparable physical and psychoactive effects on users. In both regards, synthetic drugs offer unlawful producers and distributors a variety of advantages concerning costs, risks, and profits. Moreover, the process entails fewer individuals, hence reducing the likelihood of detection.

In general terms, the market has a more horizontal structure than a vertical one. This implies that, in the medium term, it could challenge the conventional hierarchical and monolithic model of criminal organizations that have been in control of the plant-based drug market for a long time. It may also allow for a less vertically integrated market. This possibility has significant implications for the current supply chain, and it will be explored in more detail below.

Still, it is critical to note some subtle, albeit important differences in the way we see this supply chain versus how others have characterized it. Most notably, the Commission on Combatting Synthetic Opioid Trafficking (CCSOT) described this supply chain as a “pyramid” with few “producers and chemists” at the top and many “retailers” at the bottom.<sup>86</sup> The Commission does not offer many details about how it sees the chemical production industry and emphasizes that criminal groups exert tight control over the synthesis phase of the process.

In our research, however, we found that the chemical-production phase remains a vast well of potential producers, mainly based in China but increasingly from India; that many other essential chemicals needed come from US- and European-based companies, as well as Mexican companies; that independent “chemists” work for one or numerous criminal organizations;

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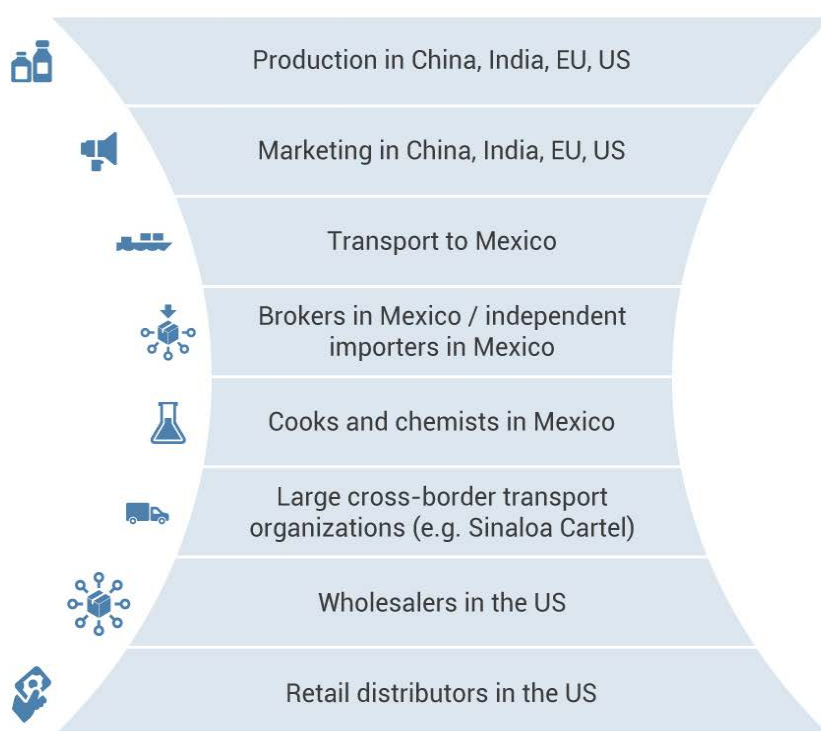
85 See, among others: United States Commission on Combatting Synthetic Opioid Trafficking, “[Final Report](#),” February 2022; Vanda Felbab-Brown, “[China and Synthetic Drugs Control: Fentanyl, Methamphetamine, and Precursors](#),” Brookings Institute, March 2022.

86 United States Commission on Combatting Synthetic Opioid Trafficking, “[Technical Appendixes](#),” February 2022.

that -- notwithstanding the dominance of two criminal organizations in the drug transportation sector -- the number of criminal groups producing synthetic drugs seems to be increasing, not decreasing.

The result is more of an hourglass, rather than a pyramid.<sup>87</sup> (To be fair, the Commission's remit did not include the methamphetamine market.) This hourglass is very dynamic, especially at the top -- where a huge number of potential chemical producers can provide a vast array of chemicals, which serve the same ends -- and at the bottom, where the low barriers of entry mean many criminal actors can participate.

## Synthetic Drug Supply Chains



March 2023

*insightcrime.org*

Sources: InSight Crime interviews with law enforcement and criminal actors in Mexico.

The top of this hourglass is broken into layers, with the essential chemicals being far more available than the pre-precursors and precursors. The amounts of raw materials needed are also minuscule, and the geographic reach of the

<sup>87</sup> Notably, the commission argues that the hourglass is a good representation of the traditional, organic drug market. See: United States Commission on Combatting Synthetic Opioid Trafficking, “[Technical Appendixes](#),” February 2022.

pool of potential suppliers is vast. Contrast this with the plant-based drug market -- where the number and geographic areas of potential raw materials suppliers have been limited over decades -- and the advantages of synthetic drug production become even more evident.

In addition, we found important differences between the methamphetamine industry and the fentanyl industry. In some respects, the methamphetamine industry is 15- to 20-years ahead of the fentanyl industry. The methamphetamine industry has been experimenting with different methods, but consistently produces some of the purest and most potent drugs in the world. As a result, it has a wider pool of chemical sources than the illicit fentanyl industry, which is in its early stages of development and production methods in comparison. Yet fentanyl has something that methamphetamine does not: its inherent potency. Due to the low amount required to satisfy current demand, long-standing producers in countries like China and India have an incentive to maintain these illegal production streams, a prospect that we will explore in more detail below.

Fentanyl provides greater opportunities for a larger number of criminal actors on the downstream side. Criminal networks have invested years of innovation to bring methamphetamine to scale, leading to a significant drop in prices. On the other hand, fentanyl has been brought to scale, and prices have dropped in a similar proportion, without any substantial investment or innovation from the major criminal organizations associated with it. This “democratization” of the fentanyl drug industry has implications for the precursor chemical supply chain and potential policy responses, both of which we will explore below.

The private sector also becomes a key player in this market, much more than it has in the plant-based drug trade, where its involvement rarely stretches beyond money laundering and providing chemicals for processing drugs like cocaine and heroin. In this case, the private sector represents the primary source of all raw ingredients needed to produce synthetic drugs. This too, has mammoth implications for policy, which we will explore in the final part of the report.

But the private sector is not a monolith. It is a complex and multilayered network of actors of different sizes and incentives. Their involvement in the supply chain of precursor chemicals for synthetic drug production varies. In general terms, the companies closer to illicit drug production -- both geographically and network-wise -- are more likely to be aware of their involvement in the illicit market. Conversely, those that are farther away have greater scope for plausible deniability.

On one side, there are private entities that lack incentive to participate in this illicit market and may not be aware of the possible diversion of chemicals they are handling. These include large transnational chemical or pharmaceutical companies, as well as large transport or shipping companies. Such companies

move large volumes of chemicals and other products, generating millions of dollars in profits that far exceed the revenue they could obtain from diverting small – or even minuscule – quantities for illicit production.

However, there may be other companies that have stronger incentives or are even coerced to divert chemical products. These include medium-sized chemical-production companies in Mexico, China, India, and other source countries; local chemical distributors in Mexico; Chinese companies dedicated to marketing and selling regulated chemicals; and import-export companies in Mexico. As we will explain below, these seem to be the type of licit actors who authorities have mostly identified in chemical diversion cases and should be targets moving forward.

On the other end of the spectrum, there are companies that are specifically created to enable the trafficking of chemical substances for illicit drug production and, therefore, are more actively involved in the illicit market. These include front companies in Mexico created to import chemical substances and chemical production companies in China that illicitly produce regulated or scheduled substances.

The positions that companies have on this spectrum are not fixed nor is their (indirect) participation in the illicit market necessarily permanent. As will be explained in this section, criminal networks resort to a variety of methods to obtain the necessary supplies to produce synthetic drugs. It is that variety which may present the greatest challenge for authorities trying to mitigate this trade.

In order to address all the issues and nuances mentioned above, we have divided precursor supply chain into three stages: 1) producing precursors, pre-precursors, and essential chemicals; 2) marketing and transporting the chemicals to Mexico; 3) sourcing the chemicals in Mexico. The following sections are descriptions of our findings at each of these stages.

## **Stage 1: Producing Precursors, Pre-Precursors, and Other Essential Chemicals**

Most scheduled and regulated precursors and pre-precursors used to manufacture synthetic drugs in Mexico come from the People's Republic of China<sup>88</sup> and India.<sup>89</sup> There are two main reasons for this: First, some precursors and pre-precursors that are controlled or monitored in Mexico are not controlled or are not strictly regulated in China and India; second,

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88 Vanda Felbab-Brown, “China and Synthetic Drugs Control: Fentanyl, Methamphetamine, and Precursors,” Brookings Institute, March 2022; United States Commission on Combatting Synthetic Opioid Trafficking, “Final Report,” February 2022.

89 InSight Crime interview, SEMAR officer, Mexico City, Mexico, 6 December 2022



the chemicals are cheaper. Indeed, even if a chemical can be synthesized in Mexico, it is often cheaper and easier to import it from these countries,<sup>90</sup> especially given the small quantities needed to satisfy demand.

There are other countries that appear to be sending essential chemicals to Mexico, which Mexican criminal groups access to produce synthetic drugs. These include companies based in Germany, Belgium, and the United States. All of these countries have a vibrant chemical trade with Mexico. Chemicals from these countries appear to be entering Mexico legally with established chemical companies or are purchased by front companies operating in Mexico. Once in Mexico, small amounts of the chemicals are diverted or stolen, which assists synthesis, bonding, and production of illicit drugs.<sup>91</sup> Mexican companies also produce less-regulated chemical substances that are purchased and used in clandestine laboratories in large quantities.<sup>92</sup>

### **China: The Production Hub**

China has the largest chemical industry on earth, with as many as 160,000 chemical companies operating in the country, according to some US government estimates.<sup>93</sup> These companies form an integral part of the country's economy, generating more than \$1.5 trillion in worldwide sales.<sup>94</sup> China's stranglehold on the early stages of pharmaceutical and organic chemical products contributes to this.<sup>95</sup> The country's pharmaceutical industry alone is a \$164 billion business, by some estimates.<sup>96</sup> These companies provide direct and indirect employment to millions, pay billions of dollars in taxes, connect China to some of the largest companies and industrial hubs on the planet, and form the backbone of numerous local Chinese economies, some of which have transitioned, or are transitioning, from other industries to the chemical industry.

Some of these companies have also been connected to criminal activities. Chinese manufacturers are among the world leaders in counterfeit drugs, in particular those related to lifestyle drugs such as weight loss and diet supplements.<sup>97</sup> For years, legitimate, semi-legitimate, and illegal producers have honed online direct sale methods to sell their products to customers in

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90 InSight Crime interview, director of the Chemistry Faculty at a university in Mexico City, Mexico, 27 June 2022.

91 InSight Crime telephone interview, expert on European drug markets, 8 December 2022.

92 InSight Crime interview, methamphetamine and fentanyl trafficker in the Tierra Caliente region, Michoacán, Mexico, 13 December 2022.

93 United States Department of State: Bureau of International Narcotics and Law Enforcement Affairs, "2014 International Narcotics Control Strategy Report (INCSR)," March 2014.

94 European Chemical Industry Council (CEFIC), "The European Chemical Industry - A Vital Part of Europe's Future: Facts & Figures 2022," 1 December 2022.

95 US-China Economic and Security Review Commission, "2014 Report to Congress," November 2014.

96 IBIS World [estimate](#), as of January 2023.

97 US-China Economic and Security Review Commission, "2014 Report to Congress," November 2014.

the United States, among other markets.<sup>98</sup> These companies employ several strategies to avoid scrutiny, including “show and shadow factories,” producing and packaging the drugs in different locations, and falsifying packaging.<sup>99</sup>

The experience has served as a template for the type of illegal production and sales happening in the synthetic drug and precursor markets. Undoubtedly, China has long been a natural hub of synthetic drugs and precursor chemical production. However, facing international pressure following a spike in synthetic opioid-related deaths in the United States and elsewhere, China’s government has taken significant steps to better regulate fentanyl, fentanyl analogues, and numerous chemicals associated with methamphetamine and fentanyl production, especially since 2019.

At first glance, it appears these measures have made an immediate impact on the market, according to law enforcement sources and experts consulted for this report.<sup>100</sup> Since 2019, the majority of China-based companies and vendors stopped openly producing fentanyl and fentanyl analogues. There is also some evidence to suggest the manufacturing of fentanyl has slowed considerably in China and picked up in Mexico. This includes a steep drop in the size of airborne seizures of fentanyl arriving to the United States, a significant drop in fentanyl seizures at international mail facilities, and a steep rise in fentanyl seizures along the US-Mexico border.<sup>101</sup>

Still, it is unclear whether the Chinese have given up completely on fentanyl production. This may be partly due to the difficulty of regulating such a large chemical industry. In China, criminals who traffic drugs, including fentanyl, may face notably harsh sentences, such as the death penalty. However, public crackdowns come in waves and tend to be politically motivated, at least in part.<sup>102</sup> And, as noted, there is a long history of show and shadow factories, among other evasive tactics. Even “successful” crackdowns on drug production, such as Chinese law enforcement efforts to quell clandestine methamphetamine production, do not always mean that the criminal groups are dismantled, or that their operations have been disrupted over the medium- or long-term. What’s more, to date there are no known legal cases in China against the illegal production of precursor chemicals or synthetic drugs.

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98 Ibid.

99 Ibid.

100 This coincides with findings from the United States Senate [Commission on Combatting Synthetic Opioid Trafficking](#) as well as other expert and law enforcement-informed reports such as the Brookings Institute [report](#) on synthetic drugs coming from China.

101 United States Commission on Combatting Synthetic Opioid Trafficking, “[Technical Appendixes](#),” February 2022.

102 Vanda Felbab-Brown, “[Fentanyl and Geopolitics: Controlling opioid supply from China](#),” Brookings Institute, July 2020.

In summary, despite China's push to more strictly police these chemicals, China remains the production hub for precursors used to manufacture synthetic drugs and possibly still a source for fentanyl itself, albeit most likely in a reduced capacity. The evidence for the former comes from the marketing efforts of these chemical companies and third-party vendors. (See next section) The evidence for the latter includes continued seizures of inbound, airborne fentanyl in the United States,<sup>103</sup> the direct sales of fentanyl still found on the internet seemingly related to Chinese production, and interviews with acting and former Mexican officials who claim that air and maritime traffic, especially to international airports in Tijuana, Toluca, and Mexico City, and ports on the Pacific coast, are a principal source of pure fentanyl.

Without delving into the fierce political debate surrounding the question of whether Mexican criminal actors synthesize fentanyl in Mexico, it is important to note that Mexican seizure data suggests that only a small percentage of pure fentanyl is still entering Mexico. Fentanyl seizures at the Mexico City airport represented just 7% of the total seizures of the drug in the country from 2020 to June 2022, according to data shared with InSight Crime by the National Guard. Moreover, the navy only registered three fentanyl seizures during that same period at Pacific ports, and ANAM only registered two instances of fentanyl seizures in 2022 (a total of 8,000 pills) coming in through the Toluca Airport. While Mexican criminal networks are agile and have undoubtedly adjusted, this data does not support the Mexican government's assertion that Mexican criminal groups are simply importing finished fentanyl, pressing it into counterfeit pills, and then transporting and selling it in the United States.

In either case, the principal source of chemicals is China. To better understand and profile the Chinese chemical industry's capabilities, we conducted an analysis of hundreds of chemical companies websites and marketing sites. Our research revealed a tightly bound, geographically-concentrated sector. In our Clearnet research, for example, we documented 188 companies that produce fentanyl precursors and pre-precursors, as well as methamphetamine pre-precursors. Given the estimated size of the illicit precursor market -- which ranges from \$10 million to \$20 million sales per year<sup>104</sup> -- we do not believe that the number of companies surpasses 500.<sup>105</sup>

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103 United States Commission on Combatting Synthetic Opioid Trafficking, "[Technical Appendixes](#)," February 2022.

104 United States Commission on Combatting Synthetic Opioid Trafficking (CCSOT), "[Technical Appendixes](#)," February 2022.

105 As a reference point, it should be noted that the Chinese pharmaceutical industry does not have many more companies even registered. The United States Senate [Commission on Combating Synthetic Opioid Trafficking](#), citing market research and stock market trend analyses, said there were between 2,000 and 5,000 firms.

In fact, the number of companies could be far lower, due to the multi-layered nature of the industry. Complex business and family arrangements often obscure ownership and connections between companies. One clan we tracked is in Guangzong, Hebei. The Guangzong Network, as we are calling it, is made up of several clans who have access and may even control several chemical-production facilities. They also have at least 60 distribution services responsible for advertising, sales, and distribution. The companies within this network often share offices, websites, social media channels, email accounts, and employees, facilitating seamless continuation of operations in case of one company's sanction or shutdown.

We are not the first to notice them. In December 2021, the US Treasury Department designated two companies that are part of this network: Hebei Atun Trading and Hebei Huanhao Biotechnology.<sup>106</sup> Both companies were still operating as of March 2023. Additionally, we found that at least four companies that are part of the Guangzong Network were commercializing fentanyl analogues even after China's ban in 2019. In November 2022, we noted a distributor selling carfentanil, a synthetic opioid that is 100 times more potent than fentanyl. (See below)

While some reports suggest these are diversified companies,<sup>107</sup> our research indicates the companies are highly focused on the precursor and pre-precursor market and are extremely agile. Many of these gray-market companies were previously making and selling fentanyl and fentanyl analogues. But after the Chinese government established a blanket ban of many of these substances in 2019, several companies shifted to selling gray-market chemicals. These include novel opioids, novel benzodiazepines, fentanyl precursors, and methamphetamine and fentanyl pre-precursors.<sup>108</sup> Others seem to have continued to produce scheduled substances.

These chemicals are produced legally and illegally. Legally, chemical companies in China produce fentanyl pre-precursors -- mainly 4-AP, 4-Piperidone, 1-BOC-ANPP, and 1-BOC-4-Piperidone -- as well as pre-precursors for the production of methamphetamine -- namely APAAN, Phenyl-2-nitropropene (P2NP), and phenylacetic acid.<sup>109</sup> Illegally, they produce fentanyl and fentanyl analogues, fentanyl precursors, and methamphetamine precursors. In addition to the strategies mentioned above to avoid scrutiny while manufacturing counterfeit drugs, licensed

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106 United States Treasury Department, "[Issuance of Executive Order Imposing Sanctions on Foreign Persons Involved in the Global Illicit Drug Trade; Counter Narcotics Designations and Designation Updates](#)," 15 December 2021.

107 Ben Westhoff, Fentanyl Inc. How Rogue Chemists Are Creating the Deadliest Wave of the Opioid Epidemic, Atlantic Monthly Press: 2019.

108 Vanda Felbab-Brown, "[China and Synthetic Drugs Control: Fentanyl, Methamphetamine, and Precursors](#)," Brookings Institute, March 2022.

109 Lauren Greenwood and Kevin Fashola, "[Illicit Fentanyl from China: An Evolving Global Operation](#)," US-China Economic and Security Review Commission, 24 August 2021.

Chinese chemical producers are known to produce chemicals they are not licensed to produce; others employ day shifts for the production of legitimate chemicals and night shifts to produce these gray-market chemicals.<sup>110</sup>

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 FUB-AMB,FUB-AKB,mdmb-fubinaca,  
 5F-ADB, 5f-mdmb2201, 5f-mdmb-pinaca,5f-amb  
 bk eb bmdp 4fadb, 5fadu,4-cdc,  
 4-EMC, 4-CEC,4-OPRC, MMBC,p.php  
 4F-PET,4F-MPH,4F-PBP4-MPQ,4-CDC,4FIBF,  
 5apb, 4fpvp, 4fphp, 4hexedrone ,mexedrone,  
 adrafinilA,PPP4cl-pvp,4CL-PET,2NMC,  
 BK-EBDP,BK-MAPB,BK-2C-B,2f-dck,U48800, bmk pmk,5-BPD,5-Meo-nept,alprazolam, Halcinonide,ETIZOLAM, clonazepam, Flubromazolum

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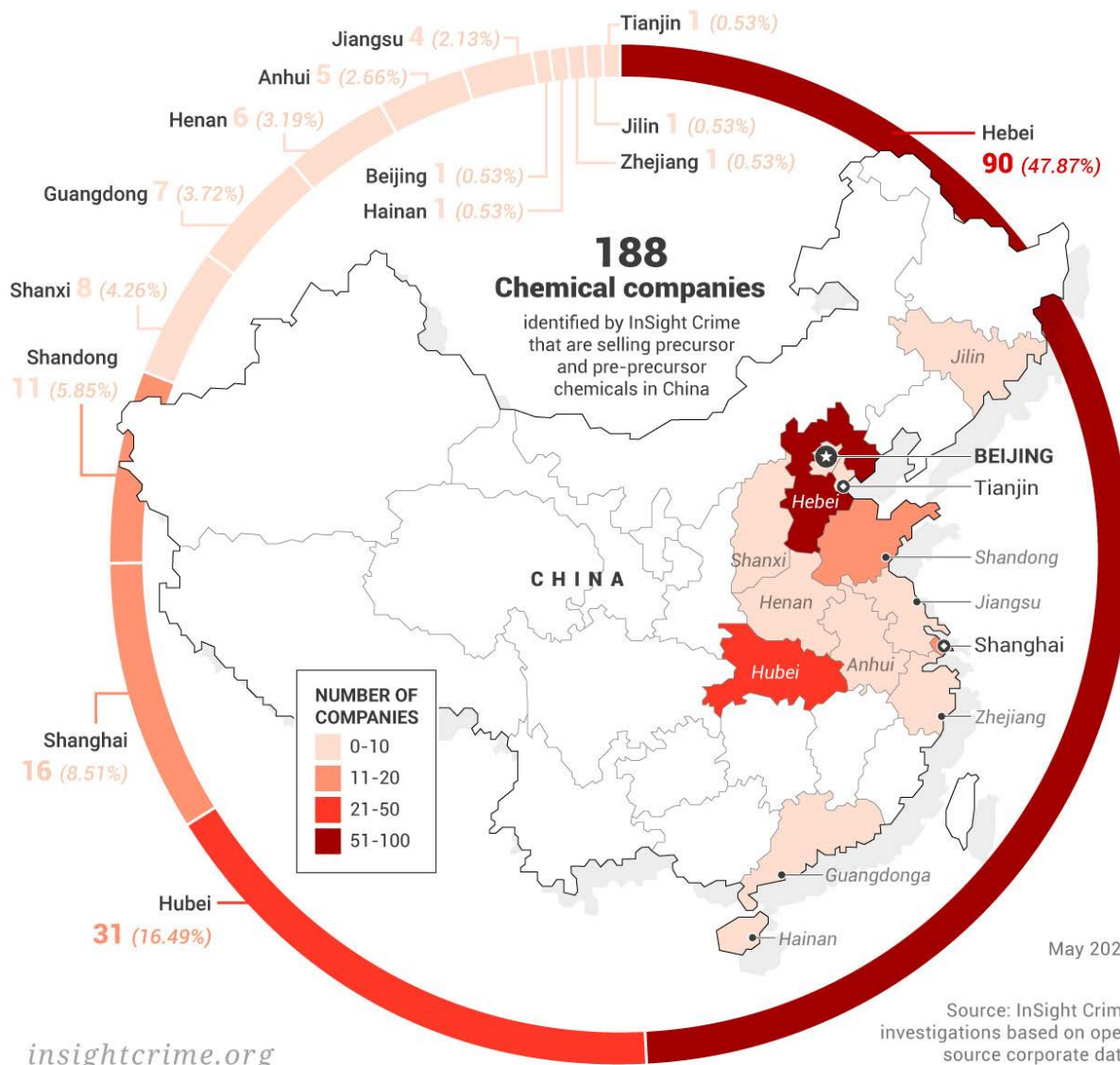
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An internet posting from Zhongding, a supplier connected to the Guangzong Network, advertising carfentanil in November 2022 (Screenshot: InSight Crime)

110 US-China Economic and Security Review Commission, “2014 Report to Congress,” November 2014.



## Chemical Companies Selling Precursor and Pre-Precursor Chemicals in China by Province



The part of the industry we identified is concentrated in two provinces -- Hebei and Hubei -- where our research shows that 63% of the precursor-producing companies operate. Though it is no secret these gray-market companies are producing precursors and pre-precursors used to make illicit drugs, they are licensed to operate, and often are even celebrated, particularly by provincial officials, as they provide taxes and employment to their regions.<sup>111</sup> High-

<sup>111</sup> Based on previous field reporting in China by Ben Westhoff, who collaborated on this investigation. See Ben Westhoff, Fentanyl Inc. How Rogue Chemists Are Creating the Deadliest Wave of the Opioid Epidemic, Atlantic Monthly Press: 2019.



ranking Chinese officials do not want China to be seen as pushing drugs, but they also strive to maintain strong relations with these provincial officials.<sup>112</sup> This political dance between national and local officials is not the subject of this report, but seems key to understanding why China continues to dominate the illicit precursor market.

Hebei province is the epicenter of these gray-market companies. Surrounding the two largest cities in northern China -- Beijing and Tianjin -- it was once a largely rural province that depended on the coal industry. The province was not a hotspot for chemical production, so the proliferation of companies commercializing precursors and pre-precursors does not necessarily respond to a thriving chemical industry; rather, it appears to respond to a lack of alternative economic opportunities and the presence of organized crime and corruption. In June 2022, China's central government carried out a "100-day operation" in Hebei to crack down on gangs and organized crime networks after a wave of violent incidents. The Ministry of Public Security arrested more than 27,000 people in the province, recorded 297 drug-related crimes, dismantled 41 local gangs, and began to investigate 15 public officials accused of protecting these criminal organizations, according to the *Global Times*, an English-language Chinese news outlet.<sup>113</sup>

Whether these organized criminal groups were directly involved in managing chemical companies is unclear; the news reports did not mention chemical production. But the families running the companies appear to have found fertile ground to aggressively expand their operations and acquire new companies with little to no scrutiny. For example, in our investigation into Clearnet company records, we found that several companies from other industries -- such as the food industry -- had recently changed their names and purposes to become chemical companies; they also became aggressive advertisers of precursor chemicals online.

As described in the next section, online platforms where these chemicals are advertised allow for an initial point of contact between buyers and sellers, but most negotiations and deals take place through encrypted communication methods, and payments are made using cryptocurrency or electronic transfers that do not go through the international banking system.<sup>114</sup> The chemicals for sale include P2P, NPP, and ANPP, in spite of the fact they are now tightly regulated substances in China.

These appear to be supplying the Mexican market and providing evidence for the argument that fentanyl is being produced in large quantities in Mexico. In December 2021, for example, the US Attorney's Office for the Northern

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112 Vanda Felbab-Brown, "China and Synthetic Drugs Control: Fentanyl, Methamphetamines, and Precursors," Brookings Institute, March 2022.

113 *Global Times*, "27,600 criminal suspects arrested in Northern China's Hebei during 100-day crackdown on crimes threatening social security: Ministry of Public Security," 1 September 2022.

114 *Ibid.*

District of Texas filed charges against Chuen Fat Yip, the purported owner of the chemical manufacturing company Yuancheng Group based in Hubei, for allegedly producing the fentanyl precursor ANPP with the knowledge that it would be unlawfully imported into the United States and later shipped to Mexico for use in the production of fentanyl.<sup>115</sup>

In a similar case, a US border-patrol agent admitted to US authorities he had received ANPP via international mail and transported it to Mexico.<sup>116</sup> More recently, in January 2023, the US Treasury Department sanctioned José Ángel Rivera Zazueta, an individual operating out of Culiacán, Sinaloa, who was allegedly importing “precursor chemicals” from the Chinese company Shanghai Fast Fine Chemicals (sanctioned in 2021) for the “illicit production of fentanyl.” The name of the chemicals was not specified. Rivera Zazueta’s network is also believed to import other chemicals from several parts of the world for the production of other synthetic drugs, including methamphetamine, ecstasy, and ketamine.<sup>117</sup>

The illicit production market for fentanyl and fentanyl analogues is perhaps the most difficult to track. This is due to the relatively small amount needed to satisfy the US market, which can be supported by facilities producing trace amounts and sending them discreetly through standard mail, express courier services, or clandestinely packed in containers. As previously mentioned, we encountered a substantial discrepancy between the stances of Mexican and US officials on whether China remains an important source of illicit fentanyl and fentanyl analogues. What we can say for certain is that other markets, most notably India, appear ready to make up for at least a portion of the fentanyl shortfall that followed Chinese efforts to police these chemicals.

### **India: Rising Production and Diversion**

India appears to be the second source nation for regulated precursor and pre-precursor chemicals used by Mexican criminal actors.<sup>118</sup> Its pharmaceutical industry is among the top fifteen largest globally in terms of worldwide sales and chemical production.<sup>119</sup> And while the scale of chemical flow between India and Mexico is not as substantial as China

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115 United States Department of Justice, “Chinese Citizen Charged with Massive Anabolic Steroid and Fentanyl Precursor Chemical Distribution Scheme,” 14 December 2021.

116 United States Attorney’s Office, Southern District of California, “Former Border Patrol Agent Pleads Guilty to Conspiracy to Distribute 4ANPP Used in the Manufacturing of Fentanyl,” 12 July 2018.

117 United States Department of Treasury, “Treasury Sanctions Three Fentanyl Traffickers Contributing to the U.S. Opioid Crisis,” 30 January 2023.

118 InSight Crime interviews, Bryce Pardo, former associate director, RAND Corporation, telephone interview, 17 June 2022; former Mexican intelligence officer, Mexico City, Mexico, 29 June 2022; SEMAR officers, Mexico City, Mexico, 6 December 2022; Vanda Felbab-Brown, “China and Synthetic Drugs Control: Fentanyl, Methamphetamine, and Precursors,” Brookings Institute, March 2022; United States Commission on Combatting Synthetic Opioid Trafficking, “Final Report,” February 2022.

119 World Integrated Trade Solution, “Chemical Exports by Country in US\$ Thousand,” World Bank, 2020; European Chemical Industry Council (CEFIC), “World Chemical Sales,” 2020.

and Mexico, it has the potential to grow. This is partly due to the lack of domestic regulations regarding fentanyl and its precursors in India,<sup>120</sup> as well as a significant licit chemical trade between the two countries. In 2020, chemical or pharmaceutical products accounted for roughly 18% of India's total exports to Mexico with a value of approximately \$600 million.<sup>121</sup> Additionally, in 2021, India and China were Mexico's only legal suppliers of phenylacetic acid, a crucial pre-precursor for producing methamphetamine.<sup>122</sup> Furthermore, according to the International Narcotics Control Board (INCB), India reported the highest number of legal NPP exports globally,<sup>123</sup> which can be used to produce ANPP and, subsequently, fentanyl.

According to the India Brand Equity Foundation, there are approximately 3,000 pharmaceutical companies, 10,500 drug manufacturing units, and over 11,000 chemical companies in India. Chemical production and chemical trading companies are scattered across the country, with most companies concentrated in the states of Gujarat, Maharashtra, Odisha, Tamil Nadu, Andhra Pradesh, and Uttar Pradesh.<sup>124</sup>

Still, by all accounts, the industry's foray into the synthetic drug market is in its early stages. Based on the little public information available, the Indian and the Chinese markets of precursor and pre-precursor chemicals seem complimentary rather than competitive. This means that substances that are increasingly difficult to produce in China due to harsher regulations may be obtained in India or transit India. In contrast to China, the Indian companies commercializing these substances do not appear to be part of a gray market. Rather, they are part of a vibrant legal chemical and pharmaceutical market that is vulnerable to diversions from this less regulated supply chain.

India produces a significant amount of fentanyl for medical purposes. It can be bought at the retail level in pharmacies across the country or online with a doctor's prescription. Hospitals can also obtain it in bulk. However, the enforcement of regulations regarding these sales is weak, leading to the diversion of the substances to other destinations, according to the Brookings Institute.<sup>125</sup> "Billions" of synthetic opioid tablets and "tons" of precursor chemicals originating from India were seized across the world in 2021, with Mexico being one of the primary destinations, according to the US State

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120 Vanda Felbab-Brown, "China and Synthetic Drugs Control: Fentanyl, Methamphetamine, and Precursors," Brookings Institute, March 2022.

121 Observatory of Economic Complexity (OEC), "India-Mexico Trade: Historical Data," 2020.

122 Data from Mexico's National Customs Agency.

123 International Narcotics Control Board (INCB), "Precursors and chemicals frequently used in the illicit manufacture of narcotic drugs and psychotropic substances," 9 March 2023.

124 Data from India Brand and Equity Foundation (IBEF)

125 Vanda Felbab-Brown, "China and Synthetic Drugs Control: Fentanyl, Methamphetamine, and Precursors," Brookings Institute, March 2022.

Department.<sup>126</sup> The DEA, in a declassified intelligence report published in 2020, declared: “India is emerging as a source for finished fentanyl powder and fentanyl precursor chemicals.”<sup>127</sup> And in its latest report on precursors, the INCB stated that the Indian government had already detected illicit fentanyl laboratories in the country.<sup>128</sup>

Still, quantifying India’s production that is being diverted into the synthetic drug supply chain is difficult. While the country’s law enforcement has seized numerous methamphetamine and methamphetamine precursors, these appear to be related to regional trade and mostly include ephedrine,<sup>129</sup> a precursor no longer used in the mass production of methamphetamine in Mexico.

What’s more, the one, oft-cited, case of fentanyl smuggling from India to Mexico occurred in 2018, when Indian authorities arrested three men, including one Mexican national, and said they were working with the Sinaloa Cartel.<sup>130</sup> That case was chronicled by many news organizations, including Forbidden Stories, which indicated that at least part of the supply being smuggled into Mexico was produced in China.

Still, it was significant. The other two suspects included a chemist who was in possession of 10 kilograms of fentanyl,<sup>131</sup> and an Indian businessman named Manu Gupta. Gupta was then the director of Mondiale Mercantile Pvt Ltd, a Madhya Pradesh-based company that exported a range of products, including chemical substances, and allegedly diverted fentanyl and precursor chemicals through two Mexican front companies based in Guadalajara.<sup>132</sup>

These are the type of details that give authorities nightmares and for many it was proverbial canary in a coal mine. However, the evidence to substantiate that India is a major source of fentanyl, fentanyl analogues, and precursors for the production of fentanyl and methamphetamine have yet to publicly emerge.

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126 United States State Department, “International Narcotics Control Strategy Report. Volume I,” 2022.

127 United States Drug Enforcement Administration (DEA), “Fentanyl Flow to the United States,” January 2020.

128 International Narcotics Control Board (INCB), “Precursors and chemicals frequently used in the illicit manufacture of narcotic drugs and psychotropic substances,” 9 March 2023.

129 Keegan Hamilton and Shamani Joshi, “First China, Now India: How Drug Cartels Get Chemicals for Meth and Fentanyl,” Vice, August 26 2021.

130 Salil Mekaad, “Indore Court Rejects Bail Plea of Man Held for Drug Smuggling,” Times of India, 3 October 2018.

131 Audrey Travère and Jules Giraudat, “Revealed: how Mexico’s Sinaloa Cartel has created a global network to rule the fentanyl trade,” The Guardian, 8 December 2020.

132 Audrey Travère, “Mexican Cartels: ‘The Asia Connection’,” Forbidden Stories, 8 December 2020.

### **Europe and the United States: Diversion**

Europe is home to the world's second-largest chemical industry, while the United States is the third largest.<sup>133</sup> Of these European countries, Germany and Belgium are the most important chemical exporters to Mexico. Chemicals are Germany's third-largest industry,<sup>134</sup> and they are Belgium's largest export.<sup>135</sup> Mexico is also Germany's top trading partner in Latin America, and close to 2,100 German companies are registered with Mexico's Economic Ministry.<sup>136</sup> What's more, chemicals are the third-largest European export to Mexico.<sup>137</sup>

The ties are important, as they represent a potential source of pre-precursor chemicals and essential chemical substances, especially once chemicals have been exported to Mexico or nearby countries where they can be diverted from the legal supplies into the illegal production chain. In the early 2000s, this was recorded with cases of ephedrine diversion from Belgium and Germany to Mexico, for the production of methamphetamine before producers switched to P2P.<sup>138</sup>

However, InSight Crime could not find any recent cases of diversion. The German Federal Police told InSight Crime that they believed that if diversion were to happen, it would most likely occur once the chemicals produced in Europe, or shipped from European ports, arrived to the destination country in Latin America.<sup>139</sup> One top European expert consulted by InSight Crime also noted a similar pattern without pointing to any recent, publicly available judicial cases.<sup>140</sup> Diversion of legal supplies in Europe, two experts noted, is so rare that most precursors for the production of methamphetamine in Europe, for example, appear to come from the same source that Mexican producers use: China.<sup>141</sup>

The same pattern can be drawn from US chemical production and diversions. Notably, the United States is Mexico's main supplier of benzaldehyde, acetic anhydride, hydrochloric acid, propionic anhydride, acetic acid, and sodium hydroxide, all of which can be used as pre-precursors or essential chemical substances in the production process of methamphetamine and fentanyl.<sup>142</sup>

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133 European Chemical Industry Council (CEFIC), "The European Chemical Industry - A Vital Part of Europe's Future: Facts & Figures 2022," 1 December 2022.

134 European Chemical Industry Council (CEFIC), "Germany: Chemical and Pharmaceutical Industry Snapshot," no date.

135 European Chemical Industry Council (CEFIC), "Belgium: Chemical Industry Snapshot," no date.

136 Germany Federal Foreign Office, "Germany and Mexico: Bilateral Relations," 30 September 2022.

137 Eurostat, "EU trade with Mexico by product group, 2011 and 2021," no date.

138 Reuters, "Belgian pharma executives may face trial over Mexical drug cartel trade," 9 March 2016.

139 InSight Crime email exchange, German Federal Criminal Police Office, Germany, 9 December 2022.

140 InSight Crime telephone interview, expert on European drug markets, 8 December 2022.

141 InSight Crime telephone interviews, expert on European drug markets, 8 December 2022; expert on synthetic drugs in Europe, 9 December 2022.

142 Data from Mexico's National Customs Agency.



However, as with the European case, diversion of US-made chemicals tends to happen once these substances have been exported to Mexico or after these companies produce them in Mexico using their Mexican subsidiaries.<sup>143</sup>

But cases of non-compliance of US companies with Know Your Customer (KYC) regulations -- whereby companies have a responsibility to verify the identity of their customers, among other requirements -- have been recorded in the past. In 2015, for example, the Pennsylvania-based chemical company Taminco US, Inc. pled guilty to sending six, 16,800 kilogram-shipments of monomethylamine to two customers in Mexico that the company failed to identify and verify. Some of these shipments had allegedly disappeared, and the DEA later found some of them in an abandoned residence near the US-Mexico border.<sup>144</sup> Monomethylamine is used a pre-precursor in the production of methamphetamine.

The United States also acts as a transit point for chemicals imported from Asia, as noted by a former US prosecutor in an interview with InSight Crime,<sup>145</sup> who said she saw this in a case as far back as 2018.<sup>146</sup> And in another case that was recently detected by SEMAR's Naval Intelligence Unit, a pre-precursor chemical arrived at the port of Long Beach, California, and was then transported to Texas prior to being exported to Mexico via the Laredo-Nuevo Laredo border crossing. According to the head of Naval Intelligence, this method allows companies to avoid the increased scrutiny of authorities at Mexican seaports.<sup>147</sup>

Moreover, the United States was the only country in the world to report seizures of 1-boc-4-AP, 4-piperidone and (2-Bromoethyl)benzene to the INCB in 2022, all of which are used as pre-precursors for fentanyl production. According to the INCB, these substances originated in China and arrived to the United States in mislabeled shipments.<sup>148</sup>

In the end, the economic ties between Mexico, the United States, and Europe could serve as a viable backup, if supplies from Asia slow, which underscores the need for a policy approach that is more focused on protecting North America than on blocking a particular source country

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143 InSight Crime interview, methamphetamine and fentanyl trafficker in the Tierra Caliente region, Michoacán, Mexico, 13 December 2022.

144 United States Attorney's Office, Eastern District of Pennsylvania, "[Allentown Company Agrees to Pay Fines and Penalties Totaling \\$1.3 Million for Violating Procedures Related to Chemical Shipments](#)," 27 October 2010.

145 InSight Crime interview, Sherri Walker Hobson, Washington DC, United States, 14 December 2022.

146 United States Southern District of California, "[Former Border Patrol Agent Pleads Guilty to Conspiracy to Distribute 4ANPP Used in the Manufacturing of Fentanyl](#)," 12 July 2018.

147 InSight Crime interview, SEMAR officer, Mexico City, Mexico, 6 December 2022.

148 International Narcotics Control Board (INCB), "[Precursors and Chemicals Frequently Used in the Illicit Manufacture of Narcotic Drugs and Psychotropic Substances](#)," 9 March 2023.

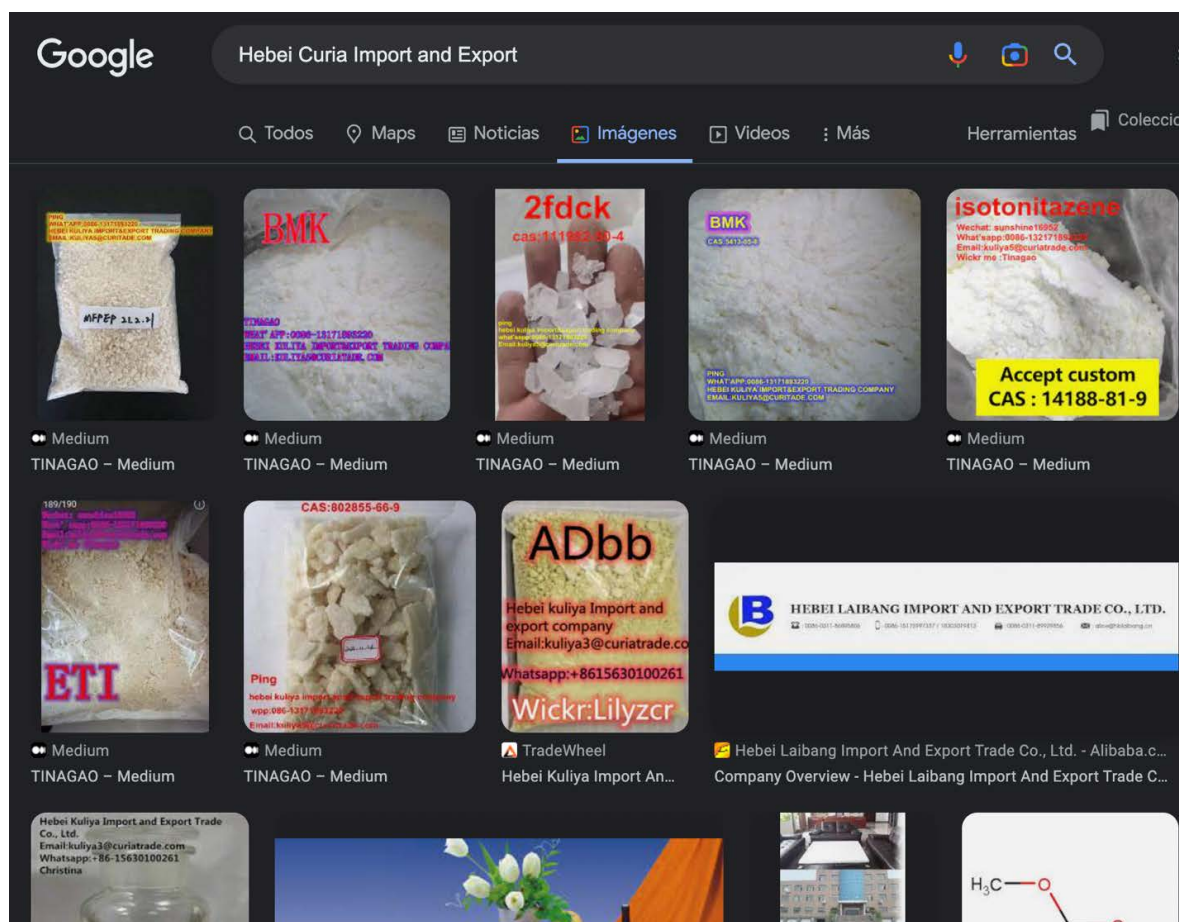


(for now, China). In addition to its longstanding connections in the United States, Mexico’s organized crime groups have important links with criminal groups in Europe for the production and trafficking of methamphetamine and cocaine.<sup>149</sup> These links may already extend to other criminal dynamics, such as the diversion of chemicals.

## Stage 2: Marketing and Transporting Precursor Chemicals to Mexico

Producers and third-party vendors sell precursors, pre-precursors, and essential chemicals, mostly over the Clearnet but sometimes on more obscure parts of the web such as B2Bs, and often in spite of restrictions that exist in the countries of origin and the countries of destination.

### Direct Sales From Producers



Hebei Curia -- a company that is part of the Guangzong Network -- promotes its products with colorful designs (Screenshot: InSight Crime, November 2022)

149 United States Drug Enforcement Administration (DEA) and EUROPOL, “Complexities and Conveniences in The International Drug Trade: The Involvement Of Mexican Criminal Actors in The EU Drug Market,” December 2022.

Producers in China use Clearnet platforms such as Made in China, Echemi, China.cn, Ecplaza, and Alibaba to reach their customer base in Mexico. In most cases, these platforms are only used by the companies to advertise the products, and clients must contact the supplier directly to make purchases. In our Clearnet research, we identified 163 companies that were registered on one or more of these platforms as of November 2022. Of these, 128 registered on at least one of these platforms between 2021 and 2022, suggesting they were cautious of or faced regulatory or law enforcement scrutiny, which forced them to switch platforms.

As opposed to sales that happen on the darknet, these platforms can be accessed through typical search engines. Advertising can be aggressive, with many companies using images of the chemical substances, including white powder and colorful text. They often provide phone numbers and write their ads in multiple languages. Some post feedback or customer reviews, while others showcase their products in videos.

**Xian SENYI Chemical**  
Warehouse Mexico 100% Safety Delivery  
CAS288573-56-8  
CAS443998-65-0  
CAS79099-07-3  
CAS125541-22-2  
CAS40064-34-4  
CAS: 79099-07-3  
Email: admin@senyi-chem.com  
Whatsapp+86 15512453308

*Xian Senyi, a chemical company based in the province of Shanxi, advertising fentanyl pre-precursors by only using the CAS number (Screenshot: InSight Crime, November 2022)*

Still, they try to avoid scrutiny or create plausible deniability in elementary ways. In the searchable text on their websites, for instance, they tend only to refer to the Chemical Abstracts Service number (CAS), abbreviated chemical names, or less common synonyms of substances. And when they do openly display chemical names, they frequently print them on images to evade detection by search engines. In one ad we found, the Shanxi-based company Xian Senyi did not include the name of the chemicals in their advertisements, only the CAS number of 1-BOC-4-Piperidone, and other derivatives of piperidine, which are used as pre-precursors for fentanyl. (See below) In this case, the customers need to contact the supplier directly to make the transaction; the company says it has a warehouse in Mexico to receive it.

### **Third-Party Vendors**

Hundreds of third-party vendors also sell the chemicals,<sup>150</sup> but it is at times unclear what the relationship is between the chemical-production companies and these vendors. In some cases, they appear to be units of the companies themselves. In other cases, they appear independent. Whatever the relation, these third-party vendors appear to be working closely with the production companies to access and market their gray-market products.

Like the companies, third-party vendors are customer-oriented and accommodating. Their websites are easy to navigate and professional. Vendors provide telephone numbers and social media contact information. Contacting them is also relatively easy through alternative encrypted platforms or email. Contact information on their websites often includes phone numbers, WhatsApp, Wickr, or an email.

They also respond to queries relatively quickly, as one did when we emailed them.

“You don’t have to worry about shipping or packing,” the representative wrote to our team. “I can guarantee the quality and purity of the products.”

The representative also provided their WhatsApp/Telegram contact and assured they had their own “factory and forwarder.” (See below)

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<sup>150</sup> Based on previous field reporting in China by Ben Westhoff, who collaborated on this investigation. See Ben Westhoff, Fentanyl Inc. How Rogue Chemists Are Creating the Deadliest Wave of the Opioid Epidemic, Atlantic Monthly Press: 2019.

Hi,my friend. I'm Maggie.

Our company has been established for nine years. We have our own factory and forwarder. You don't have to worry about shipping or packing.

I can also guarantee the quality and purity of the products. We take sample orders and do business in all countries of the world.

Here's my contact information.

WhatsApp/Telegram:

+86 15951852817

Wickr:mimaggie

I will send you the list of main products of our company,or you can contact me at any time if you are interested in any products.

Looking forward to your reply.Hope that good cooperation.

#### You may like



**Big Discount 99% 5cl-Precursor 5cl-Accessories 5-Bromo-1-Pentene 1-Bromo-4-Pentene 1119-51-3 Safe Delivery**

FOB Price: **US \$100-200 / kg**

Min. Order: 100.0000 kg

CAS No. : 1119-51-3

Formula : C5h9br

EINECS : 214-281-4

Type : **Pharmaceutical** Intermediates

Appearance : Liquid

Quality : Industrial

[Contact Now](#)

*Email exchange between InSight Crime and a chemical vendor from China (Screenshot: InSight Crime)*

## B2B Platforms

In addition to their websites, some of these production companies and third-party vendors operate their own business-to-business, or B2B, platforms. In our research, we identified nine such platforms operating in China and India offering P2P, and regulated fentanyl pre-precursors such as 4-AP, 1-BOC-4-Piperidone, and 1-BOC-ANPP.

The companies operating the B2Bs seemed aware of certain restrictions. One B2B site, Chemical Book, skirted some regulations on P2P and 4-AP by listing its offerings in English instead of Chinese. Others, such as Hangzhou Keying Chem, did not even bother to camouflage the listings for P2P or 4-AP. Some of them offer several hundred suppliers. Vendors on these platforms also provided technical information regarding purity, chemical names and synonyms, price and discounts, options of quantity, shipping and payment details, and free samples -- all part of an overt effort to establish a long-term relationship with customers. Some used wording like "100% safe delivery," "high purity," or "hot selling," to promote chemicals. And when they could not guarantee safe delivery, they promised to offer free reshipment, if the package was seized by authorities. (See below)



### Product Details

WhatsApp: +44 7858 629308  
 Email: demilee922 at gmail dot com  
 2F D CK  
 A-P VP  
 5c l a d b a  
 Eu t y l o n e  
 Eti z o l a m

### Company Profile

**Our advantage**

- Rich experience

We specialize in this field for many years, our steroids and hormones exported to all over the world and established long friendly relations of cooperation with them.

- QUALITY ASSURANCE

Our products are all made of purest raw materials. With high quality research lab equipments. The facilities are beyond the competitive suppliers

- Safest and fastest delivery

We have adequate stock so that we can deliver the products with 24 hours as soon as receiving the payment. Fast and discreet shipment will be arranged to pass customs.

**We promise that if package get seized by customs, we will reship free.**

- Great after-sales service

Any questions or problems after receiving the product, pls feel free to contact would be solved immediately.

**Qichen Biopharmaceutical Limited**

YES Gold Since 2022

Location: Kowloon, Hong Kong

Business Type: Manufacturer, Exporter

[Contact Supplier](#)

[Add to Inquiry Cart](#)

See how you can kickstart collaboration across your team with Workspaces

Request a free trial »

An advertisement promising free reshipment if customs agents seize the product (Screenshot: InSight Crime, November 2022)

## Payment Methods

These vendors preferred several payment methods, including T/T or L/C -- both Chinese electronic transfer systems -- as well as Bitcoin, Western Union, bank transfer, and MoneyGram. We did not document any vendors who accepted credit cards. It is certainly possible these payments could be a form of money

**Product Description** | Company Info. | Customer Question & Answer

**Basic Info.**

Transport Package	Bag	Specification	99%
Trademark	kmbk	Origin	China

**Product Description**

Free of customs clearance!!! We will ship by special line that shipping free from custom clearance and deliver to door, 100% pass customs!

**wic.\*kr=kmbktaylor**

**Product information**

Cas	28578-16-7
Density	1.3±0.1 g/cm3
Boiling Point	327.8±42.0 °C at 760 mmHg
Molecular Formula	C <sub>13</sub> H <sub>14</sub> O <sub>5</sub>
Molecular Weight	250.247
Flash Point	143.0±27.9 °C
Exact Mass	250.084122
PSA	57.29000
LogP	2.29
Vapour Pressure	0.0±0.7 mmHg at 25°C
Index of Refraction	1.554

**You Might Also Like**

Safe Shipment Best Price Pmk Glycidate...  
US \$1-10 / kg

CAS 20320-59-6 CAS Pmk Oil 5413-05-...  
US \$1-10 / kg

Pharamaceutical Intermediates BMK...  
US \$1-10 / kg

New Product Pmk Powder, Pmk Oil, CA...  
US \$1-10 / kg

New Price Sell Pmk Oil BMK CAS 28578-...  
US \$50 / kg

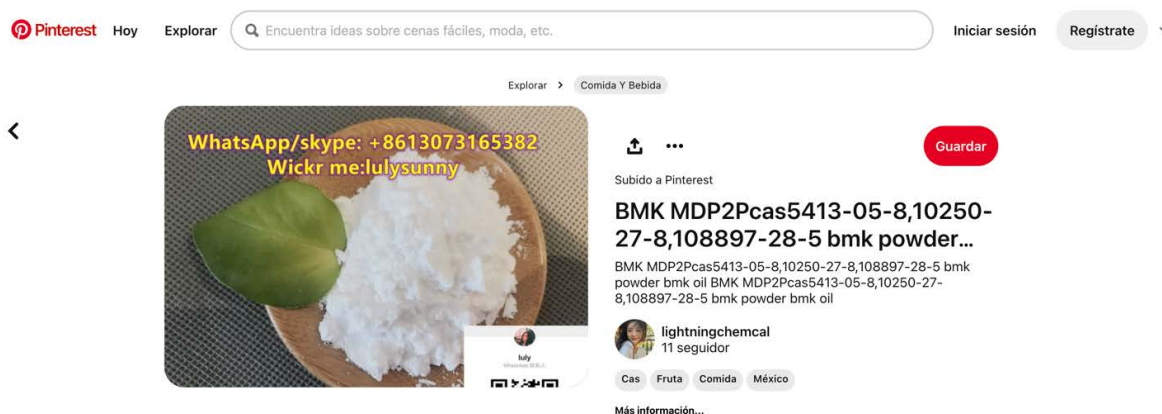
A company promising its delivery will "100% pass customs" (Screenshot: InSight Crime, November 2022)

laundering for criminal groups. But the diversity of methods and the size of the transactions makes tracking them very difficult and probably not particularly fruitful for law enforcement.

### **Delivery Services**

Chemical companies and third-party vendors send their products through third-party transport companies, standard mail, or express-service delivery companies such as FedEx. Although part of this process is considered legal, this method requires that the shippers and recipients engage in illegal activity. In fact, gray-market companies in China may take great pains to disguise their shipments. When precursor chemicals are sent to Mexico in planes or on barges, for example, they are often wrapped in fake packaging and listed on the bills of lading as other chemicals that are not scheduled or ones that are not heavily regulated. These companies ship their items in bundles or packed into containers, and customs officials and regulators frequently do not understand the chemical nomenclature or test the contents,<sup>151</sup> thus making transit and entry relatively easy.

What's more, the salespeople employed by the gray-market companies often do not know what they are selling. These companies sell hundreds, if not thousands, of different chemicals, as well as do custom orders, so the range of chemicals and uses are boundless. The salespeople are not trained in chemistry and have little incentive to understand the details. Managers and bosses also distance themselves from criminal activity by noting they follow the laws and the current scheduling lists.<sup>152</sup>



*BBMK powder –a P2P pseudonym -- openly advertised on Pinterest by an anonymous account in which the tags appear to be used as a way to divert attention (Screenshot: InSight Crime, November 2022)*

151 Ibid.

152 Ibid.



The illicit sale of fentanyl analogues and scheduled precursors for methamphetamine and fentanyl is different. The advertisement of illicit substances is more discrete and is often done through codewords, emojis, and images while avoiding the names of the chemicals.<sup>153</sup> Moreover, the advertisers tend to be individuals with pseudonyms, as opposed to company representatives.

**Details**

Price	1	Price Type	Price
Condition	New		

**Description**

(View phone number) Safely delivery Fentanyl Safely delivery  
 come on and order  
 Plz contact me for best price  
 WhatsApp :(View phone number)  
 Wickr/telegram kkoalaa

Fentanyl openly advertised by a Hebei-based company on OLX, a web commerce platform (Screenshot: InSight Crime)

153 United Nations Office on Drugs and Crime (UNODC), “The Online Trafficking of Synthetic Drugs and Synthetic Opioids in Latin America and the Caribbean,” 5 September 2018.

## India: Less Restrictions, More Transparency

Indian companies tend to be more transparent about what they are selling. Methamphetamine and fentanyl precursors and pre-precursors -- such as 4-AP, 1-BOC-4ANPP, 1-BOC-4-Piperidone, 4,4-Piperidinediol, and even P2P -- can be easily obtained on Clearnet web platforms, such as indiaMART, Trade India, and Dial4Trade, as well as other B2B platforms and the companies' own websites. As opposed to the Chinese tendency to disguise the names of the chemicals, Indian companies are very open about what you can obtain, leaving it in its more familiar name, so it can be found on search engines.

### BTC Pharmaceuticals Technology India

Nellore, Andhra Pradesh | GST 37AJQPJ2369A1Z6 | Verified Supplier

[View Mobile Number](#)

Home **Our Products** About Us Contact Us

1-Boc-4-Piperidone, CAS:79099-07-3

[Send Email](#)

40 results found for "1-Boc-4-Piperidone, CAS:79099-07-3"

#### Our Products

##### Industrial Chemicals

3-Fluorobenzoic acid CAS NO :455-38-9

4-(4,6-Dimethoxy-1,3,5-triazin-2-yl)-4-methylmorpholinium chloride, CAS NO:3945-69-5

Ethyl 2-amino-4-methylthiazole-5-carboxylate CAS NO 7210-76-8

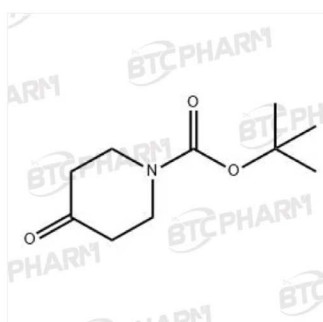
Cyclopentane-1,3-Dione, Cas:3859-41-4

2-Fluoroaniline, CAS NO:348-54-9

[+64 more products](#)

##### Pharmaceutical Intermediates

20 products available



Interested in this product?  
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#### 1-Boc-4-Piperidone, CAS:79099-07-3

Rs 200 / Kg [Get Latest Price](#)

CAS Number	79099-07-3
Chemical Formula	C9H15NO3
Color	White
Manufacturer	BTC
Melting Point	34-38 DegreeC
Molecular Weight	185.22 g/mol
Physical State	Powder
Storage	2-8 DegreeC
Country of Origin	Made in India
Production Time	Class Bottle

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Contact Us for more details

Email ID

Your Country is **United States Of America**

Name

Requirement Details

Briefly describe what you are looking to buy...

[Submit Requirement](#)

OR

[Login with Google](#)

#### Reach Us

11-569, 0, Buchireddy Palem Sri Potti Sriramulu, Nellore-524305, Andhra Pradesh, India

[Get Directions](#)

Brahmanandam Janga (Owner)

[View Mobile Number](#)

74% Call Response Rate

[Send Payment](#)

A registered Indian company openly selling a fentanyl pre-precursor without disguising the name of the chemical (Screenshot: InSight Crime, November 2022)

We detected dozens of Indian companies selling regulated substances online. In their advertisements, companies always include the full name of the chemical and its formula, as well as the contact details and the address of the company or the sales representative. As opposed to the Chinese companies, they avoid guarantees regarding delivery. However, payment can be made via mainstream means like PayPal, bank transfers, and credit cards. If the buyer is outside of India, the companies offer to send the substances by mail. And they tend to stay on one platform, as opposed to continuously changing as in the case of China. This indicates that they do not feel under the scrutiny of law enforcement.

### **Stage 3: Sourcing Precursors in Mexico**

Mexico's precursor drug industry is multilayered, stretching from rudimentary brokers and cooks to multinational companies and chemists, many of whom are independent operators.<sup>154</sup>

There are two major criminal networks in Mexico involved in the synthetic drug industry: the Sinaloa Cartel and the Jalisco Cartel New Generation (Cartel de Jalisco Nueva Generación – CJNG).<sup>155</sup> In addition, there are a smattering of smaller networks connected to this industry, most them derivatives of legacy criminal groups operating in the center and west of the country -- such as the Familia Michoacana and the Caballeros Templarios (Knights Templar) -- who have formed a loose alliance with some smaller criminal and vigilante groups -- such as the Viagras and the Blancos de Troya -- which they call the United Cartel (Cárteles Unidos - CU).<sup>156</sup> The CU operate from the Tierra Caliente, or "Hot Land," region, along the state lines of Michoacán and Jalisco. Notably, this is also where some of the fiercest fighting between criminal groups has occurred in the last few years.

The different pieces of the industry connect at different points, with independent operators often servicing those larger criminal organizations whose main purpose is to produce or buy illicit synthetic drugs in bulk quantities and

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154 InSight Crime interviews, SEMAR officer, Mexico City, Mexico, 6 December 2022; criminal lawyer, Los Mochis, Sinaloa, 17 October 2022; former drug trafficker in central Michoacán, Mexico, 12 December 2022; methamphetamine and fentanyl trafficker in the Tierra Caliente region, Michoacán, Mexico, 13 December 2022.

155 InSight Crime interviews, officer from an international governmental organization, Mexico City, Mexico, 16 June 2022; former Mexican intelligence officer, Mexico City, Mexico, 29 June 2022; officer at Mexico's National Guard, Mexico City, Mexico, 21 July 2022; officer at Baja California's Attorney General's Office, Tijuana, Baja California, Mexico, 13 September 2022; SEMAR officer, Mexico City, Mexico, 6 December 2022; José Alfredo Ortega, Michoacán's public security minister, Morelia, Michoacán, Mexico, 16 December 2022.

156 InSight Crime interviews, officer from an international governmental organization, Mexico City, Mexico, 16 June 2022; former Mexican intelligence officer, Mexico City, Mexico, 29 June 2022; officer at Mexico's National Guard, Mexico City, Mexico, 21 July 2022; officer at Baja California's Attorney General's Office, Tijuana, Baja California, Mexico, 13 September 2022; SEMAR officer, Mexico City, Mexico, 6 December 2022; José Alfredo Ortega, Michoacán's public security minister, Morelia, Michoacán, Mexico, 16 December 2022.

transport them to the global marketplace. As noted, the fentanyl industry may also include numerous smaller criminal networks, which are largely invisible since the market offers few barriers to entry.

Despite bloody territorial disputes over some criminal economies, criminal organizations do not appear to be fighting over precursor chemicals. In fact, they appear to share suppliers, according to intelligence reports of the Mexican government.<sup>157</sup> These suppliers, as will be explained in more detail below, tend to be businesspeople specializing in the import-export industry -- who may have also formed front companies -- or brokers.<sup>158</sup>

These operators use a wide variety of means to get the chemicals. Still, there are three general ways these Mexican criminal networks obtain precursors, pre-precursors, and essential chemical substances:

- **Illicit sourcing:** They obtain chemicals scheduled both in Mexico and the point of origin. This illegal method seems to be their preferred method for obtaining fentanyl, fentanyl analogues, and fentanyl and methamphetamine precursors that are not scheduled but tightly regulated internationally, such as ANPP and P2P.
- **Hybrid sourcing:** They obtain precursors and pre-precursors from countries where these chemicals are not scheduled or are sparsely regulated, even if they are scheduled or regulated in Mexico or neighboring countries. This hybrid method appears to be the preferred modus operandi for obtaining meth pre-precursors from China and India, fentanyl pre-precursors, and infrastructure like industrial pill presses.
- **Licit sourcing:** They obtain chemicals that are not scheduled and only sparsely regulated -- or not regulated at all -- in either Mexico or the point of origin. This appears to be the most common method currently employed to obtain excipients, binders, dyes, lubricants, and other essential chemicals for the synthesis of methamphetamine and the manufacture of fentanyl pills.

For this report, we will consider each import strategy individually and highlight the main use for that strategy as it relates to precursor chemicals and synthetic drugs.

<sup>157</sup> InSight Crime interview, SEMAR officer, Mexico City, Mexico, 6 December 2022; Israel Navarro, “[Cárteles de Sinaloa y Jalisco Nueva Generación Comparten proveedores para drogas sintéticas](#),” Milenio, 15 November 2022.

<sup>158</sup> InSight Crime interviews, SEMAR officer, Mexico City, Mexico, 6 December 2022; criminal lawyer, Los Mochis, Sinaloa, 17 October 2022; former drug trafficker in central Michoacán, Mexico, 12 December 2022; methamphetamine and fentanyl trafficker in the Tierra Caliente region, Michoacán, Mexico, 13 December 2022.

### **Illicit Sourcing: The Case of Fentanyl and Fentanyl Precursors**

Illicit sourcing is a reference to the process whereby Mexican criminal groups and their brokers illegally source substances that are listed or scheduled in the United Nations Conventions against Illicit Traffic in Narcotics and Psychotropic Substances of 1961 and 1971 (and all subsequent additions to this list); or are scheduled as part of domestic laws and regulations of individual nations. These include the end products -- fentanyl and its analogues, as well as methamphetamine -- the main precursors for these drugs -- P2P and methylamine for methamphetamine, and ANPP and norfentanyl for fentanyl.

Our research shows this strategy is most important for Mexico-based criminal networks as it relates to the illegal importation of fentanyl, fentanyl analogues, scheduled precursors for fentanyl, and one tightly regulated pre-precursor for fentanyl, NPP. We do not include methamphetamine or its precursors because we found that Mexican criminal actors are synthesizing these in Mexico.

The consensus of US officials and US counternarcotics agents is that Mexico-based criminal groups are accumulating fentanyl precursors and pre-precursors and synthesizing the vast majority of fentanyl in Mexico. In its most recent threat assessment, the DEA says that Mexican criminal organizations were “significantly involved in fentanyl production” and that actors like the Sinaloa Cartel and the Jalisco Cartel were “increasing the production of wholesale quantities of fentanyl in powder and pill forms.”<sup>159</sup> And in a recent appearance in front of the US Congress, DEA Administrator Anne Milgram reiterated this stance. “They are mass producing fentanyl,” she said of the Sinaloa Cartel and the CJNG.<sup>160</sup>

Recent reports on fentanyl have backed up this claim. The Commission on Combating Synthetic Opioid Trafficking, citing interviews with US law enforcement, argued that fentanyl production in Mexico was increasing, and that Chinese actors were now sending fentanyl precursors and less regulated substances to Mexico, rather than the finished product.<sup>161</sup> And a 2022 Brookings Institute report -- citing an “international drug policy expert,” and current and former law enforcement, among others -- said that Mexican criminal organizations were hiring chemists to develop precursors and produce fentanyl.<sup>162</sup>

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159 United States Drug Enforcement Administration (DEA), “2020 National Drug Threat Assessment”, March 2021.

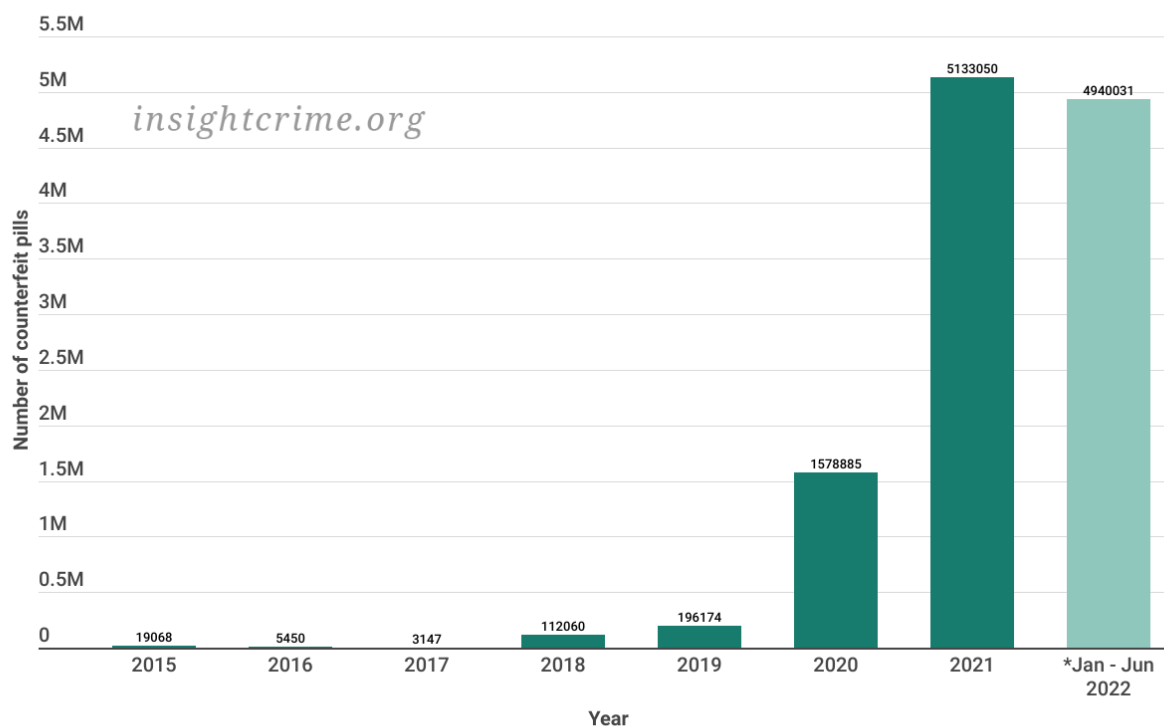
160 United States Senate Foreign Relations Committee, “Countering Illicit Fentanyl Trafficking,” 15 February 2023.

161 United States Commission on Combating Synthetic Opioid Trafficking (CCSOT), “Final Report,” RAND Corporation, 2022.

162 Vanda Felbab-Brown, “China and Synthetic Drug Control: Fentanyl, Methamphetamine and Precursors,” Brookings Institute, March 2022.

Much of the argument in favor of the theory that Mexican-produced fentanyl is dominant stems from finished fentanyl seizure data. Since 2019, when China scheduled a series of fentanyl analogues and fentanyl precursors,<sup>163</sup> seizures of fentanyl arriving by land, mostly along the US-Mexico border, have skyrocketed, while seizures arriving by air, much of which came from Asia, have dropped considerably. CBP’s seizures of substances containing fentanyl, for instance, amounted to about 6.6 tons in 2022. Of that, 6.4 tons were seized along the Southwest border, and 6.35 tons were detected at land-entry points. Meanwhile, seizures at international mail facilities have consistently declined.<sup>164</sup> Fentanyl seizures have also skyrocketed in Mexico over the last five years. In 2017, authorities reported seizing only 3,147 fentanyl pills; in 2021, that number climbed to 5.13 million pills.<sup>165</sup> By InSight Crime’s estimates -- assuming each pill has 1.6 milligrams of pure fentanyl – the 2017 seizures accounted for only 5 grams pure fentanyl, while the 2021 seizures accounted for 8 kilograms of pure fentanyl.

## Fentanyl Seizures in Mexico (2010 - 2022\*)



May 2023

Source: Mexico's Attorney General's Office

163 United Nations Office on Drugs and Crime (UNODC), “China: Announcement to place all fentanyl-related substances under national control,” April 2019.

164 United States Commission on Combating Synthetic Opioid Trafficking (CCSOT), “Final Report Technical Appendixes,” February 2022.

165 Data shared by Mexico’s Attorney General’s Office.



However, there are problems with the data. Mexican authorities are notoriously opaque on drug trafficking statistics and seizures. InSight Crime requested the navy for data on precursor seizures at ports, and they shared very little information. Some of the seizures, like a 2020-seizure of NPP and ANPP at the Ensenada port reported in the press,<sup>166</sup> did not even appear on the database. Other seizures were mysteriously revised by the López Obrador government, including reported seizures of drug labs, which went up precipitously when the army retroactively included hundreds of “inactive labs” in its numbers, Reuters reported.<sup>167</sup>

What’s more, the United States and Mexico do not adjust for purity in their fentanyl seizures statistics. The purity of fentanyl coming from Mexico by land hovers below 10%, while the purity of fentanyl arriving via international mail or express consignment carrier such as FedEx is closer to 90%.<sup>168</sup> As the Commission on Combating Synthetic Opioid Trafficking itself says, when purity is considered, the disparity between the two potential sources of finished fentanyl and fentanyl analogues -- China versus Mexico -- is considerably less. The difference in weight seized in the United States, for example, was three kilograms of fentanyl coming from Mexico for every two arriving from China -- significant but hardly iron-clad proof of a huge disparity.<sup>169</sup>

Seizures, of course, are not an empirical indicator but rather an expression of tendencies, which could reflect a small portion of the story. This is especially true with fentanyl since dealers need only a trace amount to obtain their objectives thus distorting the market in unprecedented ways. As noted by the Commission on Combating Synthetic Opioid Trafficking, the clearest illustration of these distortions is in the land-based seizures coming from Mexico.<sup>170</sup> Drug trafficking organizations normally try to maximize purity when crossing frontiers into valuable consumer nations, thus maximizing their efficiency and profits. But fentanyl seizures at the US-Mexico border and throughout Mexico, on average, contain between 95% and 97% adulterants and additives,<sup>171</sup> suggesting these criminal groups do not see the need as it relates to fentanyl.

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166 Redacción Zeta, “[Descubren en Ensenada 169 kilos de precursores de fentanilo en portacontenedores proveniente de China](#),” *Semanario Zeta*, 26 May 2020.

167 Drazen Jorgic, Jackie Botts, and Stephen Eisenhammer, “[Exclusive: Amid US pressure on fentanyl, Mexico raises drug lab raids data](#),” Reuters, 17 March 2023.

168 United States Commission on Combating Synthetic Opioid Trafficking (CCSOT), “[Final Report](#),” RAND Corporation, 2022.

169 United States Commission on Combating Synthetic Opioid Trafficking (CCSOT), “[Technical Appendixes](#),” February 2022.

170 United States Commission on Combating Synthetic Opioid Trafficking (CCSOT), “[Final Report](#),” RAND Corporation, 2022.

171 Data from November 2022 and September 2021 on profiling of fentanyl-laced fake prescription pills shared by the DEA to InSight Crime via a freedom of information request; InSight Crime interview, former Mexican federal law enforcement agent, Mexico City, Mexico, 1 March 2023.

Fentanyl's incongruity with the rest of the drug market may help explain the lack of transparency and consensus regarding the source of fentanyl production. The rise in fentanyl seizures in Mexico, for example, should be accompanied by a rise in the seizures of fentanyl laboratories in the country. However, in reply to our public information requests, SEDENA, the National Guard, and the Attorney General's Office, which shared only general data on "synthetic drug laboratories," said they had "zero" records of fentanyl labs through the end of 2022.<sup>172</sup> Former and active government officials from various security agencies in Mexico, as well as various criminal actors interviewed for this report, said that this information generally corresponded with their understanding about potential fentanyl production in Mexico as well.<sup>173</sup>

What appear in abundance are "laboratories" that press finished fentanyl into pills. An officer from Sinaloa's State Police and a former federal law enforcement officer from Mexico told InSight Crime they had only found pill-pressing facilities and that all the laboratories they had seized were used to produce methamphetamine.<sup>174</sup> This forms the core of the Mexican government's position, reiterated by President López Obrador himself in a morning press conference in March: that Mexico's criminal organizations are taking finished fentanyl and transforming it into counterfeit pills.

"I maintain that more fentanyl arrives directly to the United States and Canada than here to Mexico," he said. "What happens here is that they make pills, [then] they adulterate them."<sup>175</sup>

There is some logic behind this argument. As noted, fentanyl can be smuggled in trace amounts. It is also difficult to make from scratch. This means that industrial laboratories that are dedicated to producing other compounds but can be used to produce fentanyl on the side -- such as the ones in China and India -- have a decisive economic advantage over makeshift operations in the remote regions of Mexico. What's more, the comparatively high costs of pre-precursors, such as NPP, which is used almost exclusively for making fentanyl, would make it extremely costly for Mexican criminal groups to source these necessary ingredients.

However, the debate has become fiercely political. For its part, Mexico blames the United States for allowing criminal groups easy access to US-purchased weapons and has long blamed its problems with violence on the United

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172 Data provided to InSight Crime by Mexico's Ministry of National Defense (SEDENA), Mexico's Ministry of the Navy (SEMAR), Mexico's National Guard, and Mexico's Attorney General's Office (FGR).

173 InSight Crime interviews, Sinaloa state police officer, Culiacán, Sinaloa, Mexico, 13 October 2022; SEMAR officers, Mexico City, Mexico, 6 December 2022; former methamphetamine trafficker in central Michoacán, Mexico, 12 December 2022; methamphetamine and fentanyl trafficker in the Tierra Caliente region, Michoacán, Mexico, 13 December 2022.

174 InSight Crime interview, Sinaloa's State Police Officer, Culiacán, Sinaloa, Mexico, 12 October 2022.

175 Mexican Presidency, "[Versión estenográfica. Conferencia de prensa del presidente Andrés Manuel López Obrador del 9 de marzo de 2023](#)," 9 March 2023.

States' voracious appetite for illegal drugs. There is also a tumultuous history between the United States and Mexico, especially as it relates to drug policy. The two countries have sparred about security issues for years, and the current rhetoric regarding the designation of Mexican criminal organizations as terrorist groups and the possible deployment of US military personnel to Mexico is clouding logic and smothering data.

Indeed, there is a third approach, something between making fentanyl from scratch and obtaining finished fentanyl from abroad. We will detail this process below, but authorities from both Mexico and the United States seem to agree that this method -- which, in simplest terms, takes a precursor and converts it into fentanyl -- is something that is prevalent in Mexico. Our policy recommendations are tailored to this analysis.

For InSight Crime, it is not a question of if fentanyl is being synthesized in Mexico, it is a question of how much. Notwithstanding the Mexican government's public position, there is an abundance of evidence suggesting that Mexico imports significant quantities of precursors and pre-precursors for the synthesis of fentanyl in Mexico, as well as evidence indicating Mexican criminal groups are synthesizing fentanyl in Mexico. There is also history: Mexican criminal organizations went through a similar process with methamphetamine, experimenting with recipes and chemicals until they became self-reliant in terms methamphetamine production and distribution. As we outline in the next section, that process appears to be under way as it relates to fentanyl.

### ***Modus Operandi and Networks***

While it is impossible to say how much fentanyl is produced in Mexico and how much is sourced abroad, criminal networks are obtaining both precursors and finished fentanyl the same way. First, they use cargo ships or commercial aircrafts. In May 2020, for example, Mexican marines found close to 170 kilograms of NPP and ANPP disguised among a soap shipment from China at the Pacific port of Ensenada.<sup>176</sup> More recently, in February 2023, Mexican authorities seized 304 kilograms of a "powder containing the piperidine molecule" at the Mexico City Airport -- which can be used as a fentanyl pre-precursor in any synthesis route -- and 3.3 tons of propionyl chloride in the port of Manzanillo, used as a pre-precursor in the Gupta method, but also in the agrochemical and pharmaceutical industries.<sup>177</sup>

Second, criminals divert the chemicals from company production lines or siphon them from imports. In a recent high-profile case, Mexican authorities froze dozens of banking accounts of Grupo Pochteca, a chemical behemoth

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176 United States Drug Enforcement Administration (DEA), "2020 National Drug Threat Assessment," March 2021; see also: Redacción Zeta, "Descubren en Ensenada 169 kilos de precursores de fentanilo en portacontenedores proveniente de China," *Semanario Zeta*, 26 May 2020.

177 Mexican Government, Mexico's Ministry of Defense, Mexico's National Guard, and Mexico's Ministry of Citizen Security, "Informe de Seguridad," 7 February 2023.

in Mexico.<sup>178</sup> The investigation was led by the Mexico's Financial Intelligence Unit, the marines, and the DEA, which found the company was importing the fentanyl pre-precursors NPP and 4-piperidone, and the precursor norfentanyl, before diverting them to criminal actors. Details of the report, which appeared in Mexican newspaper, Milenio,<sup>179</sup> did not say how much or for how long these imports and subsequent diversions were taking place.

In a later report citing an intelligence document from the Mexican government, Milenio mentioned that Grupo Pochteca and two other companies -- Corporativo Escomexa and Corporativo y Enlace Ram -- were diverting these substances to the Sinaloa Cartel and the CJNG.<sup>180</sup> In November 2022, InSight Crime filed a freedom of information request about this case to Mexico's Attorney General's Office, but our requests were denied, given that the investigation was ongoing. We also requested comment from Grupo Pochteca about these allegations, to which they replied via email that the company and its subsidiaries have "never commercialized, sold, stored, or advertised" fentanyl precursors. They added that they adhere to all national and international regulations and they reject any allegation linking them to illicit activities.

Third, the chemicals are arriving via neighboring countries. In 2017, for example, a former border patrol agent was captured driving ANPP from California to Mexico. In 2018, he pled guilty to conspiring to distribute the pre-precursor.<sup>181</sup> For the prosecutor and counterdrug agent who worked the case, this was proof there was widespread production of fentanyl in Mexico by Mexican criminal organizations<sup>182</sup> -- the records showed the officer had received 13 other packages from the same post office in California arriving from China.<sup>183</sup> Numerous experts and law enforcement also told us that other shipments of precursors may be going through Central America, most notably Guatemala, before being smuggled into Mexico. Guatemalan authorities recently seized several shipments of a substance containing fentanyl at Puerto Barrios, a seaport city on the Atlantic coast, which allegedly came from eastern Europe.<sup>184</sup>

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178 Grupo Pochteca is one of Mexico's largest chemical companies. Its portfolio includes inorganic chemical substances, solvents, chemical substances for food, lubricants and grease, personal and home care, mining, construction, paper and cardboard. It is listed on the Mexican stock market, and its sales have hit record levels in recent years, according to its corporate filings cited by Milenio.

179 Rafael Montes and Óscar Cedillo, "Por 'narco', UIF, Marina y EU van contra Pochteca y 48 grupos más," Milenio, 12 October 2021.

180 Israel Navarro, "Carteles de Sinaloa y Jalisco Nueva Generación comparten proveedores para drogas sintéticas," Milenio, 15 November 2022.

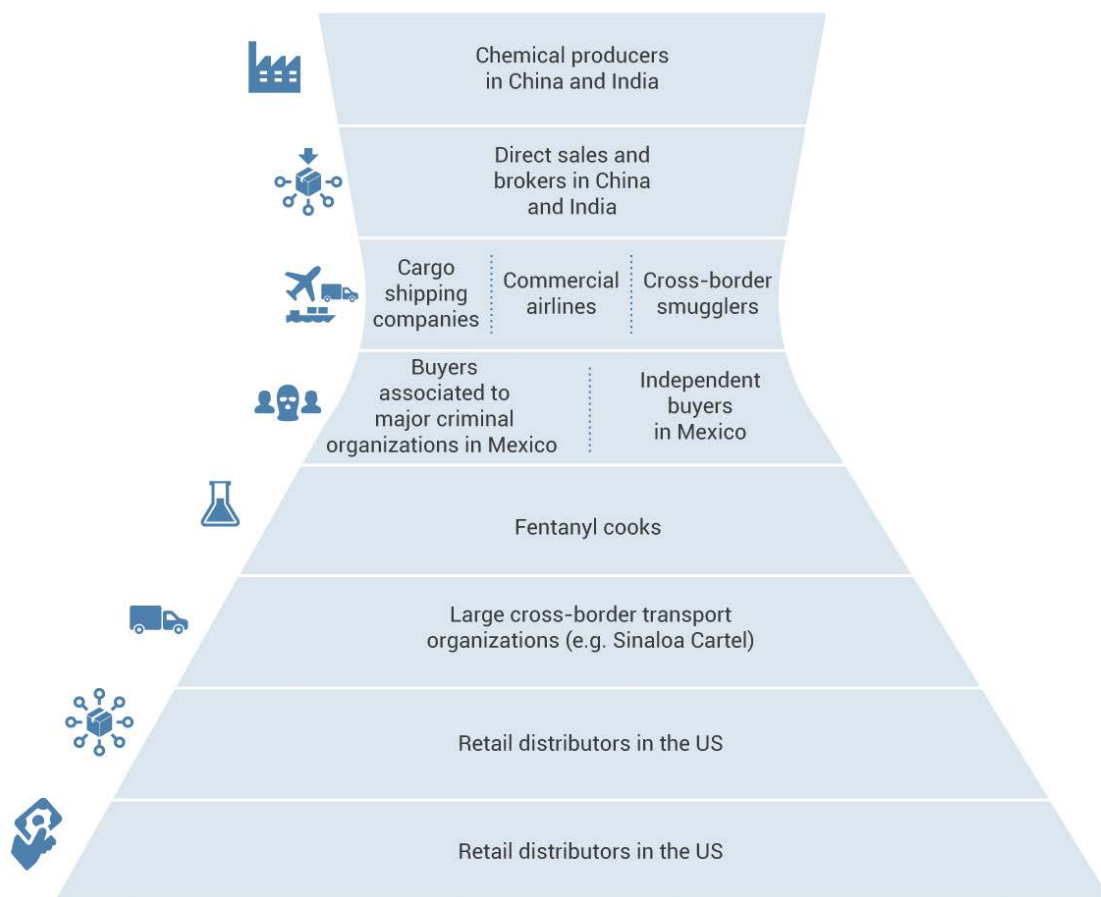
181 US Southern District of California, "Former Border Patrol Agent Pleads Guilty to Conspiracy to Distribute 4ANPP Used in the Manufacturing of Fentanyl," 12 July 2018.

182 InSight Crime interview, Sherri Walker Hobson, Washington DC, 14 December 2022; interview, US counterdrug agent, 1 March 2023.

183 United States Southern District of California, "Former Border Patrol Agent Pleads Guilty to Conspiracy to Distribute 4ANPP Used in the Manufacturing of Fentanyl," 12 July 2018.

184 Julio Román and Raúl Barreno Castillo, "Incautan 120 toneles con fentanilo en un contenedor ubicado en Puerto Barrios, Izabal," Prensa Libre, 23 March 2023.

## Illicit Sourcing: the Fentanyl and Fentanyl Precursor Supply Chain



Once in Mexico, the precursors or finished fentanyl are moved to clandestine laboratories for processing. There, if it is finished fentanyl, they are pressed into pills. If they are precursors, they undergo a rudimentary process of synthesizing fentanyl before being pressed into pills. Fentanyl is very difficult to manufacture without some of the key precursors or pre-precursors. According to one government expert interviewed by InSight Crime, fentanyl production is also considerably more dangerous than the production of methamphetamine.<sup>185</sup> It requires stricter laboratory discipline to avoid accidental overdoses, maintain some level of quality control, and even to conduct some of the required chemical reactions.<sup>186</sup>

185 InSight Crime interview, officer from the National Guard, Mexico City, Mexico, 21 July 2022.

186 InSight Crime interview, Dr. Silvia Cruz, pharmaceutical chemist, Cinvestav, National Polytechnic Institute, Mexico City, Mexico, 2 March 2023.



But this may not be what Mexican cooks are doing. US sources told us that Mexican criminal organizations are taking 4-AP and using it to make ANPP, then fentanyl; or simply getting the ANPP and making fentanyl. Both methods are infinitely easier than making fentanyl from scratch using the methods outlined in Part I. Mexican officials were not as specific. However, in response to a question about whether fentanyl was synthesized in Mexico, officials from SEMAR mentioned they had identified a small number of facilities where fentanyl appeared to have been synthesized from ANPP. And since 2019, the Mexican army has registered two seizures of ANPP -- both in the city of Culiacán -- totaling 900 liters; and four seizures of NPP -- two in Baja California, one in Puebla, and another one in Jalisco -- totaling of 172 liters.<sup>187</sup> Mexican authorities generally referred to these as “confection” sites, i.e., places where some basic chemistry takes place, in addition to pill pressing and/or lacing legacy drugs with fentanyl.<sup>188</sup>

There have also been at least two media reports from synthetic drug-production zones that appear to illustrate “cooks” manufacturing fentanyl,<sup>189</sup> and one about a chemist from Mexico’s National Autonomous University who was arrested for presumably working in a clandestine fentanyl laboratory.<sup>190</sup> A later Wall Street Journal report appeared to show at least a rudimentary version of a fentanyl laboratory with a brown jug that read, “Chinese chemical.”<sup>191</sup> The cook said he was developing his own “formula.”

There are also indications Mexican criminal actors are seeking to decrease their dependence on outsiders, just as they have with methamphetamine. In 2018, US and Mexican authorities began tracking several chemists working for the Sinaloa Cartel in Mexico that were trying to synthesize fentanyl. The investigations included wiretaps in which criminal operators spoke openly of manufacturing fentanyl precursors to synthesize fentanyl, according to two counterdrug operators who worked on the case.<sup>192</sup>

The investigators estimated there were three “legitimate chemists” and “many more” clandestine chemists, or “cooks,” that were working on the project. Their goal was to train the cooks to work in the aforementioned confection sites where fentanyl precursors, such as ANPP, or fentanyl pre-precursors, such as

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187 Data shared to InSight Crime by SEDENA.

188 InSight Crime interviews, former Mexican law enforcement officer, Mexico City, Mexico, 1 March 2023; Sinaloa state police officer, Culiacán, Sinaloa, Mexico, October 2022.

189 Peniley Ramírez, “Exclusiva: Así opera la industria de producción y exportación de fentanilo en Sinaloa,” Univisión, 23 February 2020; Paulina Gómez, “Going into a Fentanyl lab with a Sinaloa Cartel Cook,” Univisión, 5 November 2020.

190 David Saúl Vela, “Tumban red dedicada a la fabricación de drogas sintéticas en la que colaboraba ingeniero de la UNAM,” El Financiero, 25 October 2020.

191 Jon Kamp, José de Córdoba and Julie Wernau, “How Two Mexican Drug Cartels Came to Dominate America’s Fentanyl Supply,” Wall Street Journal, 30 August 2022.

192 InSight Crime interviews, US counternarcotics agent, 15 February 2023; US counternarcotics agent, 21 March 2023.



4-AP, could be used to make fentanyl in a relatively easy manner, according to investigators. The public got a glimpse of the case in December 2018, when authorities raided one clandestine facility in Mexico City and arrested four people.<sup>193</sup> The Associated Press, quoting the Attorney General's Office, said the lab was in a "middle-income neighborhood on Mexico City's north side" and had its own "automated pill press."<sup>194</sup>

No more details were given out publicly, but one of the counterdrug operators told InSight Crime that one of those arrested was a chemistry professor from Mexico's National Autonomous University (Universidad Nacional Autónoma de México - UNAM). The counterdrug operator added that the raid included "two or three labs" where they were making fentanyl. The criminal groups were storing 300 kilograms of finished fentanyl they had synthesized in one of these spots, the source said, but Mexican authorities delayed the raid, and the fentanyl was gone by the time they seized the property.<sup>195</sup>

The counterdrug operator added authorities also raided "two or three labs" where they were trying to make precursors from scratch using the Janssen and the Siegfried methods.<sup>196</sup> If true, this would indicate Mexican groups attempting to free themselves from outside chemical suppliers, like they have with methamphetamine. The account was publicly corroborated by a former DEA agent, Terry Cole, who told a media outlet there were dozens of chemists trying to "change the fentanyl molecular analog to create a new synthetic version."<sup>197</sup>

"The goal is to utilize different chemical precursors; no longer relying on importing China's chemicals," Cole told the outlet.

The networks needed to import fentanyl and fentanyl precursors may also include government officials. In June 2022, during one of President Andrés Manuel López Obrador's morning press conferences, the director of the Federal Commission Against Health Risks (Comisión Federal de Prevención de Riesgos Sanitarios - Cofepris), Alejandro Svarch Pérez, mentioned corruption inside the agency's "basement," his metaphor for the "dark areas" where nefarious activity happens.<sup>198</sup> One type of corruption he highlighted revolved around petitions that companies filed to import scheduled drugs like fentanyl for medical use in Mexico. Svarch said these schemes were governed by the logic of "whomever pays, plays."

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193 Fiscalía General de la República, "[Comunicado PGR 34/18. PGR asegura en la Ciudad de México laboratorio clandestino para elaborar fentanilo](#)," 12 December 2018.

194 Associated Press, "[Mexico raids lab producing fentanyl in capital](#)," 12 December 2018.

195 InSight Crime interview, US counternarcotics agent, 21 March 2023.

196 Ibid.

197 Jaeson Jones, "[EXCLUSIVE: Mexican Chemists Help Sinaloa Cartel Cut China Out of Fentanyl Trade](#)," 2 April 2020.

198 Mexico's Presidential Office, "[Press conference by President Andrés Manuel López Obrador](#)," 7 June 2022.

In essence, officials had set up an extortion scheme, which could be the foundation upon which drug traffickers import large quantities of illegal synthetic drugs like fentanyl, as well as precursor and pre-precursors to synthesize those synthetic drugs, Svarch explained. The system, he added, had been “institutionalized” to the extent that brokers -- which Svarch called “coyotes” -- ran interference for the schemes, collecting fees for facilitating access and swift passage of petitions. Svarch seemed to be referring to a case that came to light in October 2021, when Health Minister Jorge Alcocer told reporters that the Cofepris had to call in the Mexican navy to assist an investigation regarding the illegal importation of fentanyl.<sup>199</sup> The minister did not provide details of the case, but he mentioned that “several employees had to be removed” and that there had been threats.

### **Hybrid Sourcing: The Case of Methamphetamine Pre-Precursors**

Hybrid sourcing refers to the process whereby Mexican criminal networks obtain synthetic drugs or precursor chemicals that are scheduled or heavily regulated in Mexico from countries where these substances are not scheduled or heavily regulated. For the purposes of this study, this scheme mostly involves the aforementioned gray-market companies in China, which produce, market, and sell fentanyl and methamphetamine pre-precursors that are not heavily regulated or scheduled in that country.

The production and distribution companies do not comply with export requirements and do not declare the merchandise correctly at the point of departure, in transit, or when it arrives at Mexican ports and airports. We believe hybrid sourcing is likely the most common method for criminal networks in Mexico to obtain pre-precursors and regulated precursors. This is because it still represents the cheapest and most efficient way of obtaining the necessary materials. Specifically, we found criminal networks mostly used this method to source pre-precursors for the mass production of methamphetamine.

As noted, the production of methamphetamine has advanced significantly in the last decade. Mexican criminal networks are mass-producing some of the purest and most potent methamphetamine on the planet. P2P and methylamine fuel this market. And while both chemicals are available on the black market -- and Mexican criminal networks are obtaining some of their precursors there -- the consensus is that Mexican criminal networks now produce most of their own precursors using unscheduled or less regulated pre-precursors and essential chemicals.<sup>200</sup>

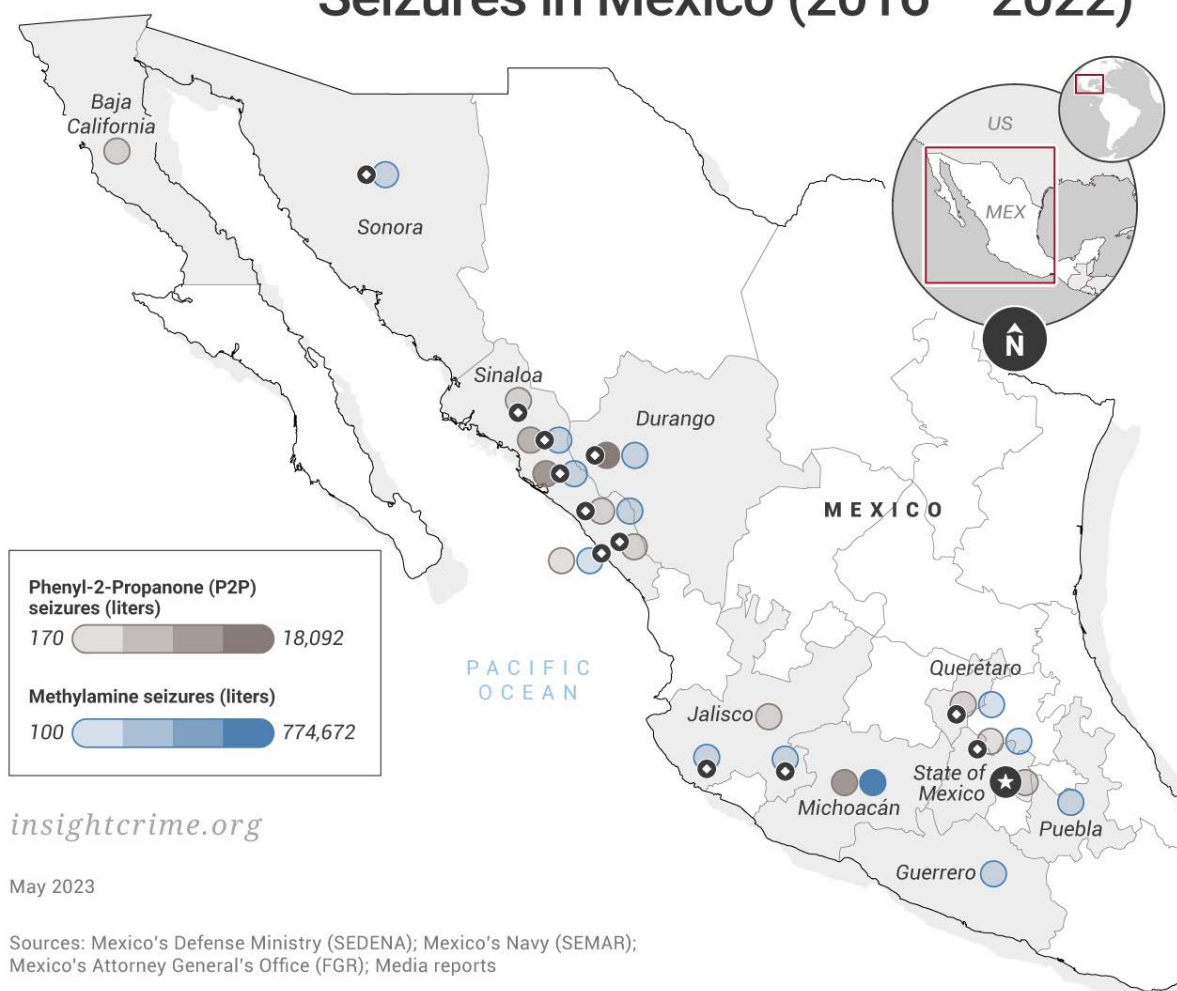
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199 Associated Press, “Mexico admits corruption in its drug regulatory agency,” 15 October 2021.

200 InSight Crime interviews, former UNODC officer, Mexico City, Mexico, 29 June 2022; former Mexican intelligence officer, Mexico City, Mexico, 29 June 2022; officer from Mexico’s National Guard, Mexico City, Mexico, 21 July 2022; United Nations Office on Drugs and Crime (UNODC), “Synthetic Drugs and New Psychoactive Substances in Latin America and the Caribbean 2021,” September 2021

Some of the evidence for this shift is in the seizure data. In recent years, Mexican authorities have seized almost all the P2P and methylamine in production zones and laboratories rather than at ports of entry, border entry points, or illegal entry points. While this pattern may be due to how Mexico has organized its regulatory bodies, security forces, and law enforcement agencies -- as well as the corruption in and around the movement of goods through the ports of entry -- it suggests that criminal networks are not importing P2P in large quantities. Instead, they seem to synthesize it from less-regulated chemicals or not scheduled pre-precursors.

## Phenyl-2-Propanone (P2P) and Methylamine Seizures in Mexico (2016 – 2022)



[insightcrime.org](https://insightcrime.org)

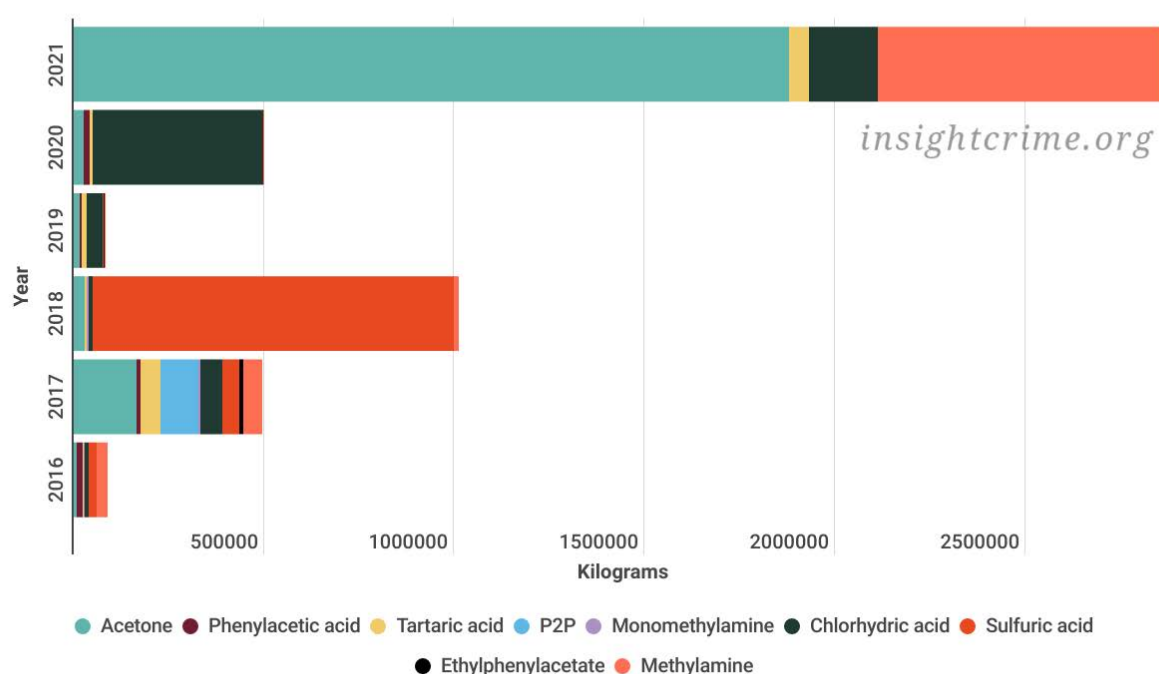
May 2023

Sources: Mexico's Defense Ministry (SEDENA); Mexico's Navy (SEMAR); Mexico's Attorney General's Office (FGR); Media reports

These efforts by criminal networks to circumvent the controls pre-date the pandemic, but may have accelerated while international trade slowed during the height of the coronavirus. Seizure data from Mexico, obtained

via freedom of information requests, illustrate a variety of substances used in methamphetamine production that have been present in large quantities in the country for years. Most notable among them are hydrochloric acid, sulfuric acid, and acetone, which was seized in record quantities during the the pandemic. But, as is evident in the graphic below, these are hardly patterns. That might be the point: Mexican criminal actors appear to be experimenting with various chemicals to produce precursors, expanding their repertoires to circumvent the system even further.

## Seizures of Chemical Substances in Mexico (2016 - 2021)



May 2023

Source: Mexico's Attorney General's Office

### Modus Operandi and the Networks

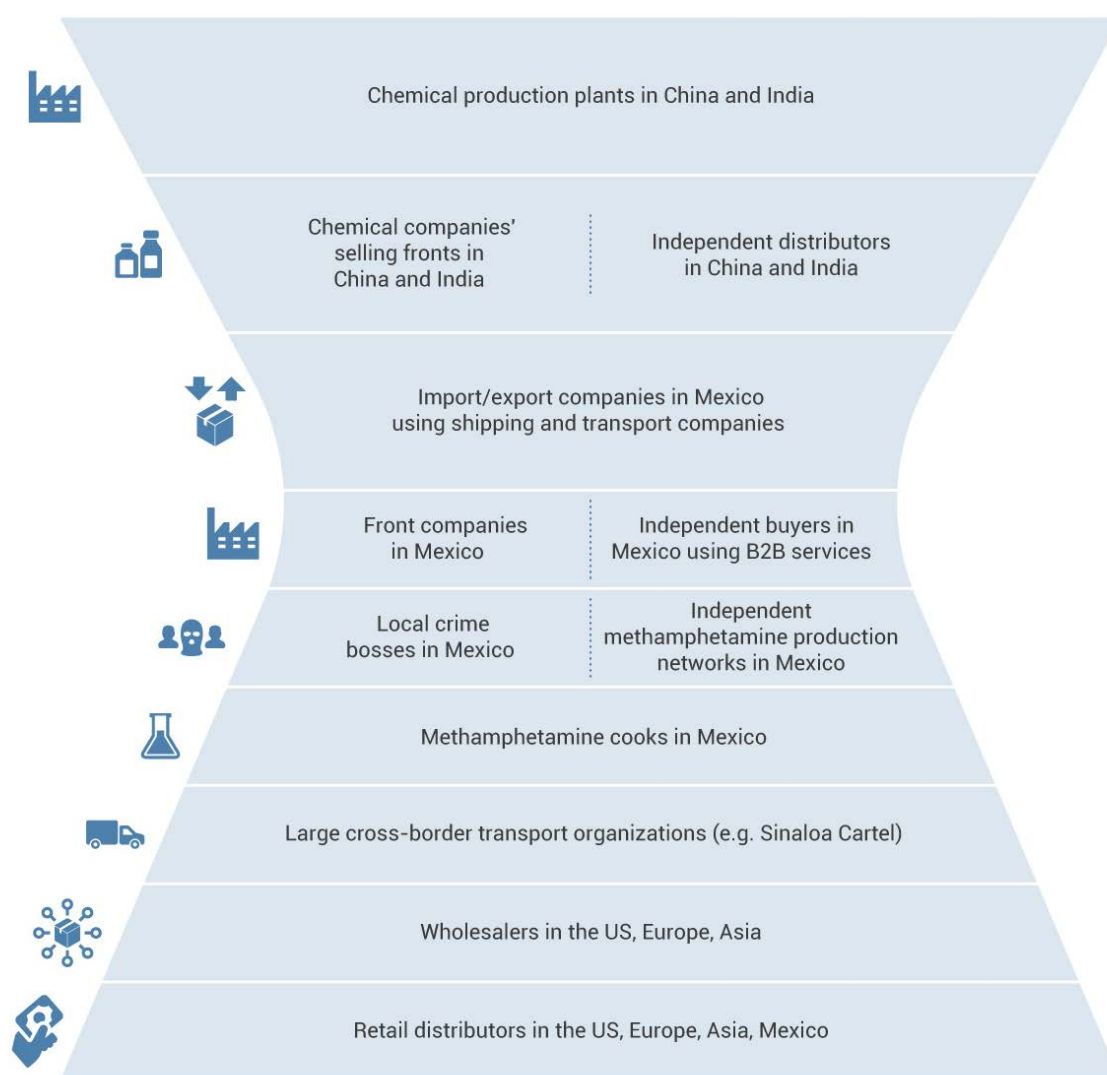
The chemicals can be imported into Mexico in two ways. First, they can come through front companies.<sup>201</sup> These front companies falsely claim to be importing these substances for a licit purpose or shift the quantities of the chemicals they are importing. In Mexico, these front companies are easily created and registered, and they are often involved in major corruption schemes.<sup>202</sup> As of January 2023, the Mexican tax administration service (Servicio

<sup>201</sup> InSight Crime interview, former Mexican intelligence officer, Mexico City, Mexico, 29 June 2022.

<sup>202</sup> For a brief but illustrative list of the various roles of front companies in recent corruption scandals, see MCCI, [¿Qué es una empresa fantasma y cómo funciona?](#)

de Administración Tributaria – SAT) identified 12,673 companies that were allegedly simulating business operations for tax evasion purposes<sup>203</sup> and that could have easily been used for illicit international trade operations. Given that the identified companies are likely a fraction of the total, the potential for deviation is significant.

## Hybrid Sourcing: the Methamphetamine Pre-precursors Supply Chain



203 Mexico's Tax Administration Service, "Listado de contribuyentes (Artículo 69-B del Código Fiscal de la Federación)," January 2023.



Mexican officials have discovered some front companies that engaged in the international chemical trade. Between December 2021 and December 2022, they closed down eight alleged front companies.<sup>204</sup> The more sophisticated of them have a commercial address in industrial districts, but others have been registered to private homes or post office boxes. The products they imported also ranged from cleaning chemicals and laboratory supplies to veterinary products and technology.<sup>205</sup> The chemicals, as noted, enter the country with false or doctored labels, or with falsified or doctored permits issued from Mexican regulatory authorities.

Mexican officials have spoken publicly about how some of the front companies are formed with the complicity of government officials. During his intervention in June 2022, Cofepris Director Svarch mentioned regulators extorting “thousands” of companies for phantom violations. While we do not believe this type of corruption is directly connected to importing precursors or illegal synthetic drugs, it could help explain how phantom companies, with as little as a post office box and a registry number, could form and operate with relative ease and little oversight. Svarch also spoke of “the darkest and most rotten” part of Cofepris -- a place where “interest groups” that managed “foreign business and the pharmaceutical industry” operated and had meetings “in broad daylight.”

Svarch is the second person to head Cofepris since Andrés Manuel López Obrador came to power in December 2018. The first, José Alonso Novelo Baeza, in various public appearances before the Senate, similarly declared that the administration’s focus was on cleaning Cofepris of corruption.<sup>206</sup> In October 2020 he said there had been “close to 30” complaints made to the agency’s internal watchdog.<sup>207</sup> The priority, he made clear, was to level the playing field amongst the companies vying for the agency’s attention and service.

The agency is rightfully concerned with this corruption, as it undermines competition in the pharmaceutical industry. However, neither Novelo nor Svarch specified what happened in these corruption and influence peddling investigations. And when InSight Crime sought more information on the internal issues, we were not granted an interview or further comment. What’s more, our public records requests and appeals regarding the agency were denied. Svarch did, however, tell *The Washington Post* the agency discovered a permit to import 40 tons of tartaric acid, which is used to

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204 InSight Crime interview, SEMAR officers, Mexico City, Mexico, 6 December 2022.

205 *United States of America v. Fujin Zheng and Guangua Zheng*, “[Indictment. Case No. 1:18 CR 474](#),” Northern District of Ohio Eastern Division, 17 August 2018.

206 Mexico’s Health Ministry, “[El titular de Cofepris compareció ante integrantes de la Comisión de Salud del Senado de la República](#),” 24 April 2019.

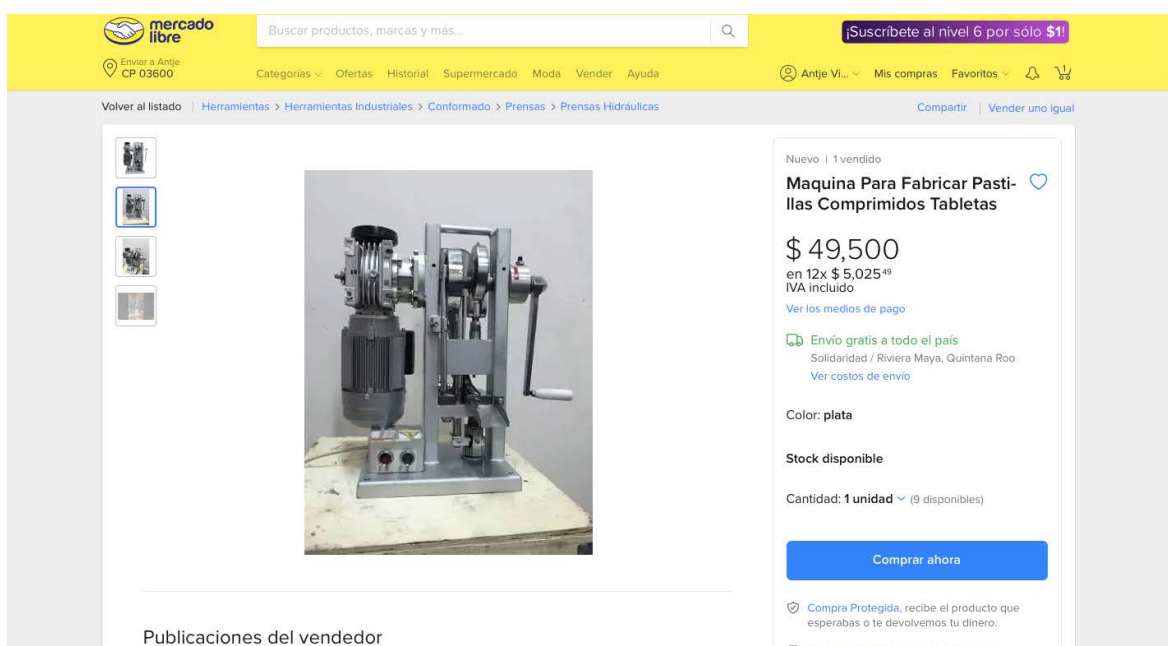
207 Mexico’s Senate, “[Versión estenográfica de la participación inicial del doctor José Alonso Novelo Baeza, titular de la Comisión Federal para la Protección contra Riesgos Sanitarios \(Cofepris\), ante la Comisión de Salud del Senado de la República](#),” 12 October 2020.



increase the purity of methamphetamine, among other suspicious items. In all, he said Cofepris had seized more than 300 tons of what The Post described as “suspect chemicals and medications.”

“Mexico had very likely become the number one importer of chemical precursors” in the world, he said to The Post.<sup>208</sup>

A second way Mexican criminal networks obtain chemicals regulated in the country but not abroad is via online services such as B2B or directly via web interactions on open-source platforms. We chronicled in detail in the previous section how criminal operators can obtain the chemicals via services, such as Chemical Book and Alibaba, which operate from Asia. In Mexico, they can purchase laboratory equipment and pill presses on platforms like Mercado Libre, a platform similar to eBay, which allows sellers and buyers to connect and make private transactions.



A pill press for sale on Mercado Libre (Screenshot: InSight Crime)

These chemicals are smuggled via air, land, and sea, although Pacific ports appear to be the main entry points for large quantities of methamphetamine and fentanyl pre-precursor chemicals into Mexico.<sup>209</sup> From China, the ships carrying the precursors depart from the ports of Shanghai, Ningbo, and

208 Mary Beth Sheridan, Eva Herscovitz, and Alejandra Ibarra Chaoul, “Inside the daunting hunt for the ingredients of fentanyl and meth,” The Washington Post, 13 December 2022.

209 InSight Crime interview, former Mexican federal law enforcement officer, Mexico City, Mexico, 1 March 2023.

Quingdao, and follow routes that connect with major transit zones in Hong Kong, Japan, and South Korea before heading to Mexico.<sup>210</sup> From India, shipments depart to Mexico from the ports of Chennai and Mumbai.

According to Mexican federal authorities interviewed by InSight Crime, the main shipping line on which the pre-precursors arrive is China Ocean Shipping Company (Cosco).<sup>211</sup> Cosco is a government-owned, Shanghai-based shipping behemoth. It operates nearly 400 shipping vessels from numerous Chinese hubs and, as of September 2022, had 268 international routes. With regards to Mexico, Cosco services routes that reach Manzanillo, Lázaro Cárdenas, and Ensenada on the Mexican Pacific coast.<sup>212</sup>

Our research could not find any public implication of wrongdoing by the company in any precursor- or synthetic drug-related criminal investigation, and the company did not respond to InSight Crime's repeated requests for comment. Nonetheless, authorities said its connection to the precursor and synthetic drug trade may be due to its size and prominence in the Pacific. It is listed in various trade publications as one of the largest shipping companies for the Pacific,<sup>213</sup> and, in addition to its international routes, it also had numerous feeder routes into China, which would give it direct access to the principal chemical-production areas.

In general, it is hard to say how much these transport companies know, since the chemicals are mislabeled, the amounts of chemicals are often falsified, or the personnel has little knowledge or expertise regarding the types of chemicals being shipped or the current restrictions being placed on them. This shields the products from scrutiny at departure and transit points, as well as upon arrival in Mexican ports of entry.

When those methods fail, criminal networks can turn to more inventive means. Specifically, criminal networks may be using fishing vessels and go-fast boats to collect precursors from container ships before they arrive at the port and transport the chemicals to unguarded areas along the coasts of Sinaloa, Colima, and Michoacán. Such pickups have been chronicled by news organizations such as National Geographic,<sup>214</sup> and research institutions like the Brookings Institute, which declared criminal groups “bring fast boats to offload precursors and cocaine (and deliver contraband, such as marine

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210 United Nations Office on Drugs and Crime (UNODC), “Synthetic Drugs in East and Southeast Asia,” 2022; Redacción Zeta, “Precursor chemicals for fentanyl production seized at Ensenada Port,” *Semanario Zeta*, 25 October 2020

211 InSight Crime interview, Dr. José Ignacio Santos, Director of Mexico's General Health Council (Consejo General de Salubridad), Mexico City, Mexico, 29 June 2022.

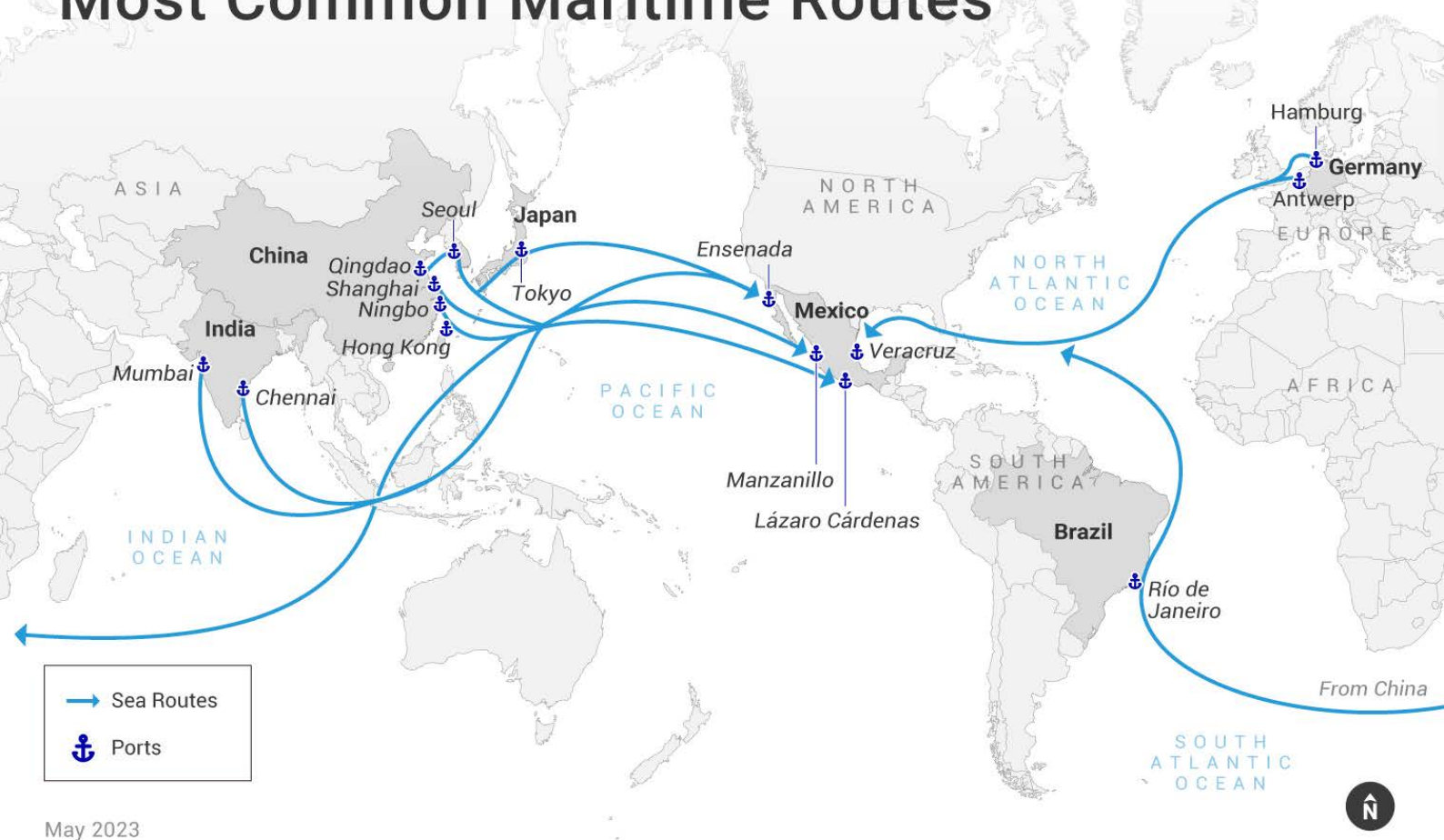
212 Cosco Shipping, “Routes,” 2022.

213 See, among others, [MoverFocus](#) and [Investopedia](#).

214 National Geographic, “Trafficked with Mariana van Zeller - Season 1 - Episode 2 - Fentanyl,” December 3, 2020.

species) onto larger ships from China or Latin America.”<sup>215</sup> From Mexican shores, the chemicals are transported to cities close to production areas, authorities told InSight Crime.<sup>216</sup>

## Precursor Chemical Flow to Mexico – Most Common Maritime Routes



May 2023

Sources: InSight Crime interviews with law enforcement officers and criminal actors

[insightcrime.org](https://insightcrime.org)

To a lesser extent, methamphetamine and fentanyl pre-precursor chemicals are transported by air cargo, and authorities have already made several seizures. Mexican authorities say that chemicals mainly land at the international airports of Mexico City, Tijuana, and Toluca; and to a lesser

<sup>215</sup> Vanda Felbab-Brown, “China and Synthetic Drug Control: Fentanyl, Methamphetamine and Precursors,” Brookings Institute, March 2022.

<sup>216</sup> InSight Crime interview, former Mexican intelligence officer, Mexico City, Mexico, 29 June 2022

extent at the international airports of Guadalajara, Querétaro, Mazatlán, Monterrey, Hermosillo, La Paz, and Oaxaca.<sup>217</sup> Acetone, hydrochloric acid, and toluene are among the substances that have been seized at airports.<sup>218</sup>

Criminal networks may also supplement their supplies of methamphetamine pre-precursors by stealing them. Bloomberg reported the theft of at least 30,000 liters of monomethylamine (MMA), a pre-precursor for methamphetamine production. The MMA was produced by a Texas-based company with production facilities in Mexico. In what appeared to be an inside job, criminals intercepted the company's trucks on three separate occasions.<sup>219</sup> In our research, we found no indication that Mexican authorities established additional security or regulations to help ensure that future supplies do not run the same level of risk. Industry sources consulted by InSight Crime were also very reluctant to share information on the production, imports, and transport of many of these chemicals. Some of them cited safety concerns.

While online trade is vibrant, there is still sometimes the need for these parties to connect in person. From our research, we believe that business deals between Chinese companies and emissaries of criminal networks happen in Mexico more often than in China. This is, in part, due to China's sophisticated surveillance and law enforcement complex, as well as its stiff penalties.<sup>220</sup> These connections are also often facilitated by intermediary criminal networks, who have strong ties to criminal organizations in Mexico and set up the front companies on their behalf.

In other words, large criminal organizations such as the Sinaloa Cartel and the CJNG do not get directly involved in the chain of precursor and pre-precursor chemicals until these substances have been gathered in bulk in Mexico. Instead, they rely on individuals or networks who have legal fronts or who set up front companies<sup>221</sup>

These third-party actors protect themselves from law enforcement scrutiny by not getting involved in any other stage of the synthetic drug production chain. This allows them to maintain a low profile and come across as law-abiding. Moreover, these actors may supply more than one criminal organization and protect themselves from disputes among different groups by gatekeeping their

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217 Data shared by Mexico's National Guard and Mexico's National Customs Agency.

218 Data shared by Mexico's National Guard.

219 Cam Simpson, Michael Smith and Nacha Cattán, "Heroin's Hidden Ingredient is a Chemical Made by US Companies," Bloomberg, 26 August 2020.

220 Based on previous field reporting in China by Ben Westhoff, who collaborated on this investigation. See Ben Westhoff, Fentanyl Inc. How Rogue Chemists Are Creating the Deadliest Wave of the Opioid Epidemic, Atlantic Monthly Press: 2019.

221 InSight Crime interviews, criminal lawyer, Los Mochis, Sinaloa, Mexico, 18 October 2022; SEMAR officer, Mexico City, Mexico, 6 December 2022; former drug trafficker in central Michoacán, Mexico, 12 December 2022; methamphetamine and fentanyl drug trafficker in the Tierra Caliente region, Michoacán, Mexico, 13 December 2022.

access to foreign chemical markets. They sell these chemicals to members of criminal organizations, who then move the substances to warehouses in cities close to synthetic-drug production zones, such as Culiacán, Guadalajara, Uruapan, and Morelia.<sup>222</sup>

At this stage of the chain, it is difficult for authorities to detect the movement of precursor chemicals, as there is less surveillance of cargo on the roads, and the substances are often transported in private cars.<sup>223</sup> The warehouses act as collection points from where the chemicals can then be distributed to nearby laboratories. These are mostly located in the city's industrial districts where they do not draw attention. Additionally, the chemicals may also be stored in safe houses or other types of private properties linked to criminal organizations.<sup>224</sup> In Sinaloa, for example, local authorities told InSight Crime that the Sinaloa Cartel -- specifically, the Chapitos, the branch linked to the sons of Joaquín "El Chapo" Guzmán -- oversees distributing the chemicals to all clandestine laboratories in the area via their local crime bosses.<sup>225</sup>

Conversely, in Michoacán, where there is not a dominant criminal organization, every producer needs to get their own supplies for the lab.<sup>226</sup> One Michoacán trafficker, for instance, said they received chemicals from both the Manzanillo and Lázaro Cárdenas ports.<sup>227</sup> The revelation was startling because the trafficker was part of an alliance that purportedly had no access to Manzanillo, since it was supposedly controlled by rivals in the CJNG. The narrative of the CJNG's monolithic control of Manzanillo was further undermined in Sinaloa where one police source indicated that criminal networks in that state also source their chemicals from Manzanillo.<sup>228</sup>

An example of how these intermediary actors operate is the case of the front companies Corporativo Escomexa and Corporativo y Enlace Ram. These two companies worked with the aforementioned Indian businessman, Manu Gupta, and Richest Group, a Chinese import-export company specializing in chemical products owned by Kevin Dai. Both Mexican front companies were registered in the city of Guadalajara and theoretically exported alcoholic beverages and raw materials.<sup>229</sup> According to the reporting by Forbidden Stories, these companies were importing fentanyl and fentanyl precursors amongst their products to supply the Sinaloa Cartel.

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222 InSight Crime interviews, officer of Sinaloa's State Police, Culiacán, Sinaloa, Mexico, 12 October 2022; methamphetamine and fentanyl trafficker in the Tierra Caliente region, Michoacán, Mexico, 13 December 2022.

223 InSight Crime interview, officer of Sinaloa's State Police, Culiacán, Sinaloa, Mexico, 12 October 2022.

224 InSight Crime interviews, officer of Sinaloa's State Police, Culiacán, Sinaloa, Mexico, 12 October 2022; methamphetamine and fentanyl trafficker in the Tierra Caliente region, Michoacán, Mexico, 13 December 2022.

225 InSight Crime interview, officer of Sinaloa's State Police, Culiacán, Sinaloa, Mexico, 12 October 2022.

226 InSight Crime interview, methamphetamine and fentanyl trafficker in the Tierra Caliente region, Michoacán, Mexico, 13 December 2022.

227 InSight Crime interview, former drug trafficker in central Michoacán, Mexico, 12 December 2022.

228 InSight Crime interview, officer from Sinaloa's state police, Culiacán, Sinaloa, Mexico, 13 October 2022.

229 Audrey Traverso, "Mexican Cartels: 'The Asia Connection'," Forbidden Stories, 8 December 2020.



However, later reporting by Milenio, citing a government intelligence report, stated that they were also supplying the CJNG.<sup>230</sup> As of December 2022, these companies were still active. InSight Crime requested Mexico's Attorney General's Office for case files on these companies, but they were denied since the investigation is ongoing. Still, InSight Crime visited the property registered as the official address for both companies and found no indication of industrial or commercial activities.

Another example that illustrates how these intermediary actors work is the case of the Zheng network, a Chinese family clan that initially trafficked controlled substances to the United States through various import-export companies based in both countries.<sup>231</sup> In 2019, El Heraldó reported that Mexico's financial intelligence unit had knowledge that the network had also been smuggling these types of substances to Mexico since 2013, using a variety of front companies that they created in the country that offered veterinary care, clothing sales, clinical laboratories, and computer systems. The Zheng network presumably moved the substances through the ports of Ensenada, Manzanillo, and Lázaro Cárdenas, supplying both the Sinaloa Cartel and the CJNG.<sup>232</sup>

US authorities have also recently shed light on more examples of these types of networks. In February 2023, the District of Columbia unsealed an indictment against two people based in Michoacán who allegedly imported methamphetamine precursors, pre-precursors, and essential chemicals -- including methylamine, nitroethane, phenylacetic acid, toluene, and acetone -- from China and India. The two appeared to participate only in this part of the chain and reportedly supplied the CJNG as well as other methamphetamine-production networks in the region.<sup>233</sup>

A few days later, the US Treasury Department sanctioned three members of a family in Culiacán, Sinaloa. The Zamudio brothers reportedly created a network of small companies in the city through which they diverted chemicals for various synthetic drug production networks that supply the Sinaloa Cartel. Two of their companies -- a small retail pharmacy and a steel shop -- were directly linked by US authorities to the supply of chemicals for fentanyl and methamphetamine production, but the names of these substances were not specified.<sup>234</sup>

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230 Israel Navarro, "Carteles de Sinaloa y Jalisco Nueva Generación comparten proveedores para drogas sintéticas," Milenio, 15 November 2022.

231 United States District Court for the Northern District of Ohio, "Zheng DTO Indictment," 2017.

232 El Heraldó México, "Los Zheng, cartel chino que opera distribución de fentanilo en México," 30 December 2019.

233 United States Department of Justice, "Foreign Nationals Charged with International Methamphetamine and Precursor Chemical Trafficking Conspiracies," 8 February 2023.

234 United States Department of Treasury, "Treasury Sanctions Sinaloa Cartel Network of 'Super Lab' Suppliers and Fentanyl Operators," 22 February 2023.

### **Licit Sourcing: The Case of Essential Chemical Substances**

Licit sourcing refers to how criminal networks obtain chemicals that are not scheduled -- and often either not strictly regulated or difficult to regulate -- in either the source country or Mexico. These less regulated or unscheduled chemicals are produced or enter Mexico legally under the guise of a front company or are diverted from a legitimate importer or chemical company to criminal actors or brokers working with large criminal networks.

The type of pre-precursors that could be accessed through this method are substances on Mexico's dual-use list, such as sodium cyanide, acetic acid, and P2NP, which are used to produce P2P. However, most of what our research found is that this way of sourcing was mostly used to obtain essential chemical substances like binders, excipients, lubricants, and dyes needed for synthesizing the drugs and the manufacturing of counterfeit pills.

### **Modus Operandi and Networks**

Many of these importers are the same front-companies outlined in the previous section, but others are different. They often have Cofepris permits and usually have a pattern of imports that do not raise suspicions and will not trip any security algorithms.<sup>235</sup> Notably, many of these chemicals are also legally produced in Mexico by companies or chemical traders, thus obviating the need for import licenses and reducing the risks. In rare instances, there have been reports of theft from legitimate chemical companies; however, it is unclear if these were inside jobs.

Companies that produce, import, and transport these chemicals -- including international pharmaceuticals, cleaning product marketers, agrochemical and pesticide marketers, flavor and fragrance manufacturers, and cosmetic companies, among others -- are numerous and varied, making regulatory efforts and enforcement that much more difficult. What's more, the amount of chemicals needed, even for the mass production of methamphetamine and fentanyl, is minimal compared to the legal market, making the combination of any of the above-mentioned methods a viable means to satisfy all the needs of these criminal groups.

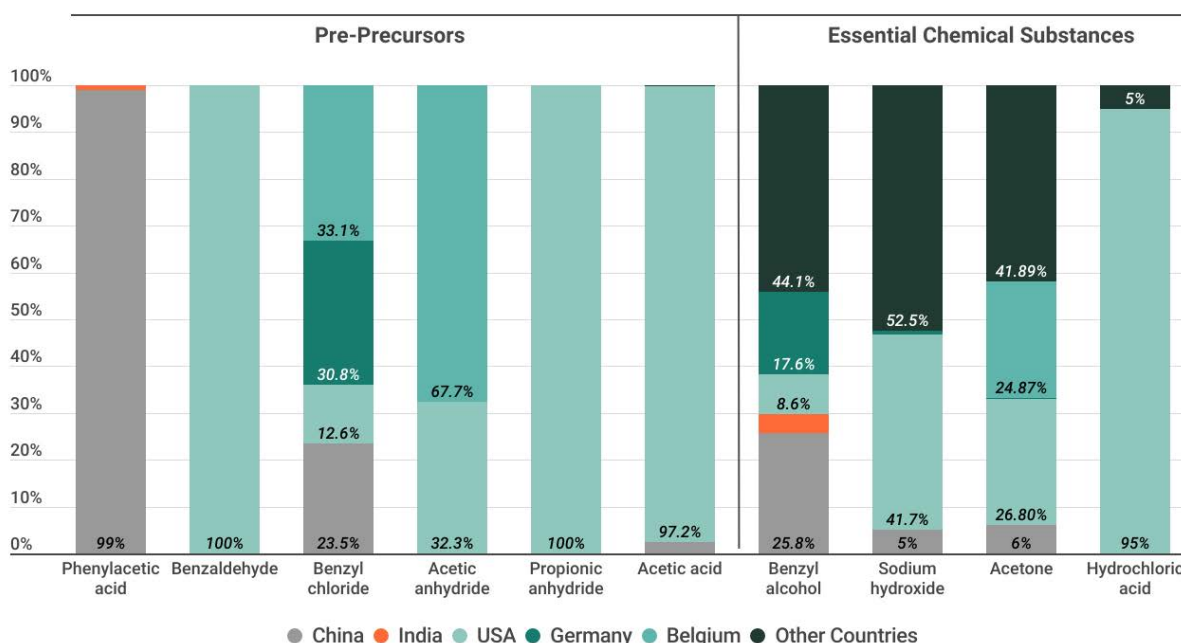
Consider the case of acetone. In 2021, the Mexican customs agency registered legal imports of acetone totaling more than 26,713 tons. That same year, acetone seizures associated with methamphetamine production amounted to less than 1,500 tons or about 6% of the imports. This means in practice is that corrupting local officials may not even be necessary. To put into perspective the amounts of some of these more important pre-precursors and thus shed light on how difficult it would be to police them, InSight Crime filed numerous freedom of information requests regarding which companies have permission to import chemicals into Mexico. However, all of these requests and subsequent appeals were denied based on what Cofepris said were "national security" concerns.

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235 InSight Crime interview, SEMAR officers, Mexico City, Mexico, 6 December 2022.

In interviews, European law enforcement and experts said that pre-precursors and essential chemical substances may be diverted from European companies with operations in Mexico, after these substances have been exported to the country.<sup>236</sup> However, it is difficult to substantiate such claims since there are few cases of diversion detected in public records, and although we made a freedom of information request, Mexico’s Attorney General’s Office did not furnish us with any reports of crimes related to the diversion of dual-use or essential chemical substances.<sup>237</sup> Still, what is clear from the import statistics is that there are a large number of possible foreign sources for these chemicals. (See below)

## Origins of Major Pre-Precursors and Essential Chemical Substances Legally Imported into Mexico



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May 2023

Source: Mexico's National Customs Agency

Mexico-based companies also produce numerous pre-precursors and chemical substances that are essential to the production of methamphetamine and fentanyl including acetic anhydride, hydrochloric acid, toluene, sodium cyanide, and sodium hydroxide.<sup>238</sup> These are monitored by the government but are not subject to strict regulations, given their dual use. The chemical

<sup>236</sup> InSight Crime email exchange, German Federal Criminal Police Office, Germany, 9 December 2022.

<sup>237</sup> Freedom of Information request to Mexico’s Attorney General’s Office. Resolution request: 330024622001942

<sup>238</sup> Data from Mexico’s National Chemical Industry Association

industry is mostly concentrated in the state of Mexico, Mexico City, Jalisco, Querétaro, Nuevo León, Veracruz, and Tamaulipas, and has seen relatively stable levels of production over the past ten years.<sup>239</sup>

## Licit Sourcing: Essential Chemicals for Methamphetamine Production



May 2023

*insightcrime.org*

Sources: InSight Crime interviews with law enforcement, criminal actors, and sources from the chemical industry.

The evidence of diversion that we have comes from media coverage and our own, gumshoe investigation of the industry. In 2020, an extensive Bloomberg investigation revealed the ease with which a Pennsylvania-based company could produce dual-use substances in Mexico in large quantities, which

<sup>239</sup> DataMexico, “Industria Química,” Mexican Federal Government, 2019; Data from Mexico’s National Chemical Industry Association.

were then aggressively marketed and sold in a vibrant retail market.<sup>240</sup> The substance, acetic anhydride, is used in the production of heroin and methamphetamine, and is highly regulated in the United States and most of the world. At the time of the Bloomberg investigation, it was already heavily regulated in Mexico as well,<sup>241</sup> but a Bloomberg reporter purchased a one-liter bottle for \$18. During the transaction, the manager of the shop said they could get the reporter an 18-liter jug in three days -- which is against the law in Mexico -- if the reporter simply provided advanced payment.

Still, determining the provenance and regulation level of chemicals these criminal networks source to synthesize the drugs or manufacture counterfeit pills remains difficult. In our interviews with criminal actors in Michoacán, for example, traffickers were vague about their sources, but one of them insisted they got their supplies solely from the Manzanillo and Lazaro Cárdenas ports; he claimed the chemicals came from China.<sup>242</sup>

A different Michoacán-based trafficker told InSight Crime they got their chemicals from Querétaro,<sup>243</sup> a state that has had significant seizures in recent years. This is because, according to this person, a great variety of medium-sized companies and warehouses do not receive as much scrutiny from the government as larger corporations often do. Most of the time they buy these products, there are few questions asked, the trafficker noted; when the quantities rise, they can resort to threats or corruption.<sup>244</sup>

In other instances, chemical substances can be bought in cities closer to production zones, such as Culiacán, which do not house an important chemical industry. These companies tend to be smaller, have a lower profile, and thus draw even less attention from authorities.<sup>245</sup> But their supplies include foreign-sourced and locally-sourced materials.

When InSight Crime visited a recently seized methamphetamine laboratory in Culiacán in October 2022, the team found dozens of packages of calcium chloride from Vitro Chemicals, Fibers, and Mining, a Texas-based chemical company. It was not immediately clear if the chemical -- which is used as a drying agent for solvents in the methamphetamine production process -- was produced in Mexico or the United States. But the quantities illustrated the ease with which traffickers could skirt regulatory efforts. InSight Crime

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240 Cam Simpson, Michael Smith and Nacha Cattan, “Heroin’s Hidden Ingredient is a Chemical Made by US Companies,” Bloomberg, 26 August 2020.

241 Mexico’s Ministry of Interior, “Acuerdo por el cual se modifica el diverso por el que se determinan las cantidades o volúmenes de productos químicos esenciales a partir de los cuales serán aplicables las disposiciones de la ley, publicado el 27 de abril de 1998,” 24 December 2018.

242 InSight Crime interview, former drug trafficker in central Michoacán, Mexico, 12 December 2022.

243 InSight Crime interview, methamphetamine and fentanyl trafficker, Michoacán, Mexico, 13 December 2022.

244 InSight Crime interview, methamphetamine and fentanyl trafficker, Michoacán, Mexico, 13 December 2022.

245 InSight Crime interview, officer from Sinaloa’s state police, Culiacán, Sinaloa, Mexico, 13 October 2022.







*Packages of sodium hydroxide from IQUISA, a company that produces chemical products in southern Mexico and commercializes them through an office in Mexico City, found in a clandestine laboratory in Culiacán, Sinaloa (Photo: InSight Crime)*

They did say, however, that the ports are useful to move the finished product closer to the US-Mexico border by crossing the Gulf of Cortés in panga-style boats or ferries.<sup>247</sup> And when producers in the area need large quantities of chemicals, they could source them in other places. An officer from Sinaloa’s state police, for example, said they had detected chemicals in clandestine laboratories that had come through Manzanillo.<sup>248</sup>

Officials also noted this dynamism. In December 2022, the navy said Ensenada had become a major point of entry, as more scrutiny was placed on the port of Manzanillo.<sup>249</sup> But they also noted that the port of Veracruz, which also receives cargo from Asia, may also become a more important entry point for illicit chemicals, as surveillance over Pacific ports continues to increase.<sup>250</sup> Veracruz is also the main entry point for chemicals coming in legally from European countries.<sup>251</sup>

247 InSight Crime interview, criminal lawyer, Los Mochis, Sinaloa, Mexico, 17 October 2022.

248 InSight Crime interview, officer from Sinaloa’s state police, Culiacán, Sinaloa, Mexico, 13 October 2022.

249 InSight Crime interview, SEMAR officer, Mexico City, Mexico, 6 December 2022.

250 Ibid.

251 Data obtained from Mexico’s National Customs Agency

# 7

## Part IV – Synthetic Drug Production and its Impact on Mexico

### Methamphetamine Production

If we go by Mexican government seizures, methamphetamine production appears to be concentrated in two places: Data from SEDENA, SEMAR, and FGR show that over the last 12 years, most laboratories have been found in the states of Sinaloa and Michoacán. A closer analysis shows that it is concentrated in a few municipalities of those states: Culiacán, the capital of Sinaloa, where 565 seizures were made from 2010 to 2022; followed by Cosalá, Sinaloa, with 259 seizures; and then Tamazula, Durango, with 79 seizures.<sup>252</sup>

The seizures can be deceiving. In recent years, laboratory seizures in Michoacán have declined, at least according to official data, even while seizures of methamphetamine along the US-Mexico border have consistently increased.<sup>253</sup> This could be due to shifts in the quantity that can be produced. In other words, criminal networks may need fewer labs to produce more drugs. But there is also strange inconsistency in the seizures. InSight Crime's fieldwork across Michoacán, and interviews with local residents and illicit actors in that state, suggest that clandestine laboratories have proliferated in recent years. Yet seizures in that state have dropped. These facilities seem to now be concentrated in the municipalities of Buenavista Tomatlán, Coalcomán, and Chinicuila, according to our field research. What's more, our fieldwork suggests numerous facilities in Jalisco, yet not a single municipality in that state cracks the top 10 municipalities with seizures. Meanwhile, seizures of methamphetamine labs along the Sinaloa-Durango border reached record numbers in 2022, representing an increase of 450% compared to 2015, the year that previously recorded the highest number of seizures.

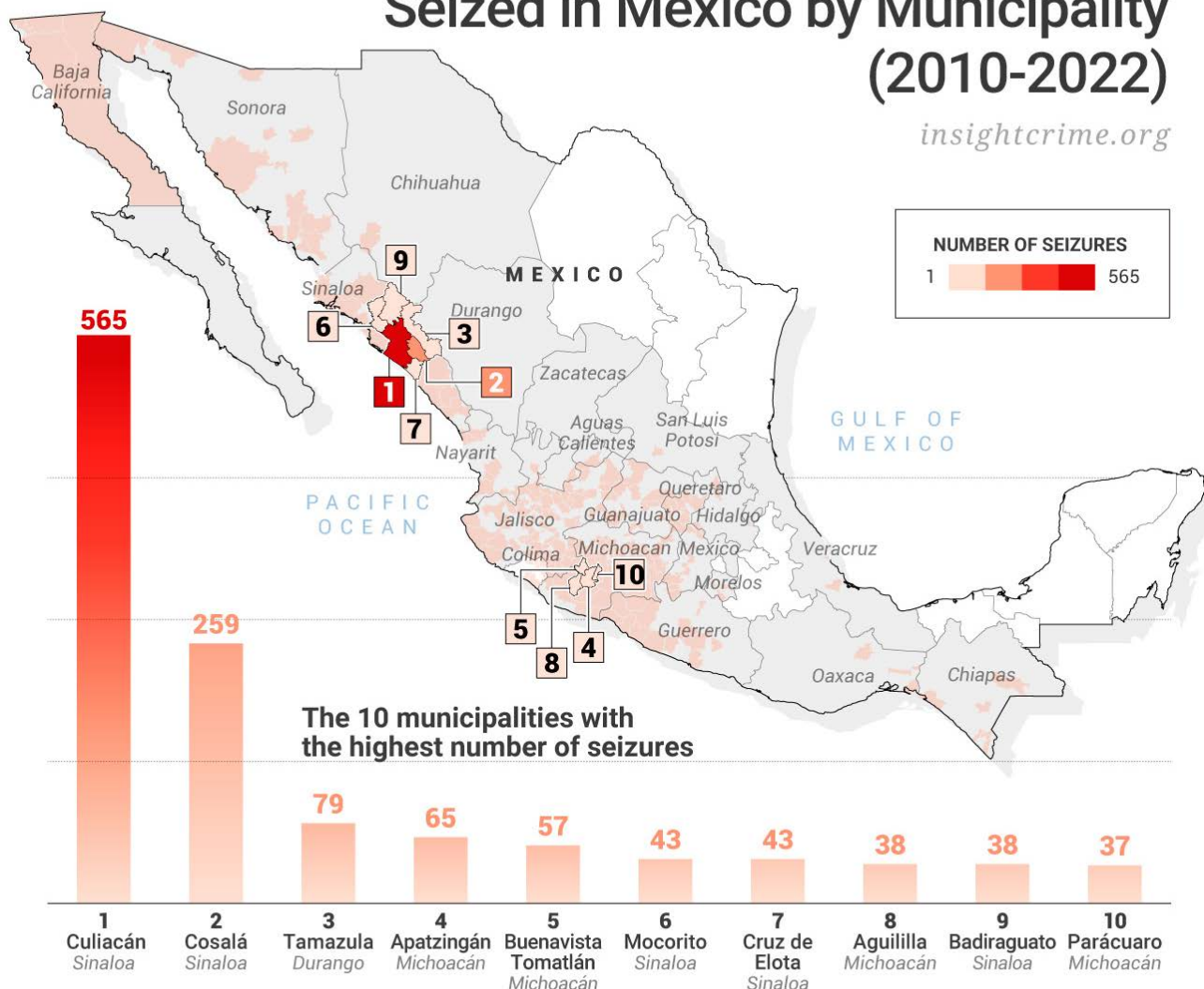
<sup>252</sup> Data shared by SEDENA, SEMAR and FGR.

<sup>253</sup> United States Customs and Border Protection (CBP), "Nationwide Drug Seizures FY2019-2022," 2023.



# Number of Methamphetamine Laboratories Seized in Mexico by Municipality (2010-2022)

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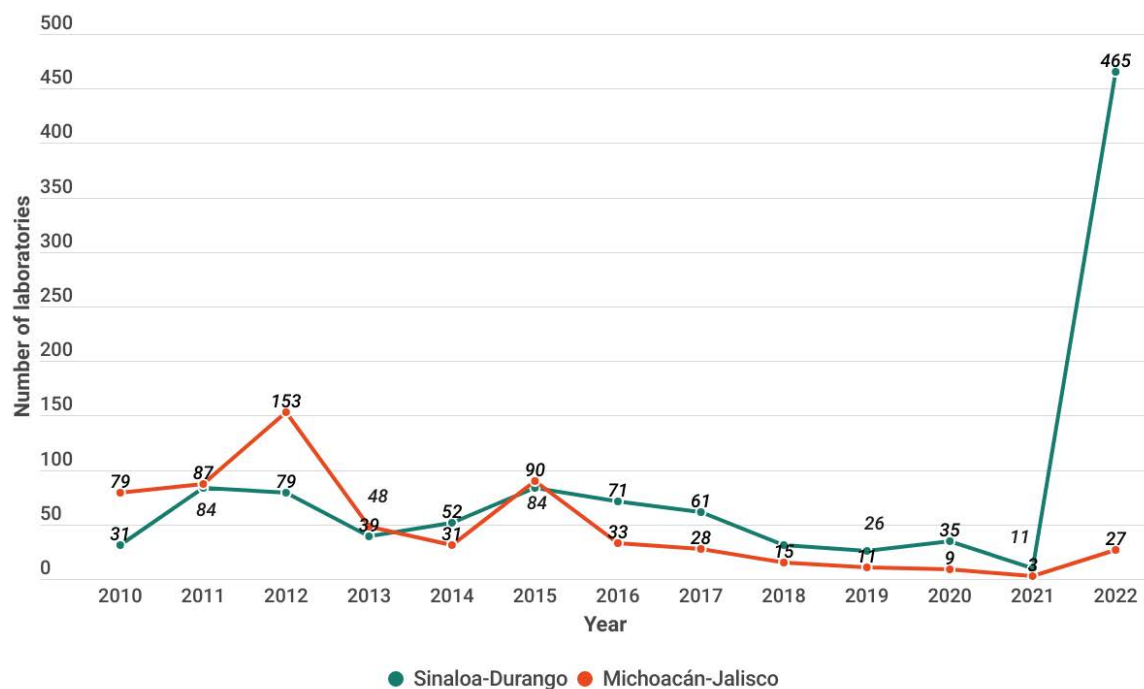
May 2023

Sources: Mexico's National Defense Ministry (SEDENA); Mexico's Navy (SEMAR)

Clandestine methamphetamine production in Mexico tends to happen in rural or semi-rural environments. It is also rustic, with limited equipment and rudimentary infrastructure. There is a need for access to water and electricity -- which criminal groups install or bring themselves -- and to roads connecting nearby towns and cities. It is, in other words, not complex and is often outsourced to third parties, even by some of the most sophisticated criminal organizations in the world. The advantages of this outsourcing are multiple: they are less costly in terms of production, personnel, and equipment; if they are raided and dismantled, it is relatively easy to relocate production;<sup>254</sup> and if they are dismantled, it is not the larger criminal organizations' problem.

254 InSight Crime interview, methamphetamine and fentanyl trafficker in the Tierra Caliente region, Michoacán, Mexico, 13 December 2022.

## Seizures of Methamphetamine Laboratories in Mexico by Region (2010 - 2022) *insightcrime.org*



May 2023

Source: Mexico's National Defense Ministry (SEDENA)

According to interviews with drug traffickers and authorities in Michoacán and Sinaloa, a small methamphetamine laboratory can produce between 200 and 300 kilograms a week, while a large one can produce up to a ton.<sup>255</sup> These quantities depend on the availability of chemical substances and the expertise of the cooks. These networks of producers tend to be independent of any large criminal organization but, in some instances, must adhere to prices and quotas the criminal organizations establish. In Sinaloa, our fieldwork indicated they receive a small share of the profits. In Michoacán, one drug trafficker said that only the “boss” of the laboratory gets paid with money, while the other workers are paid with finished methamphetamine that they are meant to sell in nearby towns.<sup>256</sup>

<sup>255</sup> InSight Crime interviews, officer from Sinaloa’s state police, Culiacán, Sinaloa, Mexico, 12 October 2022; former drug trafficker in central Michoacán, Mexico, 12 December 2022; methamphetamine and fentanyl trafficker in the Tierra Caliente region, Michoacán, Mexico, 13 December 2022.

<sup>256</sup> Ibid.



## Fentanyl Production

For many reasons, it is difficult to pinpoint the location of fentanyl labs. To begin with -- although there is an abundance of evidence to suggest Mexican criminal groups are synthesizing fentanyl in Mexico -- Mexican authorities insist they have not registered seizures of any facilities where the synthesis of fentanyl takes place. As noted, they have identified facilities where finished fentanyl is pressed into pills or capsules, or where it is laced with other drugs or substances. Only one agency, SEMAR, said they had identified labs where ANPP may have been converted into fentanyl, a process these Mexican officials insisted does not require a complex synthesis and therefore does not count as a laboratory.

Mexican authorities have also not systematically gathered data on the number and location of any of these facilities, regardless of their function. When InSight Crime requested this information from the National Guard, it was not shared. Drawing from publicly available information confuses the situation further. Mexican government agencies and the press regularly conflate seizures of methamphetamine labs and fentanyl pill-pressing facilities; and the Mexican authorities do not regularly disaggregate the different types of seizures and chemicals found.

The reality of fentanyl also makes this task difficult. Because so little is needed to fulfill consumption, a small number of production facilities could satisfy most of the traffickers' needs. Witness the two seizures of ANPP in the city of Culiacán totaling 900 liters mentioned earlier,<sup>257</sup> which, according to the INCB's calculations,<sup>258</sup> is enough to produce at least 692 kilograms of fentanyl.

Still, our research shed some light on production areas. An officer from the Attorney General's Office of Baja California, one of the main fentanyl transit points to the United States, said his team had traced most of the fentanyl they seized to the state of Sinaloa. Meanwhile, a drug trafficker in Michoacán who has recently started to smuggle fentanyl said he buys ready-made, fentanyl-laced, counterfeit pills through a contact in the city of Guadalajara. Moreover, a review of press releases from various Mexican law enforcement agencies allowed InSight Crime's team to identify that most of the seized fentanyl confection sites were in Culiacán and the northwestern border cities of Tijuana and Ciudad Juárez.

A sophisticated process that starts from scratch and follows the methods outlined in Part I would need a laboratory where conditions can be controlled, where there is specialized equipment to conduct the synthesis safely, and where there is sufficient ventilation to expel fumes and other strong scents. In other words, it would not be as discrete and presumably easier to detect by

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257 Data shared to InSight Crime by SEDENA.

258 International Narcotics Control Board (INCB), "Precursors and chemicals frequently used in the illicit manufacture of narcotic drugs and psychotropic substances 2022," 9 March 2023.

authorities, as has been the case with methamphetamine laboratories.<sup>259</sup> But, as is evident from the sole seizure of a small facility and arrest of suspects in Mexico City in 2018, confection sites can be virtually anywhere, including private homes, making it hard for authorities to detect them. And with the confection sites, there is no need for highly specialized machinery, and the process does not generate strong noises or smells that could draw attention.

These fentanyl confection sites can presumably produce hundreds of pills every week, depending on the size of the workforce. The concentration of pure fentanyl in each pill varies. According to a former Mexican federal law enforcement officer interviewed by InSight Crime, fentanyl pills seized in Mexico generally have a concentration of 3% to 5% of the synthetic opioid.<sup>260</sup> And as with the case of methamphetamine production, those working in the manufacture of fentanyl tend to be criminal cells subcontracted by larger organizations -- when operating in their territory -- or independent networks.

## Chemists and Cooks

Over the years, synthetic drug producers have scaled back their need for specialized personnel. What was once the provenance of chemists is now governed by what these organizations call “cooks.” To thoroughly understand a methamphetamine recipe, it might be necessary to have a knowledge of chemistry equivalent to at least a university degree.<sup>261</sup> But criminal networks have found these recipes can be taught<sup>262</sup> or learned via the internet.<sup>263</sup> The same is true for fentanyl confection sites: Cooks do not need an extensive chemistry knowledge, and likely only follow a simple recipe. The evidence from manufacturing sites found so far indicates that this is the most common pattern, as workers in these spaces are generally not wearing protective gear, thoroughly measuring the substance, or controlling for quality, as a more experienced chemist would.<sup>264</sup>

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259 InSight Crime interview, Dr. Silvia Cruz, pharmaceutical chemist, Instituto Politécnico Nacional, Mexico City, Mexico, 2 March 2023.

260 InSight Crime interview, former Mexican federal law enforcement officer, Mexico City, Mexico, 1 March 2023.

261 InSight Crime interviews, director of the Chemistry Faculty at a university in Mexico City, Mexico, 27 June 2022; members from the Forensic Laboratory at Mexico City’s Attorney General’s Office, Mexico City, Mexico, 28 June 2022; Silvia Cruz, researcher in pharmacobiology at Mexico’s National Polytechnic Institute, Mexico City, Mexico, 1 July 2022.

262 InSight Crime interviews with various chemical specialists in Mexico City and northwest Mexico, June - October 2022.

263 InSight Crime interviews, officer at Mexico’s National Guard, Mexico City, Mexico, 21 July 2022; Mike Vigil, former DEA Chief of International Operations, 21 July 2022.

264 InSight Crime interviews, Dr. Silvia Cruz, pharmaceutical chemist, Cinvestav, National Polytechnic Institute, Mexico City, Mexico, 2 March 2023; chemistry professor at a university in Sinaloa, Mexico, 9 October 2022; chemistry professors at a university in northwest Mexico, 14 September 2022; chemistry professor at a university in Mexico City, Mexico, 11 July 2022.

According to Mexican law enforcement and drug traffickers, the typical profile of these cooks is a youth seeking opportunity within criminal groups<sup>265</sup> or an entrepreneur attempting to enter the methamphetamine and fentanyl markets independently. In the case mentioned earlier, where chemists operating labs in the Mexico City area for the Sinaloa Cartel, investigators said the group's goal was to train a number of cooks work with the criminal organization.

The interest in working in this field continues. In Sinaloa, for example, a chemistry professor told us that he has had several students eager to enter the synthetic drug production market and that some even joined the chemistry course specifically for that purpose. The number of students interested in this had become so high the professor had given up on discouraging them and was teaching them techniques to avoid accidents in the lab.

“They are going to do it anyway, even if I tell them not to,” he told us. “But if they are going to produce drugs, they should at least not get killed in the process.”<sup>266</sup>

The dangers extend far beyond what can happen inside the lab. In May 2021, a student from the Autonomous University of Baja California was murdered in Tijuana, allegedly for refusing to collaborate with a criminal organization to help it produce synthetic drugs.<sup>267</sup> And a chemistry professor at a university in northwestern Mexico told InSight Crime that he protects his faculty and students from these threats by avoiding research topics related to synthetic-drug production.<sup>268</sup>

“As chemists we feel increasingly insecure,” he told us.

The further fentanyl producers go back in the synthesis route, the more knowledge, specialized equipment, and precision is needed. All methods to synthesize fentanyl are complex, costly, and some even need specific atmospheric conditions. Moreover, synthesizing pre-precursors into fentanyl precursors is a dangerous process that can easily lead to deadly accidents if not properly conducted. We therefore conclude that, although some experimentation in this realm may be occurring in Mexico, it is still not widespread.<sup>269</sup>

That said, for the criminal networks in the synthetic drug industry, the search for talent never ends, and there is likely to be constant innovation and experimentation in the process of producing methamphetamine and fentanyl. Mexican law enforcement officials interviewed by InSight Crime

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265 InSight Crime interview, former Mexican intelligence officer, Mexico City, Mexico, 26 June 2022.

266 InSight Crime interview, chemistry professor at a university in Culiacán, Sinaloa, Mexico, 10 October 2022

267 InSight Crime interview with university professor who knew the victim, Tijuana, Baja California, Mexico, 14 September 2022; Gustavo Pineda Negrete, “[Juan, a chemistry student at UABC, is murdered after refusing to manufacture drugs for the narco](#),” *Cultura Colectiva*, 3 May 2021.

268 InSight Crime interview, professor at the Chemistry Faculty of a university in northwest Mexico, 14 September 2022.

269 InSight Crime interviews, Dr. Silvia Cruz, pharmaceutical chemist, Cinvestav, National Polytechnic Institute, Mexico City, Mexico, 2 March 2023

said there are likely only about a dozen chemical specialists in the country.<sup>270</sup> These specialists advise criminal organizations on production processes and organize workshops,<sup>271</sup> including teaching these cooks. Criminal groups may also be trying to recruit chemistry professors and graduates.<sup>272</sup> As mentioned, in October 2020, Mexican authorities arrested a UNAM chemist who allegedly procured chemicals for a fentanyl-pill manufacturing site in Mexico City.<sup>273</sup> Authorities did not release detailed information about the case, and when InSight Crime requested this information directly to the Attorney General's Office, it was denied on "confidentiality and protection of personal data" basis.

However, hiring, training, and maintaining good chemists is not keeping pace with the demand. Indeed, the turn towards cooks may help explain the chemistry accidents and rising overdose rates of methamphetamine and fentanyl users in the United States and Mexico. Safety protocols are regularly ignored in laboratories, which has led to explosions<sup>274</sup> and poisonings.<sup>275</sup> A law enforcement officer in Baja California told InSight Crime that, in the aftermath of explosions, they have found burn marks on victims' hands, illustrating the lack of protective gear used by these workers.<sup>276</sup> At the same time, inexperienced cooks and chemists are mixing deadly amounts of synthetic drugs into fake oxycodone, Percocet, and Vicodin pills, leading to overdoses. Some experts said that neither drug dealers nor users know how much fentanyl they are consuming.<sup>277</sup>

"The worst health issue with the [illicit] manufacture is not having a homogeneous [product]," said Steven Campman, Chief Medical Examiner for San Diego County. "Some [fentanyl] pills have enough to kill a couple people in them and some are much weaker."

Toxicological studies on both sides of the US-Mexico border have also concluded that some of the drugs still have traces of precursors or other harmful substances.<sup>278</sup>

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270 InSight Crime interviews, officer at Mexico's National Guard, Mexico City, Mexico, 21 July 2022.

271 Ibid.

272 InSight Crime telephone interview, officer from an international governmental organization in Mexico City, Mexico, 16 June 2022.

273 David Saúl Vela, "Network dedicated to the manufacture of synthetic drugs, in which UNAM engineer collaborated, is brought to the ground," *El Financiero*, 25 October 2020.

274 Cuauhtémoc City Hall, "Press Release: Sandra Cuevas attends a fire in a drug lab in Doctores neighborhood," 6 December 2021.

275 InSight Crime interview, members from the Forensic Laboratory at Mexico City's Attorney General's Office, Mexico City, Mexico, 28 June 2022.

276 InSight Crime interview, law enforcement officer in Baja California, Mexico, 14 September 2022.

277 InSight Crime interviews, officer from an international governmental organization in Mexico City, Mexico, 16 June 2022; director of the Chemistry Faculty at a university in Mexico City, Mexico, 27 June 2022.

278 InSight Crime interview, Steven Campman, Chief Medical Examiner, San Diego County, San Diego, California, United States, 6 September 2022; InSight Crime interview, Dr. Silvia Cruz Martínez, researcher at Cinvestav, National Polytechnic Institute of Mexico, Mexico City, Mexico, 1 July 2022.

“The misuse of precursors, such as them not being cleaned properly, is generating unpredictable harm in consumers,” Dr. Silvia Cruz, a pharmaceutical chemist researcher at Mexico’s National Polytechnic Institute who studies drug composition, told InSight Crime.

## **Impacts of Increased Production and Trade of Synthetic Drugs**

For decades, the plant-based drug trafficking industries brought relative benefits to local communities in Mexico, such as jobs for farmers and the provision of services that the state did not deliver, including health care, housing, and social festivals. And while it was always violent, most of the impacts associated with consumption were felt abroad. This helped traffickers craft a narrative that allowed them to build a social and political base, especially in the farming communities where plant-based drugs were harvested and processed.

The synthetic drug industry is different, and the policy approaches we recommend take this into account. The production of synthetic drugs is not the economic motor its plant-based predecessor was. It has none of the connections to the agrarian lifestyle that connected traffickers with their peasant forbearers. The increased production and trafficking of methamphetamine and fentanyl are also generating devastating health effects, destroying the environment, and changing the dynamics of violence in communities near production zones or major trafficking points.

Below, we delve into what we observed during our field research in the states of Baja California, Sinaloa, Sonora, Tamaulipas, and Michoacán, including its border areas with Jalisco and Colima. In these places, our sources agreed: these impacts are unprecedented and may very likely be a game changer in the relationship between criminal organizations and communities that have long formed their social and political base. These impacts also offer policymakers an opportunity to erase the line between the traffickers and this base.

### **Public Health**

The production of synthetic drugs has led to increased consumption and overdoses in Mexico. Between 2017 and 2021, the number of people seeking treatment for amphetamine-type stimulant (ATS) use in Mexico grew by 215%.<sup>279</sup> Consumption of methamphetamine has become particularly acute in areas close to production zones, including in Sinaloa, Michoacán, Colima, and Jalisco. Compared with cocaine, methamphetamine is cheaper and generates

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<sup>279</sup> Observatorio Mexicano de Salud Mental y Consumo de Sustancias Psicoactivas, “Informe sobre la situación de la salud mental y el consumo de sustancias psicoactivas en México, 2021,” 24 June 2021.



stronger and longer-lasting stimulant effects.<sup>280</sup> Its main users are people who work long hours or who seek to avoid withdrawal symptoms from other drugs, such as heroin, according to specialists.<sup>281</sup> But it is also a party drug.

One local activist who works with young people in vulnerable situations in marginal neighborhoods of Culiacán, Sinaloa, mentioned drug consumption as one of his primary concerns. According to the activist, children as young as 11, primarily boys, were beginning to consume “crystal” or were being paid in drugs by local criminal groups to work as lookouts.<sup>282</sup> Similarly, two community leaders and members of a vigilante group in Pátzcuaro, Michoacán, mentioned that methamphetamine is popular among adolescents and young adults because of its low price, and that consumption had become so normalized that there had been an increase of retail-distribution centers.<sup>283</sup>

The social effects of increased methamphetamine consumption can be substantial. In one town in Michoacán, which has a heavy presence of criminal actors, methamphetamine consumption has been prohibited, and those who sell it are beaten or evicted from the town. According to one of the core leaders of the criminal group, this is to avoid petty crime and violent incidents associated with drug consumption.<sup>284</sup> We found a similar situation in Nuevo Laredo, on the US-Mexico border, where the Northeast Cartel -- a splinter group of the Zetas that is involved in the transportation phase of the synthetic drug chain -- has reportedly prohibited methamphetamine consumption.<sup>285</sup>

Fentanyl consumption has also increased in Mexico, especially in northwestern states like Baja California, Sonora, and Sinaloa where it is readily available. In 2017, one person sought treatment for consumption of fentanyl in Mexico; in 2021, 184 sought treatment.<sup>286</sup> However, the scope of the issue may be far wider. During 2022, for example, the Forensic Medical Services (SEMEFO) of Mexicali began to register an increasing number of deaths from respiratory or cardiorespiratory arrest.<sup>287</sup> Suspicious that these deaths were related to fentanyl, the SEMEFO started testing for the drug. Of the samples performed

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280 InSight Crime interview, Bruno Diaz, Training Director of Juvenile Integration Centers, Mexico City, Mexico, 28 June 2022.

281 Ibid.

282 InSight Crime interview, community leader and activist, Culiacán, Sinaloa, Mexico, 18 October 2022.

283 InSight Crime interviews, community leaders and members of a vigilante group, Pátzcuaro, Michoacán, Mexico, 12 December 2022.

284 InSight Crime interview, member of a vigilante group in Tierra Caliente, Michoacán, Mexico, 14 December 2022.

285 InSight Crime interviews, human rights activist, Nuevo Laredo, Tamaulipas, Mexico, 20 February 2023; government officer working with at-risk youth, Nuevo Laredo, Tamaulipas, Mexico, 24 February 2023.

286 Observatorio Mexicano de Salud Mental y Consumo de Sustancias Psicoactivas, “Informe sobre la situación de la salud mental y el consumo de sustancias psicoactivas en México, 2021,” 24 June 2021.

287 InSight Crime interview, Cesar Raul Vaca, Director, Forensic Medical Services, Mexicali, Mexico, 15 September 2022.

between June and August 2022,<sup>288</sup> 55% tested positive for drug use; and 33% of these tested positive for fentanyl.<sup>289</sup> And during the first eight months of 2022, Mexicali medical services treated 600 fentanyl overdoses, more than all the fentanyl overdoses between 2019 and 2021.<sup>290</sup>

The first Mexican city that detected fentanyl was Tijuana in 2017. The city is part of the principal corridor for the drug on its way to the United States and also a longtime heroin hotbed. At the time, supplies of black-tar heroin, the traditional Mexican version of heroin, were drying up, so dealers began to replace it with a white powder they called China White, a different version of heroin. The China White was laced with fentanyl.<sup>291</sup>

These days, there is a market for fentanyl in Tijuana and nearby border cities. In other words, users seek it out. In Mexicali, local activists said that almost all the drugs in circulation contain fentanyl.<sup>292</sup> Some users mix fentanyl with stimulants to generate a “balance” between the sedative and stimulants. And one member of a civil society organization in Tijuana that works on harm reduction told InSight Crime that almost all methamphetamine users they treat mix methamphetamine with fentanyl.<sup>293</sup> The trend is spreading, as are the associated problems. Health professionals in Sinaloa and Jalisco, for example, have started to see overdoses in emergency units at hospitals involving patients that were not aware they were consuming the synthetic opioid.<sup>294</sup>

The health risks are dire. Fentanyl targets the brain, which can “forget” to breathe, according to one health professional InSight Crime consulted.<sup>295</sup> The person can die within minutes. The effects of the drug are also shorter than those of other opioids. While heroin can generate the desired effect for up

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288 Eduardo Villa, “Por fentanilo, 33 por ciento de adictos fallecidos en Mexicali: Semefo,” *Semanario ZETA*, 5 September 2022.

289 InSight Crime Interview, Cesar Raul Vaca, Director, Servicios Medicos Forenses de Mexicali, Mexicali, Mexico, 15 September 2022.

290 Eduardo Villa, “Por fentanilo, 33 por ciento de adictos fallecidos en Mexicali: Semefo,” *Semanario ZETA*, 5 September 2022.

291 InSight Crime interviews, Dr. Raúl Rafael Palacios, Director, Social Integration Centers, Tijuana, Baja California, Mexico, 13 September 2022; Medical doctor and project coordinator in consumer care organization, Tijuana, Mexico, 14 September 2022.

292 InSight Crime Interview, Lourdes Angulo, Director of Social Integration Verter, Mexicali, Mexico, 15 September 2022.

293 InSight Crime interview, Medical doctor and project coordinator in consumer care organization, Tijuana, Mexico, 14 September 2022; Fleiz C, Arredondo J, Chavez A, Pacheco L, Segovia LA, Villatoro JA, Cruz SL, Medina-Mora ME, de la Fuente JR. “Fentanyl is used in Mexico’s northern border: current challenges for drug health policies,” *Addiction*, (2020), pp. 778-781.

294 InSight Crime interview, Marta Alicia Torres, Sinaloa State Commissioner against Addictions, Culiacán, Sinaloa, 10 October 2022; forensic doctor in Guadalajara, Jalisco, Mexico, 18 January 2023.

295 InSight Crime interview, Silvia Cruz, Researcher, Cinvestav, National Polytechnic Institute, Mexico City, Mexico, 1 July 2022.

to eight hours, fentanyl's effect may last two hours,<sup>296</sup> leading users to re-up on their dosages more frequently, heightening the risk of overdose. And because there are no controls regarding purity, it is impossible to predict when there is a higher risk of overdose.<sup>297</sup>

“It really depends on the quality of the batch that is currently being sold in the neighborhood,” one medical expert working on harm reduction in Tijuana told InSight Crime.<sup>298</sup> “If it has too much pure fentanyl, we will start seeing a spike in overdoses, and then we know more will come. But there can be times in which the concentration of fentanyl is minimal.”

Methamphetamine consumption has its own problems. It causes hyperactivity, insomnia, and accelerated weight loss, a health officer working on preventing addictions in Sinaloa explained to InSight Crime.<sup>299</sup> If mixed incorrectly, it can also cause visual and auditory hallucinations.<sup>300</sup> With fentanyl, rehabilitation and harm-reduction centers in Mexicali and Tijuana say they have more skin rashes, something that was not common among heroin consumers.<sup>301</sup> The causes vary, but chemistry experts and pharmaceutical chemists consulted by InSight Crime in Mexico City said that illegal drug producers rarely conduct an effective cleaning process of residues of precursors, additives, and catalysts that remain in these drugs, which can lead to these side effects.<sup>302</sup>

However, the real scale of the crisis remains unknown. According to several activists interviewed in border cities of Baja California, most fentanyl users do not seek treatment because they fear discrimination or do not know they are consuming fentanyl.<sup>303</sup> What's more, authorities and health professionals do not have the tools to detect it. In Baja California, Sinaloa, Michoacán, and Jalisco, there is not enough equipment for a toxicological analysis of fentanyl. As of November 2022, only three cases of fentanyl overdose deaths were

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296 InSight Crime interview, Medical doctor and project coordinator in consumer care organization, Tijuana, Mexico, 14 September 2022.

297 InSight Crime interview, Lourdes Angulo, Director of Social Integration Verter, Mexicali, Mexico, 15 September 2022

298 InSight Crime interview, Medical doctor and project coordinator in consumer care organization, Tijuana, Mexico, 14 September 2022.

299 InSight Crime interview, Marta Alicia Torres, Sinaloa State Commissioner against Addictions, Culiacán, Sinaloa, 10 October 2022.

300 InSight Crime interview, Raul Rafael Palacios, Director at Centros de Integración Juvenil, Tijuana, Mexico, 13 September 2022.

301 InSight Crime interviews, Lourdes Angulo, Director of Social Integration Verter, Mexicali, Mexico, 15 September 2022; Medical doctor and project coordinator at consumer care organization, Tijuana, Mexico, 14 September 2022.

302 InSight Crime interview, director of a university chemical laboratory, Mexico City, Mexico, 27 June 2022. InSight Crime interview, Silvia Cruz, Researcher, Cinvestav, Mexico City, Mexico, 1 July 2022.

303 A significant part of the fentanyl consumer pool in northern Baja California are in a homeless situation or are part of the migrant community, who have historically been abused by authorities. Many fear that seeking treatment will lead them to detention.

registered in Sinaloa and only five in Tijuana,<sup>304</sup> far below what activists and health professionals say is the actual number. Moreover, naloxone, a drug administered to counter in emergencies the effects of a fentanyl overdose, is not yet legal in Mexico.

Meanwhile, the problem gets worse. An addictions specialist in Sinaloa estimated that some public hospitals in Culiacán get two possible fentanyl overdose cases per shift,<sup>305</sup> or about four a day. And health care providers and addiction specialists in the places InSight Crime visited warn that use could spread in the same way it has with methamphetamine, which now dominates the Mexican stimulant drug market throughout the country.

### **Environmental Damage**

Anecdotal evidence during our research indicates that chemical waste from illegal synthetic drug production has caused widespread environmental damage in the areas where clandestine laboratories are concentrated. However, the full scope of the impact is not known, as there have not been any empirical studies to quantify it, and people living close to production areas are afraid of reporting pollution due to the threat of criminal organizations.<sup>306</sup>

The amount of potential waste is significant. According to the 2022 World Drug Report by UNODC, the P2P method produces up to ten kilograms of waste for every kilogram of methamphetamine.<sup>307</sup> If we use our initial estimates of methamphetamine production in Mexico as a baseline, we can estimate that between 3,102 and 3,942 tons of chemical waste are generated each year by clandestine production. Some of the residues discharged are metals, solvents, and pre-precursors that can pollute waters and soil. In some cases, the chemicals can impact surrounding crops, often via the irrigation canals.<sup>308</sup>

InSight Crime saw an example of the impact this can have in a valley called Eldorado, near Culiacán. Eldorado is an important agricultural hub of what is Mexico's breadbasket. Farmers in the valley cultivate corn and tomatoes, among other crops, but authorities have also discovered methamphetamine laboratories. One environmental and wildlife activist in the area took us to a nearby lagoon that had dried up. (See picture below) The activist said this was, in part, due to the chemical waste from the methamphetamine laboratories, but added that it was probably also due to the agrochemicals used to harvest corn and tomato crops.<sup>309</sup>

304 Sara García, "[Fentanyl Has Become a Hidden Killer in Mexico](#)," InSight Crime, 10 November 2022.

305 InSight Crime interview, Marta Alicia Torres, Sinaloa State Commissioner against Addictions, Culiacán, Sinaloa, 10 October 2022.

306 InSight Crime interview, person who was forcibly displaced from a town in Michoacán that was overtaken by the CJNG, Michoacán, Mexico, 14 December 2022.

307 United Nations Office on Drug and Crime (UNODC), "[World Drug Report 2022: Drugs and the Environment](#)," June 2022.

308 InSight Crime interview, chemistry professor, Culiacán, Mexico, 10 October 2022.

309 InSight Crime interview, environmental activist working on crocodile conservation, Eldorado, Culiacán, Sinaloa, Mexico, 11 October 2022.



*A dry lagoon in Eldorado, Culiacán, Sinaloa (Photo: InSight Crime)*

According to various environmental activists interviewed in Sinaloa, synthetic drug laboratories have polluted rivers that local communities use for drinking water. And in mountainous areas of Sinaloa, some residents have reportedly started to suffer from health problems, such as severe headaches, which some activists said may be related to the presence of chemicals from clandestine laboratories.<sup>310</sup> People living near synthetic drug production sites are also exposed to toxic solvents and fumes,<sup>311</sup> but few report these issues for fear of reprisals.

Water pollution due to chemical runoff impacted wildlife, farm animals, and vegetation. In Michoacán and Sinaloa, residents said that chemical pollution has killed fish in large quantities.<sup>312</sup> The activist who took us to Eldorado said the chemicals severely affected the American crocodile population, impacting the females' fertility and leaving many crocodiles with birth defects. The mere presence of clandestine laboratories has also impacted the mobility and breeding patterns of wildlife like jaguars, which live in the Sinaloa-mountain range.<sup>313</sup>

<sup>310</sup> InSight Crime interview, environmental activists in Culiacán, Sinaloa, Mexico, 11 October 2022.

<sup>311</sup> United Nations Office on Drug and Crime (UNODC), “[World Drug Report 2022: Drugs and the Environment](#),” June 2022.

<sup>312</sup> InSight Crime interviews, environmental activist in Culiacán, Sinaloa, Mexico, 11 October 2022; priest in a town that has been surrounded by clandestine laboratories on the Michoacán-Jalisco border, Mexico, 13 December 2022; member of a vigilante group in southern Michoacán, Mexico, 14 December 2022.

<sup>313</sup> InSight Crime interview, environmental activist working in Jaguar conservation, Culiacán, Sinaloa, Mexico, 11 October 2022.



Still, there is little systematic study of these issues, and authorities InSight Crime consulted downplayed the problems. Local authorities in Michoacán and Sinaloa mentioned having detected environmental damage but had no strategy to counter it or any means to clean up areas where laboratories had been dismantled or destroyed. Not surprisingly, synthetic drug producers take little care to mitigate the damage. In a laboratory that InSight Crime visited in Sinaloa, chemicals were discharged into wells, (see photo) a practice that also appears to be commonplace in Michoacán.<sup>314</sup>



*Chemical waste in a clandestine methamphetamine laboratory (Photo: InSight Crime)*

Authorities also struggle to dispose of the chemicals they have seized. One source in the Attorney General’s Office in Baja California said seized chemicals were normally burned or disposed of “under strict environmental regulations,” but the officials could not specify what exactly that meant.<sup>315</sup> For their part, the head of the Naval Intelligence Unit said that the marines have yet to come up with a solution to dispose of 1,100 tons of seized chemicals they are currently storing.<sup>316</sup> InSight Crime sought an interview with Mexico’s Attorney General’s Office, which is technically in charge of this process, but it did not respond to our repeated requests.

314 InSight Crime interview, leader of a vigilante group in southern Michoacán, Mexico, 14 December 2022.

315 InSight Crime interview, officer from Baja California’s Attorney General’s Office, Tijuana, Baja California, 13 September 2022.

316 InSight Crime interview, SEMAR officer, Mexico City, Mexico, 6 December 2022.

## Violence

The increased production and sale of synthetic drugs appear to contribute to an increase in homicides, forced disappearances, and forced displacement in different states of Mexico. The violence seems to be related, in part, to disputes between criminal groups for control of ports and key areas for the production, transit, international trafficking of synthetic drugs, and the sale of synthetic drugs on local markets. During our research, we looked at how this is impacting criminal dynamics in three key states: Baja California, Sinaloa, and Michoacán. At this stage, it is very difficult to disaggregate violence related to the methamphetamine market and violence related to the fentanyl market, but the sources we consulted during our fieldwork emphasized that the violence they are seeing is more closely associated with the methamphetamine market.

In Baja California, homicides have increased dramatically in recent years. In 2015, the state registered 909 homicide victims, or a rate of 27 murders per 100,000 inhabitants. In 2022, that number had climbed to 2,728 victims, or 72 murders per 100,000 inhabitants.<sup>317</sup> Local authorities told InSight Crime that the uptick in homicides was related to disputes for control of the local drug distribution market. Synthetic drugs are powering that market, they said. Specifically, the authorities said that up to 80% of the murders in the state are associated with drug sales, mainly methamphetamine and fentanyl.<sup>318</sup>

This fight for the proverbial corner is evident in the state's largest cities. In 2022, Tijuana had 2,050 homicide victims, or a rate of 107 homicides per 100,000 inhabitants, making it one of the most violent cities in the world.<sup>319</sup> For its part, in 2022, Mexicali had a record number of homicide victims, with 297, and a rate of 28 homicides per 100,000.<sup>320</sup> The dynamic, authorities told InSight Crime, is similar in these cities: Gangs are seeking to profit from the proliferation of local synthetic drug consumption.<sup>321</sup>

The port city of Ensenada has a slightly different dynamic. In 2021, it too became one of the most violent cities in the world, with 286 homicides, or a rate of 76 murders per 100,000.<sup>322</sup> In 2022, the rate decreased to 48 murders per 100,000 inhabitants.<sup>323</sup> The city does not have a significant consumption

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317 Baja California's Ministry of Public Security, "[Estadística Estatal y Municipal](#)," 2023.

318 InSight Crime interview, Edgar Mendoza, Regional Prosecutor of Tijuana, Tijuana, Mexico, 13 September 2022.

319 Baja California's Ministry of Public Security, "[Estadística Estatal y Municipal](#)," 2023; El Sol de Tijuana, "[Tijuana is the fourth most violent city](#)," 8 March 2022.

320 Baja California's Attorney General's Office, "[Incidencia Delictiva en Mexicali](#)," 2021.

321 InSight Crime interviews with various officials at Baja California's Attorney General's Office, Tijuana and Mexicali, Baja California, Mexico, 13-15 September 2022.

322 El Sol de Tijuana, "[Tijuana is the fourth most violent city](#)," 8 March 2022.

323 Baja California's Ministry of Public Security, "[Estadística Estatal y Municipal](#)," 2023.

market like Tijuana and Mexicali, leading authorities to surmise that the rise in murders -- and eventual decline -- was related to disputes over the control of its port,<sup>324</sup> which, as noted, is an important entry point for precursor chemicals.

Violence related to synthetic drugs is also rising sharply in Sinaloa. While homicides in the state have decreased over the last five years, forced disappearances have consistently increased. By January 2023, 5,686 people were reported missing in the state. And in 2021, for the first time, the state recorded more cases of forced disappearance, 574, than homicides, 556. According to the leader of a collective that searches for disappeared persons, around 80% of the people who have been forcibly disappeared in the cities of Culiacán, Los Mochis, and Mazatlán were methamphetamine users or distributors.<sup>325</sup>

Criminal actors use forced disappearance as a punishment for those who break the unwritten rules they set about the local consumption market of crystal meth, several members of the collectives told us.<sup>326</sup> This can include not paying on time, buying from the wrong dealer, stealing product or money, or “misbehaving” while under the effects of the drug. In other words, it is a way for criminal organizations -- in this case, networks associated with the Sinaloa Cartel -- to enforce their control over the local retail market. And by turning to disappearances rather than homicides, violence becomes less visible to authorities and the general population.

In the state of Michoacán, meanwhile, the proliferation of clandestine methamphetamine laboratories and the armed disputes between different groups and the CJNG is displacing entire communities. Around 400,000 people have been forcibly displaced in Michoacán between 2010 and 2021, according to local newspaper El Sol de Morelia.<sup>327</sup> In one recent example in December 2022, 1,300 displaced people arrived in the small coastal town of Coahuayana, on the border between Colima and Michoacán. According to some of the victims, they were fleeing an incursion by the CJNG, which had allegedly overrun private ranches and other properties to set up methamphetamine labs.<sup>328</sup>

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324 InSight Crime interview, anthropologist studying criminal organizations, Autonomous University of Baja California, Ensenada, Baja California, Mexico, 18 September 2022; Zeta Tijuana, “Las narcomantas del CJNG: cártels de Tijuana van por Ensenada,” 31 May 2021.

325 InSight Crime interviews with several members of collectives that search for disappeared persons in Culiacán, Mazatlán and Los Mochis, Sinaloa, Mexico, 14 – 17 October 2022.

326 InSight Crime interviews, members of collectives that search for disappeared persons in Culiacán, Los Mochis and Mazatlán, Sinaloa, 10-18 October 2022.

327 Dalia Martínez and Paola Franco, “Más de 400 mil desplazados de Michoacán por violencia,” El Sol de Morelia, 23 April 2021.

328 InSight Crime interviews, Maria Rosario Ruiz, Presidenta de Desarrollo Integral de la Familia (DIF) de Coahuayana, Coahuayana, Mexico, 14 December 2022; person who was forcibly displaced from a town in Michoacán that was overtaken by the CJNG, Michoacán, Mexico, 14 December 2022.

“If you do not support them or collaborate with them [the CJNG], they will kill you,” one person who had recently fled his hometown told InSight Crime.<sup>329</sup>

But while some flee to save their lives, others flee to avoid being forcibly recruited. One priest in a small town on the Michoacán-Jalisco border told InSight Crime that over the last seven years, nearly the entire adolescent population had left the town or disappeared from the area.<sup>330</sup>

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329 InSight Crime interview, person who was forcibly displaced from a town in Michoacán that was overtaken by the CJNG, Michoacán, Mexico, 14 December 2022.

330 InSight Crime interview, priest in a town that has been surrounded by clandestine laboratories on the Michoacán-Jalisco border, Mexico, 13 December 2022



8

## Part V – Regulatory and Law Enforcement Efforts in Mexico

As noted earlier in the report, Mexico's legal regime adheres closely to international and US regulatory frameworks. Its treaty obligations and laws are very similar to those of the United States regarding the regulatory controls on precursor chemicals, and its list of controlled substances parallels that of the United States. In the last several years, it has also reformed its laws, placed further controls on various chemicals, and added the navy and the National Guard to its efforts to regulate the movement of these chemicals and investigate wrongdoers. In November 2022, it launched a new online platform to trace dual-use chemicals.

However, these efforts do little to deter the flow of precursor chemicals and synthetic drugs. Criminal organizations, large and small, can get the ingredients they need from a multitude of independent producers, transporters, and brokers, then process those ingredients into increasing amounts of synthetic drugs that are trafficked by some of the world's most sophisticated criminal networks across the US-Mexico border for distribution in the United States.

The reasons for this are multiple. From a regulatory point of view, they relate to Mexico's failure to fully coordinate its efforts among myriad government agencies and the private sector. While Mexico is, like the rest of the world, playing a constant game of catchup as it relates to issuing controls on the substances themselves, it does seem to have in place strong laws and a robust regulatory framework; it requires significant reporting on the part of the private sector; and it has beefed up its investigative capacity. However, these parts of the regulatory whole do not appear in sync, do not have the right incentives to encourage self-policing or sharing of information regarding criminal wrongdoing, or are simply not staffed by officials trained well enough to do their jobs.

Mexico also faces endemic corruption, and there is little will on the part of authorities to prosecute wrongdoers. One of the country's key regulatory agencies, Cofepris, has a culture of corruption so deep they called the navy to help them deal with the problem, but none of those implicated in that case have been fully prosecuted. The government has also employed the navy and the army to monitor and police these institutions, as well as airports and ports of entry. But they do not have any means of launching judicial investigations,



even when they capture suspects or seize suspect cargo. This lack of judicial follow up happens with seizures of laboratories, confection sites, and pill-pressing facilities where there are few arrests or prosecutions.

## Mexico's Regulatory System

The current regulatory framework for precursors and pre-precursors in Mexico is divided in two main components:

- A. Treaties, laws, and codes criminalizing the production, trafficking and processing of precursors destined to the production of illegal drugs.
- B. Treaties and laws regulating precursors and equipment that can be used for both legal and illegal purposes.

Mexico is a signatory to the United Nations (UN) treaties of 1961, 1971, and 1988, which guide the worldwide control of chemical substances. As such, it reports to the International Narcotics Control Board (INCB), created in 1961, which helps guide the implementation of these treaties.<sup>331</sup>

One of the INCB's key enforcement programs is PEN Online and PEN Online Light. Ostensibly, Mexico participates in this program, which provides an export pre-notification (PEN online) to importing countries upon request in order to avoid diversion of chemicals in international trade. Specifically, Cofepris participates in PEN Online Light. Launched in October 2022, PEN Online Light operates on a voluntary basis between countries and consists of the possibility of exchanging information on substances which are not covered by Tables I and II of the 1988 Convention, but which are being used for the illegal production of drugs in a certain country. Mexico's participation in those programs is considered by some experts to be underdeveloped.<sup>332</sup> Although Cofepris is attached to PEN Online, it is not fully compliant with reporting; as of December 2022, SEMAR was in the process of acquiring it for container monitoring.

These treaties also form the foundation of Mexico's legal framework. As shown in the graphic below, some of the relevant treaties and laws straddle both components, as they both regulate dual-use precursors and equipment and criminalize the production of illegal drugs using them – as well as the drugs themselves. For example, both the relevant UN conventions and Mexico's Ley General de Salud (General Health Law - LGS) regulate certain substances and criminalize others, including, in the case of the LGS, their precursors and analogues.

331 United Nations Office on Drugs and Crime (UNODC), "[Scheduling Procedures Under the International Drug Control Conventions](#)," 2020.

332 InSight Crime interview, International Narcotics Control Board Officer, November 2022.

Other relevant laws and codes do not criminalize illegal precursors specifically but rather their associated activities. Thus, the Ley Federal contra la Delincuencia Organizada (Organized Crime Combat Law, LFDO), the Código Fiscal de la Federación (Federal Tax Code - CFF) and the Código Penal Federal (Federal Criminal Code - CPF) do not deal specifically with precursors but rather with the broader aspects of smuggling and using them to produce illegal drugs. Mexico's definition of a fentanyl lab may be stricter than that of a methamphetamine lab, limiting the number of seizures, although the size differential between fentanyl and methamphetamine production amounts may also be a factor.

For its part, the Ley Federal para el Control de Precursores Químicos, Productos Químicos Esenciales y Máquinas para elaborar Capsulas, Tabletas y/o comprimidos (Chemical Precursors, Essential Chemical Products and Pill Presses Law - LFP) regulates precursors and pill-pressing equipment but only imposes fines for non-compliance with its annual reporting requirements, while the Ley Aduanera (Customs Law - LA) regulates the international trade of the substances, also imposing fines rather than criminal penalties.

## Mexican Precursor Regulatory Framework Components *insightcrime.org*

<p><b>Criminalization of production, trafficking, and processing of precursors</b></p>	<ul style="list-style-type: none"> <li>• Single Convention on Narcotic Drugs of 1961 as amended by the 1972 Protocol</li> <li>• Convention on Psychotropic Substances of 1971</li> <li>• United Nations Convention against Illicit Traffic in Narcotic Drugs and Psychotropic Substances of 1988</li> <li>• General Health Law (Ley General de Salud – LGS)</li> <li>• Organized Crime Combat Law (Ley Federal contra la Delincuencia Organizada – LFDO)</li> <li>• Federal Tax Code (Código Fiscal de la Federación – CFF)</li> <li>• Federal Criminal Code (Código Penal Federal – CPF)</li> </ul>
<p><b>Administrative regulation of precursor manufacturing, import-export, and processing</b></p>	<ul style="list-style-type: none"> <li>• United Nations Convention against Illicit Traffic in Narcotic Drugs and Psychotropic Substances of 1988</li> <li>• General Health Law (Ley General de Salud – LGS)</li> <li>• Chemical Precursors, Essential Chemical Products and Pill Presses Law (Ley Federal para el Control de Precursores Químicos, Productos Químicos Esenciales y Máquinas para elaborar Capsulas, Tabletas y/o comprimidos – LFP)</li> <li>• Customs Law (Ley Aduanera – LA)</li> </ul>

May 2023

Source: InSight Crime analysis

The three most important domestic regulations in Mexico that address precursor chemicals and essential chemicals used for the illegal production of synthetic drugs such as methamphetamine and fentanyl are the General Health Law, the Federal Law for the Control of Precursor Chemicals, Essential Chemicals and Machines to Manufacture Capsules and/or Tablets, and the Dual-Use Substances Watch List.

The **General Health Law (LGS)**, published in 1984, categorizes and provides guidelines on different substances, including methamphetamine, fentanyl, and some of their precursors. The law identifies fentanyl as a narcotic drug, which means that although they have a therapeutic use, they generate side effects that can cause addiction. Both narcotic and psychotropic substances are controlled and regulated by law and are only available for medical and research use in compliance with the monitoring guidelines established by law. The General Health Law also designated the creation of the Cofepris, whose objective is to implement policies and programs to prevent and address health risks. Since then, Cofepris has played a key role in implementing regulations on narcotic or psychotropic substances, including precursor chemicals.

The **Federal Law for the Control of Chemical Precursors, Essential Chemical Products and Machines for the Production of Capsules and/or Tablets (LFP)**, published in 1997, aims to control the production, preparation, acquisition, import, export, transportation, storage and distribution of chemical precursors, essential chemical products and machines for capsules and tablets, to prevent their diversion for the illicit production of narcotics. It regulates most of the pre-precursors and precursor chemicals used for the illegal manufacture of different drugs, in line with international guidelines on the control of precursor chemicals issued by the INCB. Between 2009-2015, this law added various methamphetamine precursors as illegal producers adapted and discovered new production methods. Since 2017, the law has added fentanyl precursors to its schedule and is kept updated with new analogues.

According to the 2022 International Narcotics Control Strategy Report, Mexico's watchlist for dual-use chemicals has expanded and now contains either 69 or 72 chemicals -- depending on which government list is cited -- used to produce fentanyl and methamphetamine. This includes at least eight precursor and pre-precursor chemicals used for the illegal production of fentanyl, and at least 20 precursors, pre-precursors and essential chemicals used to manufacture methamphetamine. Additionally, the law regulates the different stages of the chain of access to these substances, from purchases made by individuals and companies to transportation, import and export. Enforcement agencies include the Ministry of Health, the Ministry of Foreign Affairs, the Ministry of Finance and Public Credit, the Ministry of Economy, the Ministry of Infrastructure, Communications, and Transportation, the General Health Council and the Attorney General's Office. Cofepris is the institution in charge of granting permits for the importation and distribution of chemical precursors into and within Mexican territory.

For the private sector, LFP also mandates detailed know-your-customer procedures, annual reporting, and bookkeeping, and an immediate report of any suspicious activity -- including large or unusual orders and unusual inventory losses. Furthermore, the LFP also mandates the creation of a centralized information system that includes all the information reported to the authorities involved -- and any they might have gathered on their own.

The **Dual-Use Substances Watch List** was created in May 2021, following the growing trend of seizures of precursors and unregulated chemical substances for the illegal production of synthetic drugs. The objective of this list is to establish vigilance over unregulated substances that, while having legal uses, can be used to produce synthetic drugs. These substances are evaluated by the Technical Group for the Control of Synthetic Drugs (GTCDS), of which the above-mentioned ministries are part, in addition to the Ministry of the Navy, which took control of ports and some airports in mid-2020.<sup>333</sup> The Navy (SEMAR) has been particularly effective in some aspects of port control, but the number of significant seizures has remained static. Unfortunately, SEMAR has not contributed to new prosecutions, arguably because they do not prioritize safeguarding seized drugs for evidentiary purposes and therefore do not always follow a legally admissible chain-of-custody process.

### ***Analysis of Mexico's Regulatory Regime***

Although the Mexican framework formally mandates a high level of cooperation among all the agencies involved in regulation, in practice there appear to be very significant differences in the levels of enforcement. The criminalization of illicit production and trafficking of controlled precursors and the prevention of diversion of legal stocks are complementary, addressing different and key aspects of illegal precursor sourcing and processing. However, they present unique and clearly differentiated enforcement challenges in the Mexican context, subject to different levels of enforcement, as the penalties and the capabilities and incentives of each of the ministries and agencies involved vary significantly.

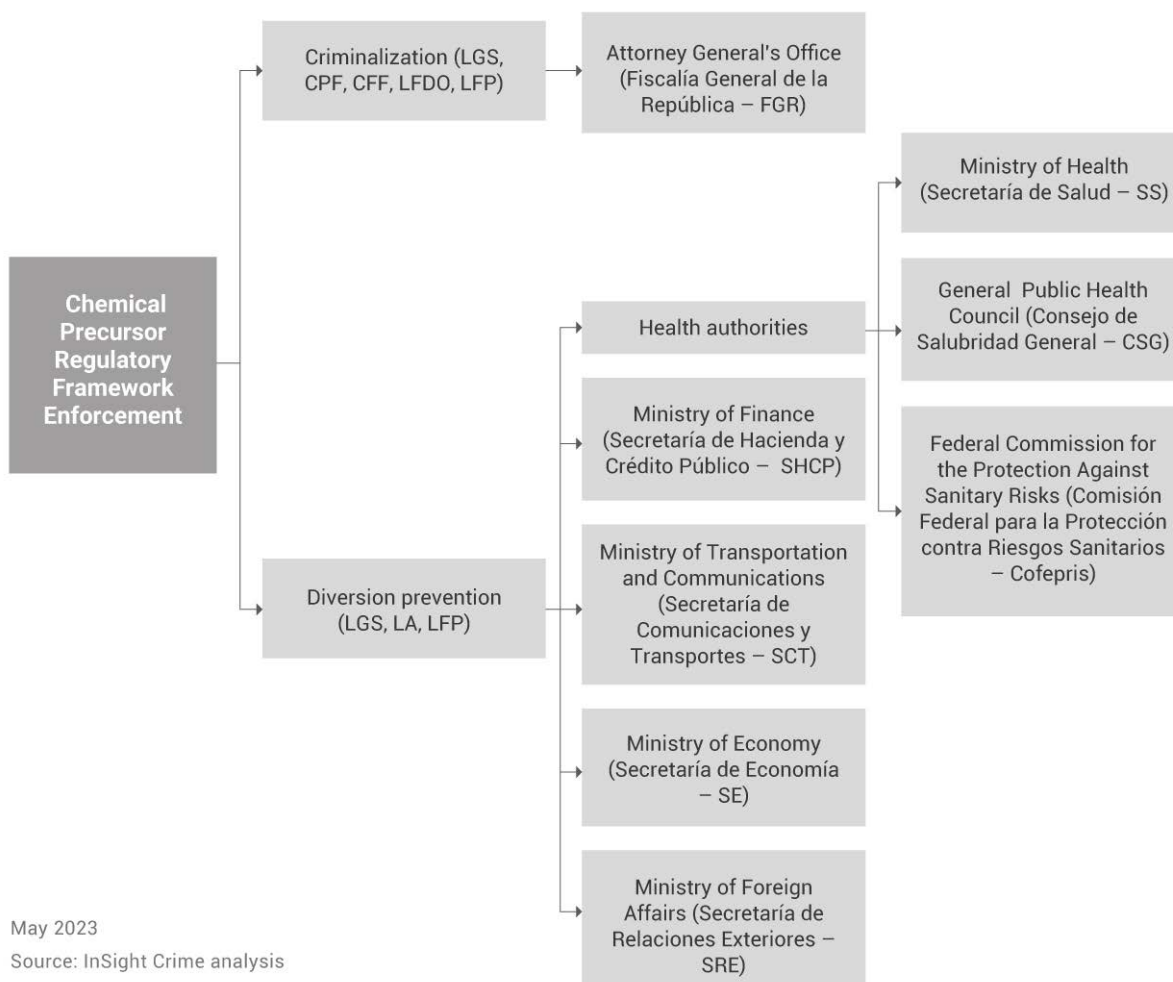
The prosecution of all presumed crimes related to precursors is under the exclusive jurisdiction of the Attorney General's Office. (See graphic below) The criminalization of the illegal procurement of precursors and equipment, and the prevention of their diversion is derived from the objective of combating the production, trafficking, distribution, and sale of illegal psychotropic substances. Thus, the criminalization of illegal precursor markets is supposed to be a means to that same end.

However, the system does not seem to be working as it is intended. While there are a significant number of investigations related to violations of the LGS, more than half were related to possession and none of them can be attributed to the reporting requirements mandated by the 1988 Convention and the LFP. In fact, it was possible to ascertain through freedom of information requests that none of the ministries tasked with the enforcement of LFP -- which include the Health Ministry (Secretaría de Salud - SS), the Ministry of Transportation and Communications (Secretaría de Comunicaciones y Transportes - SCT), and the Ministry of Economy (Secretaría de Economía - SE) -- had referred any cases to the Attorney General's Office for potential prosecution (see graphic below).

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<sup>333</sup> Mexico's Chamber of Deputies, "[Publica DOF decreto por el que trasladan las facultades del control y administración de los puertos del país de la SCT a la Semar,](#)" 7 December 2020.

# Mexico's Chemical Precursor Regulatory Framework *insightcrime.org*



May 2023

Source: InSight Crime analysis

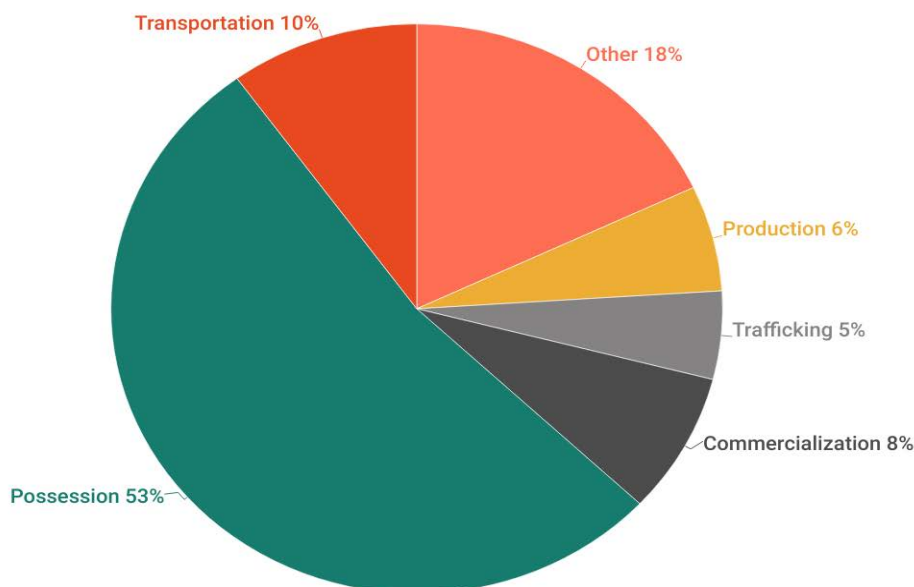
The fact that no cases have been referred would mean that either: a) there is no significant diversion of precursors and machinery; b) there is no adequate enforcement on the diversion prevention component of the framework; c) the agencies are simply unable to detect potential diversions; d) there is corruption; e) all of the above.

This lack of evidence of diversion is unlikely to mean that none exists, given seizures of precursors both at ports-of-entry (POE) and in methamphetamine lab raids. Instead, it may be a clear sign that even though the reporting requirements are thorough and mostly aligned with international best practices, as compiled by the INCB, they are not impacting the actual enforcement of the overall framework. One possibility is that the Mexican private sector is not complying with its reporting requirements. However, one expert on the private sector told InSight Crime that the private sector is complying but sees no government follow-up or reason for businesses to push for prosecutions.<sup>334</sup>

334 InSight Crime telephone interview, expert on Mexican private sector, 28 November 2022.



## Registered Violations of Mexico's General Health Law (2012-2021) *insightcrime.org*



March 2023

Source: Mexico's National System of Public Security

Overall, the Organization of American States (OAS)/ Inter-American Drug Abuse Control Commission (CICAD) Mutual Evaluation Mechanism from 2022 notes that while Mexico has many comprehensive national programs it “has not established mechanisms for inter-institutional cooperation between public and private institutions to provide a comprehensive response to the illicit production of drugs.”<sup>335</sup> Furthermore, the 2022 International Narcotics Control Board annual report notes that Mexico did not attend the most recent international workshop on public-private partnerships, although Canada and the United States sent representatives. This workshop, and the INCB’s existing materials on augmenting the role of public-private partnerships<sup>336</sup> help partner nations exchange best practices relating to the use of the private sector in trafficking dangerous substances, with the goal of “strengthening international operational cooperation across borders to prevent future misuse of legitimate internet-related services.”<sup>337</sup>

Alternatively, the illegal procurement of precursors may not occur through diversion but through smuggling, the use of shell companies, and the intentional mislabeling of the imported substances, amongst other criminal techniques. If that is the case, as at least one source alleged,<sup>338</sup> Mexican

335 Organization of American States, Inter-American Drug Abuse Control Commission, Secretariat for Multidimensional Security, “Multilateral Evaluation Mechanism (MEM),” 2022.

336 International Narcotics Control Board (INCB), “Public-Private Partnerships. Concept and Related Activities in Precursor Control,” 2013.

337 International Narcotics Control Board (INCB), “Report 2022,” 9 March 2023.

338 InSight Crime interview with Mexican law enforcement officer, Mexico City, Mexico, June 2022.

customs authorities appear reluctant to take any active role in identifying and referring potentially criminal cases they detect. Instead, they seem to informally transfer their seizures to the National Guard or the navy to avoid getting involved in criminal justice processes. In fact, there are few incentives for any of the ministries involved to take a more proactive role in identifying both potential diversions or outright criminal activity and referring those cases to FGR. Doing so would entail that the government official or officials involved would become enmeshed in criminal justice processes, a dangerous eventuality.

Regulations fall particularly short when it comes to prosecution. The Law on Chemical Precursors contemplates fines for non-compliance, but investigations of possible criminal dynamics are outside its scope. Some regulations fail to keep pace with the illegal synthetic drug producers: As soon as a precursor is regulated, criminal groups access unregulated pre-precursors to continue production.<sup>339</sup> In addition, within the institutions in charge of enforcing these laws there are corruption schemes. One of the most telling cases is that of Cofepris, mentioned earlier in the report, where 19 officials were dismissed in 2021 for receiving bribes<sup>340</sup> when granting permits for the importation of chemical precursors.<sup>341</sup>

Finally, international coordination is lacking, specifically with China, India, and other countries involved and affected in the trafficking of precursor chemicals. There are currently no talks between the governments of China and Mexico to agree on strategies for the exit and entry of precursor chemicals.<sup>342</sup> China, for its part, has stated that it depends on the control capabilities of the Mexican authorities.<sup>343</sup> Mexico has ongoing discussions with the United States and intermittently with Canada on precursors, and all three attend INCB and UNODC-sponsored trainings, but no format involves all three nations of North America. These gaps will be addressed in the section of this report regarding recommendations and opportunities for positive intervention.

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339 InSight Crime telephone interview, officer from a multilateral agency in Mexico City, Mexico, June 16, 2022.

340 Maritza Pérez, “[Secretaría de Marina identifica red de corrupción con apoyo de Cofepris](#),” *El Economista*, 21 December 2021.

341 Associated Press, “[La Marina intervino Cofepris por corrupción que se liga a fentanilo, reconoce Salud](#),” *SinEmbargoMX*, 15 October 2021.

342 InSight Crime interview, public official on security issues in Mexico, Mexico City, Mexico, 20 May 2022.

343 Vanda Felbab-Brown, “[China and Synthetic Drugs Control. Fentanyl, Methamphetamines, and Precursors](#),” *Brookings Institute*, March 2022.

# 9

## Part VI – Recommendations

Precursor chemical regulations are aimed at two essential tasks: criminalizing the illegal procurement of precursors (and pre-precursors) and equipment for manufacturing methamphetamine and fentanyl; and preventing the diversion of legal stocks of precursors and equipment, primarily through reporting requirements and information sharing.

But what is clear from this research is that while existing conventions, laws, and regulations have greatly advanced in the past five years, they are not sufficient to address the threat of precursor trafficking, either because they fail to include enough flexibility to meet new methods of producing synthetic drugs, or because they are unevenly applied. Given the specific challenges of chemical narcotics -- the high mutability of the ingredients, shorter supply chain, and smaller physical amounts of the product which can be moved in a variety of more unobtrusive ways -- legal measures are often outdated as soon as they are enacted. What's more, the private sector is going to resist heavy government intrusions given the implications for business development and trade.

Therefore, a singular focus on the supply-side issues of regulating precursor and pre-precursor chemicals is inherently flawed. The days of a plant-based, essential precursor that is geographically limited and unchanging in form -- such as marijuana, coca leaves, or opium -- are over. Law enforcement agencies need to both manage an ever-changing landscape of products that need to be regulated while having to reach into licit trade diversion without damaging the economic well-being of the affected nation. An approach that focuses on China as the current major supplier is also inherently weak, given that India and others are more than ready to take over chemical exportation for illicit use, if China were to shut down trafficking. This is the balloon effect on a global scale.

Instead, the evidence gathered for this report and others points to a need to focus strongly on the regulatory environment from a global and regional perspective, particularly in North America, as well as create an up-front approach that engages the public and the private sector. This broader approach would generate greater space and acceptance for augmented government actions to regulate trade even in non-narcotic products that might be associated with methamphetamine and fentanyl production -- a radical but necessary element of controlling these ingenious drugs.

## Multilateral Diplomacy

The research shows that a global industry requires a global diplomatic response. Much of that response is in place. The United Nations (UN) treaties of 1961, 1971, and 1988 guide the worldwide control of chemical substances. The Commission on Narcotic Drugs (CND), created in 1946, and the International Narcotics Control Board (INCB), created in 1961, guide the implementation of these treaties. The CND, an elected body comprised of 53 member states, supervises the application of the international drug control treaties, and governs the activities of the UN Office of Drugs and Crime (UNODC). The INCB is the UN lead for monitoring surveillance and enforcement of precursor chemical control and identifying new controlled substances.<sup>344</sup>

As noted, one of the INCB's key enforcement programs is PEN Online and PEN Online Light. Another important INCB program is the Global Rapid Interdiction of Dangerous Substances (GRIDS)<sup>345</sup> program, which consolidates earlier programs and public-private partnership initiatives. GRIDS focuses on new psychoactive substances not yet under international control, and non-medical synthetic opioids, by:

- Enhancing global communication platforms to facilitate real-time information exchange between Member States on incidents involving dangerous substances;
- Engaging in public-private partnerships, focusing on legitimate industries exploited in the manufacture, marketing, monetization, and movement of dangerous substances;
- Coordinating activities that support multilateral operations, investigations, and communication with a focus on newly emerging dangerous substances.

For its part, the UNODC has regional offices which carry out training and policy mandates, including an office in Mexico that conducts joint training with the INCB for Mexican authorities<sup>346</sup> and meets with the Mexican government's technical group for the control of synthetic drugs.<sup>347</sup>

The Financial Action Task Force (FATF) is an independent inter-governmental body that develops and promotes policies to protect the global financial system against money laundering, terrorist financing, and the financing of proliferation of weapons of mass destruction. FATF has begun publishing

344 United Nations Office on Drugs and Crime (UNODC), "[Scheduling Procedures Under the International Drug Control Conventions](#)," 2020.

345 International Narcotics Control Board (INCB), "[GRIDS](#)," 2023.

346 International Narcotics Control Board (INCB), "[Strengthening Mexico's Capacity to Exchange Information to Prevent Global Trafficking of Dangerous Substances](#)," 29 October 2021.

347 International Narcotics Control Board (INCB), "[INCB raises awareness on precursor control framework and its tools in a discussion with the Mexican Technical Group for the Control of Synthetic Drugs](#)," 30 August 2021.

reports that “provide operational and policy options and tools to detect, investigate and disrupt the finance that supports organized criminal groups and related professional money launderers.”<sup>348</sup> While these suggested policy options and tools are not yet included in FATF’s “blacklist” and “grey list” official assessments, there is the possibility that they will be in the future.

Finally, the Organization of American States’ Inter-American Drug Abuse Control Commission (OAS/CICAD) supports a Group of Experts on Chemical Substances and Pharmaceutical Products. The Group is comprised of technical, regulatory, and policy specialists from member states, along with subject matter experts, who exchange information and best practices regarding the production, smuggling, and diversion of precursor chemicals. The group develops approaches to emerging threats and model legislation, which it makes available to OAS member states, and holds international meetings.<sup>349</sup>

### **Multilateral Recommendations**

*The goal of multilateral diplomacy is to re-focus the political issue away from United States-China-Mexico agendas and historical problems, and to widen the application of controls to future/potential source nations, by strengthening existing information clearinghouse mechanisms for international police agencies and cluster/link analysis for international legal entities.*

Recommendation #1: Increase funding to UNODC and INCB for their precursor control, reporting, and analysis capabilities. Specifically:

- Seek immediate and full international compliance, particularly by Mexico, with PEN Online. While it must remain on a voluntary basis, there is an opportunity to use this program to push for greater reporting, regulation, and possibly scheduling, of analogues or chemicals with no proven dual use.<sup>350</sup>
- Surge funding and political support to the GRIDS program to increase its capability to supply link analysis for coordinated police action.
- Encourage continued training by UNODC and INCB for Mexican authorities, including a possible project for UNODC to develop enhanced special surveillance lists for Mexico and replicate work (underway in Ecuador and Colombia) to train authorities on responsible handling of seized precursor chemicals.

348 Financial Action Task Force (FATF), “Money Laundering from Fentanyl and Synthetic Opioids,” 30 November 2022.

349 OAS/CICAD, “Group of Experts on Chemical Substances and Pharmaceutical Products,” 27 January 2021.

350 InSight Crime telephone interview, expert on INCB issues, 7 December 2022.



Recommendation #2: Continue to strengthen the Commission on Narcotic Drug's role in scheduling precursor chemicals. Specifically:

- Push between annual meetings to schedule chemicals with “no known dual use” as identified by INCB.
- Propose and pass a CND resolution in 2023 to make it standard practice to have scheduling apply to all analogues, based on the clear gaps in enforcement due to the rapid mutation of chemical formulae.

Recommendation #3: Utilize the OAS/CICAD Group of Experts on Chemical Substances and Pharmaceutical Products<sup>351</sup> for its technical expertise and solid nonpartisan reputation to advance messages of concern and proven solutions with the private sector and governments in Latin America, particularly Mexico. Specifically:

- Request that the Group of Experts focus on North America's vulnerabilities and conduct a high-level intervention with the private sector (Chambers of Commerce) in all three countries, to strengthen industry understanding and acceptance of voluntary reporting requirements and government regulations.
- Working through the OAS Secretariat, elevate the Group of Experts' 2019 model legislation and guides to investigation of import and diversion of chemicals, through resolutions and possible deadlines for action, at a special meeting of all OAS members on the fentanyl threat.

## **Bilateral/Trilateral Diplomacy**

Counter-narcotics cooperation among the United States, Canada, and Mexico is formalized in the North American Drug Dialogue (NADD). During the most recent NADD meeting in November 2022, the three countries pledged to “understand and address the illegal supply chain of illegal synthetic drugs and their precursor chemicals and related equipment affecting North America, especially those causing the most harm” and “better understand and address the illegal drug-related financing methods and activities that support operating capital, access and profit from illegal drug sales, and facilitate new and existing partnerships amongst the relevant stakeholders.”<sup>352</sup>

The United States, Canada, and Mexico Free Trade Agreement (USMCA) specifically excludes anti-narcotics regulation relating to chemical precursors

<sup>351</sup> OAS/CICAD, “Group of Experts on Chemical Substances and Pharmaceutical Products,” 27 January 2021.

<sup>352</sup> United States State Department, “Joint Statement: Sixth Meeting of the North American Drug Dialogue,” 9 November 2022.

in its chapter on chemicals.<sup>353</sup> However, the USMCA “Good Regulatory Practices” chapter<sup>354</sup> encourages legal compatibility among the three nations, which could apply to voluntary reporting and regulation of pre-precursors with no proven dual use.<sup>355</sup>

Regarding bilateral relations, in October 2022, at the second meeting of the US-Mexico High Level Security Dialogue, the US and Mexico agreed to a joint action plan focused on synthetic drugs. The Dialogue statement also flagged the value of exchanges of forensic chemists who could advance understanding and identification of fentanyl precursors and synthesis; and support for prosecutors and chemists to help present evidence of fentanyl and precursors at trial.

### ***Bilateral/Trilateral Recommendations***

*The goal of bilateral/trilateral diplomacy is to create a fully unified North American approach (“Fortress North America”) while using the comparatively apolitical nature of this problem as a basis for cooperation with China.*

Recommendation #1: Amend US drug control reporting to eliminate the plant-based “Majors List” as an expenditure of diplomatic capital that alienates Mexico and is out of touch with the synthetic-opioid reality.

Recommendation #2: Demarche Mexico’s foreign ministry to urge that precursor chemical control become a prioritized agenda item within their relations with China and India.

Recommendation #3: Within the broader US-China agenda make fentanyl precursor control a prioritized confidence-building mechanism, emphasizing China’s “global counternarcotics leadership” potential. Specifically:

- Emphasize self-interest as Mexican criminal organizations target the Chinese user market.
- Conduct anti-money laundering (AML) cooperation against smuggling networks.
- Encourage voluntary best-practices for Chinese chemical companies following the example of Germany-based BASF.<sup>356</sup>

353 Office of the United States Trade Representative, “US Mexico Canada Agreement Sectoral Annex on Chemicals,” 2019

354 Ibid.

355 InSight Crime telephone interview, former US diplomat and trade expert, 30 November 2022.

356 Vanda Felbab-Brown, “The Opioid Crisis in America,” Brookings Institute, 2020.

Recommendation #4: Build on the existing (United States/Mexico/Canada) North American Drug Dialogue<sup>357</sup> to trilateralize precursor law enforcement cooperation agreements to provide greater coherence and impact. Specifically:

- With Mexico and Canada, announce at the CND in 2023 a unified North American commitment to voluntary notifications under the 1988 Treaty for precursors with no known dual use, through the International Special Surveillance List.
- Scrub all existing US-Mexico and US-Canada law enforcement agreements to see if they can be amended to include the third country; request the same for Mexico-Canada agreements.
- Model enforcement of non-scheduled chemicals in the United States, Mexico, and Canada, on the Uyghur Forced Labor act,<sup>358</sup> which establishes a “rebuttable presumption” that anything produced in that region is done with forced labor. As applied to fentanyl and methamphetamine precursors, the importer would be required to attest to the need for chemicals with no known dual use, or the elevated need for such chemicals when compared to previous years’ importation or use.

## Law Enforcement and Regulatory Efforts in Mexico

Given that the purpose of law enforcement is to criminalize the production of known precursors and regulate the potential dual-use chemicals and equipment, and given the complex and changing nature of the problem, urgent action is needed across a variety of technical and legal fronts to tighten enforcement. As noted in Part V, regulatory and law enforcement efforts in Mexico suffer from corruption, malfeasance, and a lack of incentives to put to work what is a robust regulatory regime and thoughtful legislation. Furthermore, financial crimes and money laundering need to become more central to the efforts against synthetic drugs, having arguably more impact than many elements of street-level enforcement.

### Law Enforcement Recommendations

*The goal for law enforcement is to identify and block gaps created by the complex and hybrid (public-private) nature of the chemical control problem through a continuous cooperation and learning cycle.*

Recommendation #1: Provide Mexico’s port authorities with targeted capacity-building via Customs and Border Protection (CBP). CBP should utilize DEA, US Department of Justice, and local law enforcement experts but be publicly in

357 United States Department of State, “Joint Statement: Sixth Meeting of the North American Drug Dialogue,” 9 November 2022.

358 United States Customs and Border Protection (CBP), “Uyghur Forced Labor Prevention Act,” 23 December 2021.

the lead, given its less controversial profile in Mexico. Key capacity building areas include:

- How to test, store and maintain seized evidence, and detain and charge suspects, in order to allow for use in trials. Although seizures are not a control mechanism for fentanyl or chemicals, they are a potentially powerful component within wider conspiracy cases, which can only occur if evidence management is executed within the confines of the law and strictly enforced.
- Improving Mexican port control and oversight capabilities, such as improved logistics tracking and drone surveillance of shipments, and improved use of human intelligence to alert authorities to suspicious shipments.
- Establishment of testing labs as close as possible to port operations.
- Enhancement of SEMAR internal affairs capabilities given addition threats of corruption.

Recommendation #2: Urge the Mexican government to stiffen enforcement of the existing legal regime criminalizing illegal procurement of pre-precursors and precursors and to more strongly incentivize relevant ministries (Health, Foreign Affairs, Finance and Public Credit, Economy, Infrastructure, Communications, and Transportation, General Health Council, and Cofepris) to refer cases of illegal procurement to the FGR. Specifically:

- Amend the Law on Chemical Precursors to add the possibility of more serious prosecutions for criminal intent and conspiracy with transnational criminal organizations.
- Create user-friendly and third-party controlled online cooperation mechanisms among Mexican government entities responsible for enforcing key laws.
- Protect whistle-blowers who indicate lax reporting within their agencies.
- Create an Inspector General position at Cofepris with authority to investigate alleged internal corruption relating to chemical importation.

Recommendation #3: Elevate the role of money laundering and white-collar enablers in the precursor chemical trade for intensified levels of law enforcement cooperation among the United States, Canada, and Mexico. Specifically:

- Promote the November 2022 FATF recommendation,<sup>359</sup> which suggest that national Financial Intelligence Unit, Customs, and other anti-money laundering (AML) and counter-terrorist financing (CTF) officials receive specific training from FATF, UNODC, or the US Department of Justice on “how companies (e.g., pharmaceutical and chemical importers) may be deliberately or unwittingly providing raw materials to organized criminal groups.”
- In cooperation with Mexico, focus on network analysis that can provide investigative leads stemming from inexplicably high financial amounts associated with licit imports, production, or imports.
- Initiate the prosecution of emblematic, high-profile, conspiracy cases in the United States that link fentanyl poisoning to financial gains by chemical companies.

Recommendation #4: Further utilize US sanction regimes to list Mexican, Chinese, and Indian pharmacy companies or chemical importers that have been shown to have failed to conduct controls over production, importation or diversion of listed chemical precursors or pre-precursors. Specifically, consider using:

- EO 13773 from February 2017 (transnational criminal organizations).<sup>360</sup>
- EO 14059 from December 15, 2021 (any foreign person engaging in “activities and transactions that have materially contributed to ... the international proliferation of illicit drugs or their means of production”).<sup>361</sup>

Recommendation #5: Study new technologies such as blockchain, which could be used to track non-dual-use precursors for reporting on levels of imports as initial “proof of concept.”

## Private Sector

Mexico’s chemical industry, while largely compliant with aspects of the Know Your Customer (KYC) reporting currently in place, could do more to prevent the illegal import or diversion of precursor chemicals. Some reasons for this are the small amounts and variable materials that are used; financial costs relating to compliance; and possible violent threats from criminal trafficking organizations for interfering in trade. However, more voluntary action is

359 Financial Action Task Force (FATF), “[Money Laundering from Fentanyl and Synthetic Opioids](#),” 30 November 2022.

360 The White House, “[Executive Order on Establishing the United States Council on Transnational Organized Crime](#),” 15 December 2021.

361 United States Treasury Department, “[Executive Order on Imposing Sanctions on Foreign Persons Involved in the Illicit Drug Trade](#),” 15 December 2021.



possible given the vital economic relationship with the United States and Canada, with the importance of avoiding sectoral and company-specific reputational harm.

### **Recommendations for the Private Sector**

*The goal of private sector engagement is to establish a sense of a common threat from precursor chemical trafficking, in order to improve voluntary reporting and other compliance.*

Recommendation #1: Utilize the “Good Regulatory Practices” concept of Chapter 28 of USMCA<sup>362</sup> to harmonize regulations relating to precursor and pre-precursor reporting and control across Canada, Mexico, and the United States. Making this issue a high-profile agenda item for trade discussions will signal to the private sector the level of political will within the United States to address the problem.

Recommendation #2: Working in partnership with the US Chamber of Commerce, Mexican Chamber of Commerce and Industry (Consejo Coordinador Empresarial), and the Canadian Chamber of Commerce, encourage increased voluntary private sector efforts. Specifically:

- Encourage the Mexican private sector to more fully comply with existing KYC rules.
- Conduct a supply chain control campaign, which uses best practices from European import/export companies (e.g., BASF of Germany), including a possible public pledge.
- Meet with Mexican chemical importers to ask them to suggest what regulations should be created or better enforced regarding anomalous sales, given the possible security threats they face from traffickers from compliance.
- Have a trilateral group of experts explore the efficacy of voluntary color marking of chemicals.
- Offer training on how to detect and combat diversion of legally-imported chemicals, including inventory control/reporting requirements.
- Encourage the Mexican Association of Industrial Pharmaceutical Investigation (Asociación Mexicana de Industrias de Investigación Farmacéutica - AMIIF), a leading Mexican pharmaceutical group, to bring smaller companies into fuller compliance through an education-focused effort.

Recommendation #3: Make the private sector more aware, as noted by the FATF findings of November 2022, about “the risks of new technologies (including dark web marketplaces and digital assets) to launder the proceeds of drug

362 Office of the United States Trade Representative, “United States-Mexico-Canada Agreement. Chapter 28: Good Regulatory Practices,” 1 July 2020.

trafficking and take appropriate measures to deny criminals access to their business platforms or products.” Specifically:

- Ask US tech industry allies to work with chemical companies in a “summit” or hackathon to address digital trading problems relating to precursors and explore methods (e.g., blockchain) that may illustrate transparency and compliance.
- Use INCB and UNODC to support public-private partnerships in Mexico and urge the government of Mexico to comply with INCB’s 2023 Precursor Report recommendation to engage “industries in self-protective, proactive strategies aimed at both reducing opportunities for infiltration by traffickers and facilitating the monitoring of the potential evolution of illicit drug markets.”<sup>363</sup>

Recommendation #4: Encourage Mexican tax authorities to apply regulations more vigorously via a combination of red flags raised by voluntary submissions, and randomized checking and fines.

## Public Diplomacy and Messaging

Mexican criminal networks have long propagated the perception that the illegal drugs they trafficked or produced were impacting only people outside of Mexico; they have also benefited from the tradition of the Mexican private sector resisting government interference and regulation. However, as outlined in Part IV, the synthetic drug industry is uniquely damaging and offers policymakers an opportunity to upend some of these perceptions. In addition, Mexico and the United States have major elections in 2024, which offer opportunities to elevate this issue of domestic and international importance while attempting to take it out of the unhelpful arena of partisan politics.

### **Recommendations Concerning Public Diplomacy and Messaging**

The goal of a campaign for US, Mexican, Canadian public awareness-raising is to create a public atmosphere conducive to increased control of precursors and decrease consumption of synthetic drugs.

Recommendation #1: Develop a long-standing campaign along the lines of an anti-tobacco campaign to educate people regarding the dangers of synthetic drugs and its impacts. Specifically:

- Frame the dialogue on non-medicinal fentanyl as being a “poison” versus a narcotic, using data and medical experts’ testimony regarding overdose deaths and inadvertent usage; ask World Health Organization (WHO) to also use the poison terminology within its public messages and referrals to CND.

<sup>363</sup> International Narcotics Control Board (INCB), “INCB Report on Precursors 2022: Conclusions and Recommendations,” 9 March 2023.

- In collaboration with Cofepris and the Ministry of Health, address Mexico-based messaging to parents of young people, warning about deaths from mislabeled pills and create a constituency which supports government action.

Message to Mexico's Chamber of Commerce and Industry (CCE) that governments will treat chemical companies as potential victims, not perpetrators, of the trafficking organizations, if they fully comply with reporting requirements.

Recommendation #2: Work with the 2024 presidential election cycles in both Mexico and the United States, to elevate the issue, protect it from becoming a victim of partisan politics, and identify the need for bold and non-partisan political actions.

- Use the mechanism of candidate pledges to ensure support for continuity of effective enforcement programs spanning presidential terms and transitions.
- Ensure synthetic opioids are elevated as an issue during the election campaign, for the purpose of public education.

# 10

## Annex I - Methodology

The team began the project with an intense period of **desktop research** to understand the legal and illegal markets. It scoured existing, open-source government and trade databases such as the National Customs Agency, Cofepris, Ministry of Treasury and Public Credit, the Attorney General's Office, the National Guard, the Ministry of Defense, and the navy.

The team also reviewed the numerous recent reports on the illicit synthetic drug industry, its global connections, its online marketing teams and players, etc. Part of this work included reviewing online recipes for synthetic drugs as well as academic and government research regarding the production of these drugs.

In addition, we studied dozens of United States federal indictments against criminal networks that were charged with trafficking or facilitating the trafficking of synthetic drugs and chemical precursors.

We also executed numerous **public information, or FOIA, requests** to try to unearth enough representative data to get a clear picture of this universe. During the course of the project, we made a total of 76 requests to 13 government agencies. The results were mixed. Most of the information we obtained was related to law enforcement efforts concerning the synthetic drug trade. But when it came to the chemical market -- both licit and illicit -- authorities were more reluctant to share data and judicial cases. And in other cases, the information was simply not available.

To compliment this gap in knowledge, the team conducted 86 semi-structured **interviews**. These sources were divided in three main categories.

The first category was government. We aimed to reach customs and military officials managing the ports; trade and commercial ministries overseeing the industries; and drug and chemical regulatory agencies that are monitoring the precursor imports, as well as drug and chemical production and distribution. The results in this category were also mixed. In Mexico, we were able to interview various law enforcement sources at the state level, federal health authorities, officers from the National Guard, and the navy.

However, we were not granted an interview with Cofepris, the National Customs Agency, the Attorney General's Office, or the Ministry of the Economy. And in some cases, the government officials we did talk to were only willing to share general information, without going into the more nuanced details of the (licit and illicit) chemical market. To complement our understanding and

corroborate information, we interviewed former officers from some of these agencies, as well as law enforcement agents in the United States, and officials from multilateral organizations.

The second category is industry. We aimed to interview sources inside the companies or working directly with the importers and producers. These included compliance lawyers, trade brokers, and trade association leaders. Here again, the results were mixed. While we spoke to CEOs of chemical companies, compliance lawyers, members of the national chemical industry association, and trade brokers, most sources were reluctant to share detailed information about their work, citing personal security concerns or confidentiality.

The third category was civil society. There are, unfortunately, few academics and even fewer watchdog groups that are focused on precursors. However, we did manage to speak to an array of activists working on drug consumption and harm reduction, pharmaceutical chemists, and security experts and analysts.

Finally, we made **field visits** to some of the entry points, concentration zones, passage points, and border crossings where precursors are trafficked and used to produce synthetic drugs. There we did dozens of interviews with key actors to help us analyze the transit hubs. The areas visited included both sides of the California-Baja California border, the states of Sinaloa, Michoacán, Jalisco, Colima -- where we focused on the municipalities that concentrated synthetic drug production, -- Sonora, Tamaulipas, and Mexico City.

The team also got a better understanding of how local government law enforcement and regulators are deployed, and how effective their interventions are. In addition, investigators gained further insight into the local social and economic drivers of the synthetic drug trade and its impact on public health, the environment, and citizen security.



# 11

## Annex II - Glossary

**Analogues** – A chemical substance that has a molecular composition, which is substantially similar to another substance.

**Binder** – Chemical substance or material that binds other chemicals together to form a cohesive whole -- in this context, in the process of manufacturing synthetic drugs.

**Business-to-Business (B2B)** – Digital commerce platforms that act as intermediaries between producers and final buyers.

**Chemical Abstract Service Registry (CAS)** – A numeric identifier that can contain up to ten digits, divided by hyphens into three parts. It is unique, designates only one substance, and it is indicated when it exists.<sup>364</sup>

**Catalyst** – A chemical substance that can accelerate a chemical reaction and does not become part of the final product.

**Clearnet** – Another word for open web or surface web. It refers to all websites and databases that are indexed by traditional search engines, as well as social media platforms, online applications, open forums, and instant messaging applications.<sup>365</sup>

**Confection sites** – Simple laboratories where some basic chemistry takes place to transform fentanyl precursors into fentanyl.

**Criminal networks** – A group of criminal organizations or individuals that associate on a regular and prolonged basis to facilitate a criminal objective. This network may be characterized by formal and informal partnerships, alliances, and/or cooperation.<sup>366</sup>

**Criminal organization** – A structured group of three or more persons existing for a period of time and acting in concert with the aim of committing one or more serious crimes or offences.<sup>367</sup>

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364 United Nations Office on Drugs and Crime (UNODC), “Multilingual Dictionary of Precursors and Chemicals Frequently Used in the Manufacture of Narcotic Drugs and Substances Under International Control,” 2015.

365 United Nations Office on Drugs and Crime (UNODC), “The online trafficking of Synthetic drugs and synthetic opioids in Latin America and the Caribbean,” 2022.

366 InSight Crime and American University Center for Latin American and Latino Studies (CLALS), “Criminal Networks in the Americas,” CLALS Working Paper Series No. 33, January 2022.

367 United Nations General Assembly, “United Nations Convention against Transnational Organized Crime and the Protocols Thereto,” 8 January 2001.

**Diversion (of chemicals)** – The act or instance in which chemical substances are purposely moved from the legal sphere into an illegal one.

**Darknet** – Covert part of the World Wide Web that is not indexed by standard search engines and can only be accessed using specialized software.<sup>368</sup>

**Designer pre-precursor** – Purposely fashioned, close-chemical relatives of highly-regulated substances that can easily be converted into a scheduled or highly-regulated precursor. These substances are specifically created to avoid international controls and have no known legal uses.<sup>369</sup>

**Dual-use pre-precursor** – Any chemical substance that has a legitimate, known chemical or medical use but is employed as a precursor in the development and/or manufacturing of synthetic drug precursors. The regulations around these substances vary by country.

**Dyes** – Chemical compounds which can add color to a substance when applied as a solution from either aqueous or organic solvents.<sup>370</sup>

**Essential chemical substances** – Any chemical substance that may be used in the production, manufacture, extraction and/or preparation of narcotic drugs and psychotropic substances. These substances do not become part of the final product but are essential in the synthetization process. They include solvents, reagents,<sup>371</sup> catalysts, or binders.

**Legacy drugs** – In this report, we refer to legacy drugs as those plant-based substances that criminal organizations in Mexico have historically smuggled into the United States, and which are tightly linked to the origins of these networks and their relationships with communities, state actors, and the private sector. Legacy drugs include marijuana, heroin, and cocaine.

**Monitor(ed)** – The act of requiring reported use, purchase, or manufacturing of a chemical substance based on potential use and potential for harm. This term is particularly relevant in the context of Mexico and its watchlist of “dual-use substances.”<sup>372</sup> The use or commercialization of these substances does not immediately lead to penalties, as these are employed in a variety of legal industries.

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368 United Nations Office on Drugs and Crime (UNODC), “The online trafficking of Synthetic drugs and synthetic opioids in Latin America and the Caribbean,” 2022.

369 International Narcotics Control Board (INCB), “Precursors and chemicals frequently used in the illicit manufacture of narcotic drugs and psychotropic substances,” 2018.

370 Jae Hong Choi, “Dye”, in Luo Ronnier (ed) “Encyclopedia of Color Science and Technology” (Berlin, 2013)

371 United Nations Office on Drugs and Crime (UNODC), “Multilingual Dictionary of Precursors and Chemicals Frequently Used in the Manufacture of Narcotic Drugs and Substances Under International Control,” 2015.

372 Mexico’s Health Ministry, “Lista de vigilancia de sustancias susceptibles de uso dual,” 28 April 2022.

**Pill-pressing facilities** – Clandestine, mostly rudimentary spaces where criminal groups adulterate pills with filler and fentanyl and press them into pills or lace legacy drugs with fentanyl.

**Plant-based drugs** – Drugs whose foundation is a plant. These include legacy drugs such as marijuana, cocaine, and heroin.

**Potency** – Strength of effects that a drug can have on the consumer.<sup>373</sup>

**Precursor** – Any chemical substance that may be used in the production, manufacture, and/or preparation of narcotic drugs and psychotropic substances with the particularity that it incorporates its molecular structure to the final product.<sup>374</sup>

**Pre-precursor** – Term for chemicals that can be turned into precursors for the production of synthetic drugs.

**Purity** – The amount or quantity of a specific drug in the final product. Purity is assessed on an individual basis and can be reported as a percentage (%) or as absolute weight.<sup>375</sup>

**Reagent** – In a chemical reaction, a reagent is a substance that is involved in the reaction itself without necessarily becoming part of the final product.<sup>376</sup> It is used in many cases as a way of measuring the degree to which a reaction has occurred.

**Regulate** – Broad efforts to exert some sort of oversight, monitoring system, or control over the production and movement of chemicals; also referred to as “controls” or “controlled.” In Mexico, substances that are regulated are included in the Federal Law on the Control of Precursor Chemicals and Essential Chemical Products.<sup>377</sup> In the United States, regulated chemical substances are listed in the DEA’s List I and List II under the Chemical Diversion and Trafficking Act.<sup>378</sup> In China, regulated substances are listed under the Regulations on the Administration of Precursor Chemicals.<sup>379</sup>

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373 Health Research Board, “Fentanyl purity, potency, & synthesis: real-time testing of opioid drug products in the United States,” 2022.

374 United Nations Office on Drugs and Crime (UNODC), “Multilingual Dictionary of Precursors and Chemicals Frequently Used in the Manufacture of Narcotic Drugs and Substances Under International Control,” 2015.

375 Health Research Board, “Fentanyl purity, potency, & synthesis: real-time testing of opioid drug products in the United States,” 2022.

376 United Nations Office on Drugs and Crime (UNODC), “Multilingual Dictionary of Precursors and Chemicals Frequently Used in the Manufacture of Narcotic Drugs and Substances Under International Control,” 2015.

377 Mexico’s Chamber of Deputies, “Ley Federal para el Control de Precursores Químicos, Productos Químicos Esenciales y Máquinas para Elaborar Cápsulas, Tabletas y/o Comprimidos,” 20 May 2021.

378 United States Drug Enforcement Administration (DEA), “List I and List II Chemicals,” Diversion Control Division, November 2022.

379 State Council of the People’s Republic of China, “Regulations on the Administration of Precursor Chemicals,” 2021.

**Schedule(d)** – The act of classifying a drug or chemical based potential use and potential for harm, use and sale of which could lead to penalties such as fines, sanctions, or prison. In Mexico, these substances are categorized as “narcotics” (estupefacientes) under the General Health Law.<sup>380</sup> In the United States, these substances fall under the DEA’s Schedule I and Schedule II lists under the Controlled Substances Act.<sup>381</sup> In China, these substances are listed under the Supplementary List of Controlled Narcotic Drugs and Psychotropic Substances with Non-medical Use.<sup>382</sup>

**Solvent** – Chemical substance used in dissolving or dispersing one or more substance(s) without modifying their molecular structure. It does not become part of the final product.<sup>383</sup>

**Synthesis** – A chemical reaction in which one or more simple chemical compounds create a new, more complex, chemical structure. In the context of synthetic drug production, this refers to all processes in which precursor chemicals are transformed into another product such as a drug precursor or the final product.

**Synthetic drugs** – Chemical compounds produced in a laboratory for legitimate medical uses as well as illicit drug consumption.<sup>384</sup>

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380 Mexico’s Health Ministry “Ley General de Salud. Título Decimosegundo Control Sanitario de Productos y Servicios y de su Importación y Exportación. Capítulo V Estupefacientes,” 16 May 2022.

381 United States Drug Enforcement Administration (DEA), “Drug Scheduling,” 5 January 2023.

382 United Nations Office on Drugs and Crime (UNODC), “Generic Legislation for China: Supplementary List of Controlled Narcotic Drugs and Psychotropic Substances with Non-medical Use,” 2021.

383 United Nations Office on Drugs and Crime (UNODC), “Multilingual Dictionary of Precursors and Chemicals Frequently Used in the Manufacture of Narcotic Drugs and Substances Under International Control,” 2015.

384 C4ADS, “Lethal Exchange: Synthetic Drug Networks in the Digital Era,” 2020.

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## Annex III – List of Abbreviations

**4-AP** 4-anilinopiperidine

**AML** Anti-money laundering

**ANAM** Mexican National Customs Agency (Agencia Nacional de Aduanas)

**AMIIF** Mexican Association of Pharmaceutical Research Industries (Asociación Mexicana de Industrias de Investigación Farmacéutica)

**APAAN** Alpha-phenylacetonitrile

**ANPP** 4-anilino-N-phenethylpiperidine

**ATS** Amphetamine-type stimulant

**B2B** Business-to-business

**BMK** Benzyl Methyl Ketone

**CAS** Chemical Abstracts Service

**CBN** India's Central Bureau of Narcotics

**CBP** United States Customs and Border Protection

**CCE** Mexico's Chamber of Commerce and Industry (Consejo Coordinador Empresarial de México)

**CCSOT** United States Commission on Combatting Synthetic Opioid

**CFE** Mexico's Federal Tax Code (Código Fiscal de la Federación de México)

**CTF** Counter-terrorist financing

**CJNG** Jalisco Cartel New Generation (Cartel de Jalisco Nueva Generación)

**CICAD** Organization of American States' Inter-American Drug Abuse Control Commission (Comisión Interamericana para el Control del Abuso de Drogas)

**CND** United Nations Commission on Narcotic Drugs

**CPF** Mexico's Federal Criminal Code (Código Penal Federal de México)



**COFEPRIS** Mexico's Commission for the Prevention of Health Risks (Comisión Federal de Prevención de Riesgos Sanitarios Federal de México)

**COSCO** China Ocean Shipping Company

**CU** Carteles Unidos

**DEA** United States Drug Enforcement Administration

**DOJ** United States Department of Justice

**EAPA** Ethyl alpha-phenylacetoacetate

**END** India's Essential Narcotic Drugs List

**EO** United States Executive Orders

**FATF** Financial Action Task Force

**FGR** Mexico's Attorney General's Office (Fiscalía General de la República de México)

**FOIA** United States Freedom of Information Act

**FY** Fiscal Year

**GRIDS** United Nations Global Rapid Interdiction of Dangerous Substances

**GTCDS** Mexico's Technical Group for the Control of Synthetic Drugs (Grupo Técnico para el Control de Drogas Sintéticas)

**INCB** International Narcotics Control Board

**ISSL** International Special Surveillance List

**KYC** Know Your Customer

**LA** Mexico's Customs Law (Ley Aduanera de México)

**LFDO** Mexico's Organized Crime Combat Law (Ley Federal contra la Delincuencia Organizada)

**LFP** Mexico's Chemical Precursors, Essential Chemical Products and Pill Presses Law (Ley Federal para el Control de Precursores Químicos, Productos Químicos Esenciales y Máquinas para elaborar Capsulas, Tabletas y/o comprimidos)

**LGS** Mexico's General Health Law (Ley General de Salud de México)

**MAPA** Methyl alpha-phenylacetoacetate

**MMA** Monomethylamine

**MPF** Mexico-produced fentanyl




**MPM** Mexico-produced methamphetamine  
**NADD** North American Drug Dialogue  
**NCB** India's Narcotics Control Bureau  
**NDPS** India's Narcotic Drugs and Psychotropic Substances Act  
**NPP** N-Phenethyl-4-piperidinone  
**NSDUH** United States National Survey on Drug Use and Health  
**OAS** Organization of American States  
**P2NP** Phenyl-2-nitropropene  
**P2P** Phenyl-2-propanone  
**PICS** United Nations Precursors Incident Communication System  
**PO** Ports of Entry  
**SAT** Mexican Tax Administration Service (Servicio de Administración Tributaria)  
**SCT** Mexico's Ministry of Transportation and Communications (Secretaría de Comunicaciones y Transportes)  
**SE** Mexico's Ministry of Economy (Secretaría de Economía)  
**SEDENA** Mexico's Ministry of National Defense (Secretaría de la Defensa Nacional)  
**SEMAR** Mexico's Ministry of the Navy (Secretaría de Marina)  
**SEMEOF** México's Forensic Medical Services (Servicio Médico Forense)  
**SS** Mexico's Health Ministry (Secretaría de Salud)  
**TCO** Transnational Criminal Organizations  
**UN** United Nations  
**UNODC** United Nations Office of Drugs and Crime  
**USMCA** United States-Mexico-Canada Free Trade Agreement  
**WHO** World Health Organization

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# Annex IV – Synthetic Drug Production Methods and Major Chemicals

## Methamphetamine Production

### P2P METHOD

PRECURSORS			
Name	 Legal Uses	 Illegal Uses	 Legal Status
<b>Phenyl-2-propanone (P2P)</b>	Chemical and pharmaceutical industries	Main precursor to synthesize methamphetamine	Scheduled in Mexico and the United States; regulated in China
<b>Methylamine</b>	Chemical, agrochemical, and pharmaceutical industries	Main precursor to synthesize methamphetamine	Regulated in Mexico, China, and the United States

### PRE-PRECURSORS

<b>Phenylacetic acid</b>	Chemical, pharmaceutical, and cosmetic industries	P2P production	Regulated in Mexico, China, and the United States
<b>Benzaldehyde</b>	Pharmaceutical, chemical, food, petrochemical, and cosmetic industries	P2P production	Regulated in Mexico and the United States
<b>Benzyl chloride</b>	Chemical, pharmaceutical, food, and cosmetic industries; production of plastic	P2P production	Regulated in Mexico, China, and the United States
<b>Sodium cyanide</b>	Chemical, agricultural, and pharmaceutical industries	P2P production	Monitored in Mexico; regulated in China
<b>Alpha-phenylacetoacetonitrile (APAAN)</b>	No known legal uses except, in small amounts, for research and analytical purposes	P2P production	Scheduled in Mexico; regulated in China and the United States
<b>Acetic acid</b>	Food and chemical industries	P2P production	Monitored in Mexico
<b>Acetic anhydride</b>	Chemical, tobacco, food, textile, and pharmaceutical industries	P2P production	Regulated in Mexico, China, and the United States
<b>2-acetyl-2-phenylacetamide (APAA)</b>	No known legal uses except, in small amounts, for research and analytical purposes	P2P production	Regulated in China and the United States
<b>1-phenyl-2-nitropropene (P2NP)</b>	Pharmaceutical industry	P2P production	Monitored in Mexico

<b>Nitroethane</b>	Chemical and petrochemical industries	P2P production	Regulated in Mexico, China, and the United States
<b>Methyl alpha-phenylacetoacetate (MAPA)</b>	No known legal uses except, in small amounts, for research and analytical purposes	P2P production	Regulated in China and the United States
<b>Ethyl alpha-phenylacetoacetate (EAPA)</b>	No known legal uses	P2P production	Not regulated

**ESSENTIAL CHEMICAL SUBSTANCES**

<b>Tartaric acid</b>	Pharmaceutical, food, and photography industries	Used to separate methamphetamine molecules and improve quality	Monitored in Mexico
<b>Acetone</b>	Pharmaceutical, chemical, fuel, and agricultural industries	Used as solvent in methamphetamine production	Regulated in Mexico, China, and the United States
<b>Ethyl alcohol</b>	Chemical, pharmaceutical, food, agrochemical, and cosmetic industries	Used as solvent in the final stages of methamphetamine production	Not regulated
<b>Hydrochloric acid</b>	Chemical, cosmetic, and food industries	Used to obtain methamphetamine hydrochloride	Regulated in Mexico, China, and the United States
<b>Sodium hydroxide</b>	Production of paper, explosives, petroleum, and cleaning products	Used as reagent in methamphetamine production	Monitored in Mexico
<b>Toluene</b>	Production of paints, varnishes, explosives, dyes, and coatings. Fuel industry	Used as solvent to extract the base of methamphetamine	Regulated in Mexico, China, and the United States
<b>Calcium chloride</b>	Chemical, agrochemical, food, and pharmaceutical industries	Used as drying agent for solvents in the methamphetamine production	Monitored in Mexico
<b>Benzyl alcohol</b>	Pharmaceutical, chemical, and food industries	Synthesis of pre-precursors for the production of P2P	Not regulated
<b>Acetophenone</b>	Cosmetic, plastic, and food industries	Used as solvent in the process of methamphetamine production	Not regulated




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Sources: UNODC, INCB, DEA, US National Institute on Drug Abuse, China's National Office on Drug Control, Mexico's General Health Law.

# Fentanyl Production

## JANNSEN METHOD

PRECURSORS			
Name	 Legal Uses	 Illegal Uses	 Legal Status
<b>Norfentanyl</b>	Used in small amounts for research and analytical purposes; licit production of fentanyl	Illicit production of fentanyl	Monitored in Mexico; scheduled in the United States
PRE-PRECURSORS			
<b>Benzylfentanyl</b>	Licit production of fentanyl	Production of norfentanyl	Monitored in Mexico; regulated in the United States
<b>1-benzyl-4-piperidone</b>	No known legal uses	Synthesis of fentanyl precursors	Monitored in Mexico
<b>1-benzyl-4-phenyliminopiperidine</b>	No known legal uses	Synthesis of fentanyl precursors	Not regulated
<b>1-benzyl-4-anilinopiperidine</b>	No known legal uses	Synthesis of fentanyl precursors	Not regulated
<b>Piperidine</b>	Chemical and pharmaceutical industries	Synthesis of fentanyl precursors	Regulated in Mexico, China, and the United States
<b>Propionic anhydride</b>	Agrochemical, pharmaceutical, and food industries	Synthesis of fentanyl precursors	Regulated in Mexico and the United States
ESSENTIAL CHEMICAL SUBSTANCES			
<b>Sodium carbonate</b>	Chemical, petrochemical, and mining industries; production of paper, textiles, and glass	Fentanyl synthesis	Monitored in Mexico
<b>Potassium iodide</b>	Pharmaceutical industry	Fentanyl synthesis	Not regulated
<b>Diisopropyl ether</b>	Chemical, agrochemical, and petrochemical industries	Acts as solvent in the synthesis of fentanyl	Not regulated
<b>Toluene</b>	Used as solvent to manufacture paints and varnishes; petrochemical industry	Acts as solvent in the synthesis of fentanyl	Regulated in Mexico, China, and the United States
<b>Aniline</b>	Chemical, agrochemical, and pharmaceutical industries	Fentanyl synthesis	Monitored in Mexico

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Sources: UNODC, INCB, DEA, US National Institute on Drug Abuse, China's National Office on Drug Control, US Congressional Research Service, Mexican General Health Law.






# Fentanyl Production

## SIEGFRIED METHOD

PRECURSORS			
Name	 Legal Uses	 Illegal Uses	 Legal Status
<b>4-anilino-N-phenethylpiperidine (ANPP)</b>	Licit production of fentanyl	Illicit production of fentanyl	Regulated in Mexico and China. Scheduled in the United States
PRE-PRECURSORS			
<b>N-phenethyl-4-piperidinone (NPP)</b>	Licit production of fentanyl and carfentanyl	Synthesis of ANPP	Regulated in Mexico, China, and the United States
<b>4-piperidone</b>	Licit production of fentanyl	Synthesis of NPP	Monitored in Mexico
<b>1-boc-4-piperidone</b>	Licit production of fentanyl	Synthesis of 4-piperidone	Not regulated
<b>1-phenethyl-4-phenyliminopiperidine</b>	No known legal uses	Synthesis of ANPP	Not regulated
ESSENTIAL CHEMICAL SUBSTANCES			
<b>Propionyl chloride</b>	Agrochemical and pharmaceutical industries	Synthesis of fentanyl	Regulated in Mexico
<b>Acetonitrile</b>	Agrochemical, chemical, and pharmaceutical industries	Synthesis of fentanyl	Monitored in Mexico
<b>Potassium carbonate</b>	Food, photography, chemical, agrochemical industries	Synthesis of fentanyl	Not regulated
<b>Tetra-n-butylammonium bromid</b>	Chemical industry	Used as catalyst in the synthesis of fentanyl	Not regulated
<b>Benzyl trimethylammonium chloride</b>	Chemical industry	Used as catalyst in the synthesis of fentanyl	Not regulated
<b>Polyethylene glycol</b>	Cosmetic and pharmaceutical industries	Used as catalyst in the synthesis of fentanyl	Not regulated
<b>Phenethylbromide</b>	Chemical and pharmaceutical industries	Synthesis of NPP	Monitored in Mexico
<b>Aniline</b>	Chemical, agrochemical, and pharmaceutical industries	Synthesis of ANPP	Monitored in Mexico
<b>Methanol</b>	Chemical, petrochemical, and pharmaceutical industries	Synthesis of ANPP	Monitored in Mexico
<b>Sodium borohydride</b>	Chemical industry	Synthesis of ANPP	Not regulated
<b>Sodium chloride</b>	Food, chemical, and pharmaceutical industries	Synthesis of ANPP	Not regulated
<b>Sodium hydroxide</b>	Production of paper, explosives, petroleum, and cleaning products	Synthesis of ANPP	Monitored in Mexico
<b>Methylene chloride</b>	Chemical and pharmaceutical industries; production of cleaning products and paint removals	Used as solvent in the synthesis of fentanyl	Not regulated
<b>Pyridine</b>	Chemical, agrochemical, and pharmaceutical industries	Used as solvent in the synthesis of fentanyl	Not regulated
<b>Hydrochloric acid</b>	Chemical, cosmetic, and food industries	Used to obtain fentanyl hydrochloride	Regulated in Mexico, China, and the United States
<b>Acetone</b>	Pharmaceutical, chemical, petrochemical, and agricultural industries	Used as solvent in the synthesis of fentanyl	Regulated in Mexico, China, and the United States

# Fentanyl Production

## GUPTA METHOD

PRECURSORS			
Name	 Legal Uses	 Illegal Uses	 Legal Status
<b>4-anilino-N-phenethylpiperidine (ANPP)</b>	Licit production of fentanyl	Illicit production of fentanyl	Regulated in Mexico and China; scheduled in the United States
PRE-PRECURSORS			
<b>4-anilinopiperidine (4AP)</b>	No known legal uses except, in small amounts, for research and analytical purposes	Synthesis of ANPP	Regulated in Mexico and the United States
<b>1-boc-4-anilinopiperidine (1-Boc-4-AP)</b>	No known legal uses except, in small amounts, for research and analytical purposes	Synthesis of 4-AP	Monitored in Mexico. Regulated in the United States
<b>4-piperidone</b>	Licit production of fentanyl	Synthesis of 4-AP	Monitored in Mexico
<b>1-boc-4-piperidone</b>	No known legal uses	Synthesis of 4-piperidone	Not regulated
<b>Propionic anhydride</b>	Agrochemical, food, and pharmaceutical industries	Synthesis of fentanyl precursors	Regulated in Mexico and the United States
<b>Propionyl chloride</b>	Agrochemical and pharmaceutical industries	Synthesis of fentanyl precursors	Regulated in Mexico
<b>Piperidine</b>	Chemical and pharmaceutical industries; production of rubber products and plastics	Synthesis of fentanyl precursors	Regulated in Mexico, China, and the United States
ESSENTIAL CHEMICAL SUBSTANCES			
<b>Acetic acid</b>	Chemical and food industries	Synthesis of fentanyl	Monitored in Mexico
<b>Methylene chloride</b>	Chemical and pharmaceutical industries; production of cleaning products, and paint removal chemicals	Used as solvent in the synthesis of fentanyl	Not regulated
<b>Sodium hydroxide</b>	Production of paper, explosives, petroleum, and cleaning products	Synthesis of fentanyl	Monitored in Mexico
<b>Dichloroethane</b>	Production of vinyl and plastic products	Synthesis of fentanyl	Not regulated

May 2023

*insightcrime.org*

Sources: UNODC, INCB, DEA, US National Institute on Drug Abuse, China's National Office on Drug Control, US Congressional Research Service, Mexican General Health Law.

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## Annex V- Major Criminal Organizations in Mexico

### The Sinaloa Cartel

The Sinaloa Cartel is a network of cells linked together mostly by family ties or marriage. Originally led by prominent traffickers from the rural Golden Triangle Region, who for decades focused on marijuana and heroin production and trafficking, the organization today runs one of the most sophisticated operations of synthetic drug trafficking.

The most notable actors at the moment are the sons of Joaquín Guzmán, alias “El Chapo”, collectively known as the Chapitos, who have changed the traditional approach of their father to maximize profits from various sources and boost territorial control.<sup>385</sup> And with plant-based drugs increasingly losing value, the trafficking of methamphetamine and fentanyl has become one of their main sources of income.<sup>386</sup>

The Chapitos have a monopoly over most of the state of Sinaloa, including the municipalities where clandestine laboratories have been found. They dictate production quotas, decide who gets permission to produce and sell synthetic drugs, set prices, and determine who can buy the finished product. Those who break these rules are generally punished with violence.<sup>387</sup>

Production is divided into zones, and each zone has a local crime boss -- closely linked to the Chapitos -- who enforces the norms, supplies production cells with the necessary chemical substances, pays cooks, and collects the final product before it is sold to trafficking networks.<sup>388</sup>

The Chapitos have also installed a sophisticated network of punteros, or lookouts, across the city of Culiacán and every surrounding town, allowing them to have real-time information about any suspicious movements from

385 Chris Dalby, “How the Chapitos Became Hyper-Capitalist Narcos,” InSight Crime, 23 December 2022.

386 InSight Crime, “The End of (Illegal) Marijuana: What it Means for Criminal Dynamics in Mexico,” 6 December 2022.

387 InSight Crime interviews, environmental activist working in areas close to clandestine laboratories, Eldorado, Culiacán, Sinaloa, Mexico, 11 October 2022; officer from Sinaloa’s state police, Culiacán, Sinaloa, Mexico, 12 October 2022.

388 InSight Crime interviews, environmental activist working in areas close to clandestine laboratories, Eldorado, Culiacán, Sinaloa, Mexico, 11 October 2022; officer from Sinaloa’s state police, Culiacán, Sinaloa, Mexico, 12 October 2022.

authorities or rival groups. These are normally young people, or even children, local crime bosses recruit.<sup>389</sup> According to a source in Sinaloa's state police, this means that cooks can always escape from a laboratory that is about to be busted before the sting.<sup>390</sup>

Currently, the Chapitos are the dominant actor in Mexico's fentanyl market. Authorities and illicit actors interviewed across Baja California, Sinaloa, Mexico City, and Michoacán agreed that the organization faces little competition.<sup>391</sup> Law-enforcement officers have found several fentanyl pill-pressing facilities and warehouses storing hundreds of thousands of pills in the city of Culiacán -- more than in any other production zone.



Graffiti on the highway from Los Mochis to Culiacán; Chapisa or Chapiza is a name the Chapitos commonly use to refer to themselves (Photo: InSight Crime)

But beyond Sinaloa, the Chapitos are also one of the most prominent organizations in northwest Mexico, ensuring their access to drug corridors through armed wings that keep rivals at bay. This has led to bloody battles, mostly in towns close to the US-Mexico border in Sonora, Chihuahua, and Baja California.<sup>392</sup>

Other cells associated with the Sinaloa Cartel, such as the one linked to Ismael Zambada, alias "El Mayo," do not appear to be significantly involved in synthetic drug production. They likely maintain a lower profile by focusing mostly on finding clients abroad and supervising transportation across the border.

389 InSight Crime interview, community leader working on preventing youth violence, Culiacán, Sinaloa, Mexico, 18 October 2022.

390 InSight Crime interview, officer from Sinaloa's state police, Culiacán, Sinaloa, Mexico, 12 October 2022.

391 InSight Crime interviews, officer from Mexico's National Guard, Mexico City, Mexico, 21 July 2022; Rafael Orozco Vargas, Central Attorney, Baja California's Attorney General's Office, Mexicali, Baja California, 15 September 2022; officer from Sinaloa's state police, Culiacán, Sinaloa, Mexico, 12 October 2022; former drug trafficker in the central Michoacán, Mexico, 12 December 2022; methamphetamine and fentanyl trafficker in Tierra Caliente, Michoacán, Mexico, 13 December 2022.

392 InSight Crime interview, Rafael Orozco Vargas, Central Attorney, Baja California's Attorney General's Office, Mexicali, Baja California, 15 September 2022; Peter Appleby, "El Chapo's Sons Fight Rafael Caro Quintero's Men in Sonora, Mexico," InSight Crime, 22 July 2022.



## The Jalisco Cartel New Generation (Cartel de Jalisco Nueva Generación – CJNG)

The CJNG is one of the most powerful criminal organizations in the Americas. It operates in numerous Mexican states, and in countries as far afield as Asia and Europe. It is involved in numerous criminal markets, but its roots lie in the methamphetamine market, where it remains a major player.

The organization is the result of various fragmentations of the Colima, Milenio, and Sinaloa cartels. The first two were the pioneers in developing the Mexican methamphetamine market and developed networks to source ephedrine and pseudoephedrine from China, South Asia, and Europe.<sup>393</sup>

This organization operates in a more vertically than the Sinaloa Cartel and has a more boots-on-the-ground approach to its illegal activities and territorial control. The leader of the organization, Nemesio Oseguera, alias “El Mencho,” allegedly gives most of the orders regarding methamphetamine production and armed battles with rival groups.<sup>394</sup>

The CJNG’s current synthetic drug production is concentrated along the Jalisco-Michoacán border and in Colima, where they also control the land route from the port of Manzanillo to the city of Guadalajara. The group has also aggressively tried to expand to other strategic regions, such as Michoacán’s coast, the west side of the US-Mexico border, and the drug corridors that connect these two places.<sup>395</sup>

This expansion has been brutal. Our sources in western Michoacán said that the CJNG had overtaken entire towns to set up methamphetamine laboratories. For this, they have allegedly displaced hundreds of people by taking their properties and imposed population controls schemes -- such as extortion rackets and curfews -- on top of eliminating everyone who is (even loosely) associated with rival groups.<sup>396</sup> This led to several hundred citizens taking up arms since 2015 and forming vigilante groups that constantly engage in bloody battles with the CJNG, using military-style weapons and equipment.<sup>397</sup>

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393 United States Drug Enforcement Administration, “Congressional Testimony”, 18 March 1998; United States District Court for the District of Columbia, “Zhenly Ye Gon Indictment,” 9 February 2011; United States District Court for the District of Columbia, “Gerardo González Valencia Indictment,” 19 April 2016.

394 InSight Crime interviews, members of various armed groups fighting against the CJNG in central and southern Michoacán, Mexico, 12 – 14 December 2022.

395 InSight Crime interviews, members of various armed groups fighting against the CJNG in central and southern Michoacán, Mexico, 12 – 14 December 2022.

396 InSight Crime interviews, members of various armed groups fighting against the CJNG in central and southern Michoacán, Mexico, 12 – 14 December 2022; person who was forcibly displaced from a town that was overtaken by the CJNG, southern Michoacán, Mexico, 14 December 2022.

397 InSight Crime interviews, members of various armed groups fighting against the CJNG in central and southern Michoacán, Mexico, 12 – 14 December 2022.



The CJNG is the second most important Mexican illicit actor in the fentanyl trade, although authorities have yet to detect pill-pressing facilities in areas they exert control. For now, it is likely that they either import fentanyl directly from Asia through the port of Manzanillo or buy it from independent sources and producers in Mexico.

Former and active drug traffickers who had close knowledge of the CJNG told InSight Crime that about two-thirds of the group's income comes from drug trafficking profits, while the rest results from extorting the local population, transnational agribusinesses, and mining companies.<sup>398</sup>



A CJNG graffiti in Apatzingán, Michoacán. A town in the Tierra Caliente region where the CJNG has set up methamphetamine laboratories (Photo InSight Crime)

One of the CJNG's most important advantages is that it has installed a sophisticated money laundering scheme, injecting capital into dozens of businesses and real estate properties around the major urban areas of Jalisco -- namely Guadalajara and Puerto Vallarta -- as evidenced by the continued sanctions from the US Treasury Department against the group and their associates since the beginning of the 2010s. This expansion into the legal economy has also allowed them to have close associates in Mexico's business class, possibly aiding them in forming front companies and ensuring the flow of chemicals.<sup>399</sup>

## Michoacán-Based Trafficking Networks

The state of Michoacán houses a variety of drug trafficking networks that may be loosely linked to a criminal organization, to vigilante groups, or act independently. Most of these are remnants of the once powerful groups of the Familia Michoacana, the Knights Templar and the Milenio Cartel, where they inherited their methamphetamine enterprise and international contacts. These groups form loose and fragile alliances that are constantly changing.<sup>400</sup>

398 InSight Crime interviews, former drug trafficker in central Michoacán, Mexico, 12 December 2022; methamphetamine and fentanyl trafficker in Tierra Caliente, Michoacán, Mexico, 13 December 2022.

399 InSight Crime interview, member of a vigilante group in southern Michoacán, Mexico, 14 December 2022.

400 Steven Dudley, "A Cartel's Bodyguard in Mexico's 'Hot Land'," InSight Crime, 14 September 2022.

Today, all Michoacán-based armed groups have allied against the incursion of the Jalisco Cartel in the state. Local groups, such as Los Viagras, Blancos de Troya and other former members of the Knights Templar, have formed a coalition known as *Cárteles Unidos*. Others are acting independently, like the *Familia Michoacana* and a handful of vigilante groups, some of whom openly traffic drugs themselves.<sup>401</sup>

The key advantage of Michoacán-based trafficking networks is their access to the Lázaro Cárdenas port, which they aggressively defend from the CJNG. According to armed actors and Michoacán's minister of security, these groups use the port to exchange iron and other minerals obtained from dozens of illegal mines in the area for chemical precursors from China.

Moreover, our interviews with former and current drug traffickers suggested that Michoacán-based trafficking networks are increasingly looking to use the port to send methamphetamine back to East Asian markets, given that the Sinaloa and Jalisco Cartels currently dominate the US market.

Finally, traffickers in Michoacán have recently begun to enter the fentanyl market. However, sources who spoke to InSight Crime in the state said no production was taking place. Instead, illicit actors were buying pills in bulk in the city of Guadalajara, possibly from the Sinaloa Cartel or independent networks.

## **Other Criminal Networks**

Other medium-sized, criminal organizations in the country have been connected to the synthetic drug trade, including the Arellano Félix network based in Baja California, and remnants of the Zetas based in northeast Mexico.

However, during our research, we did not find that these groups were significantly involved in sourcing precursors or in drug production. Instead, they appear to buy the counterfeit pills from the networks mentioned above -- predominantly the Sinaloa Cartel and the CJNG -- or charge trafficking groups a fee for moving drugs through their territory.

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401 InSight Crime interview, José Alfredo Ortega, Michoacán's Minister of Public Security, Morelia, Michoacán, 16 December 2022.

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# Annex VI - International Controls and Relevant Regulatory Regimes

## Multilateral

Three United Nations (UN) treaties guide the worldwide control of chemical substances: the 1961 Single Convention on Narcotic Drugs, the 1971 Convention on Psychotropic Substances and the 1988 United Nations Convention against Illicit Traffic in Narcotic Drugs and Psychotropic Substances. The first focuses on the regulation of drugs with the effects of cannabis, opium, cocaine or similar; the second regulates amphetamine-type stimulant substances; and the third regulates precursor chemicals used for illegal drug production.<sup>402</sup> Guiding the implementation of these treaties are the Commission on Narcotic Drugs, created in 1946, and the International Narcotics Control Board (INCB), created in 1961.

The CND, an elected body comprised of 53 member states, supervises the application of the international drug control treaties and governs the activities of the UN Office of Drugs and Crime (UNODC). The CND conducts normative deliberations regarding treaty-based obligations, such as scheduling new substances, and carries out operational oversight of UNODC. The CND meets annually to adopt new decisions and resolutions, making it a less than agile body for rapidly evolving chemical threats. The regulation (“control”) of new chemicals is carried out as follows:

- Step 1: A State signatory to the 1988 Convention or the INCB makes the request to include the chemical on the control list.
- Step 2: The UNODC General Secretariat sends a notification with supporting information to the signatory countries and to the CND. When necessary, it is sent to the INCB and the World Health Organization (WHO). Parties submit comments.
- Step 3: The General Secretariat sends CND members the notification information, INCB and WHO comments, additional information, and proposed changes or comments from signatory countries.

<sup>402</sup> United Nations Office on Drugs and Crime (UNODC), “Scheduling Procedures Under the International Drug Control Conventions,” 2020.

- Step 4: The CND votes; it must be approved by two-thirds of the members.
- Step 5: The General Secretariat sends voting result to INCB, WHO and signatory countries.
- Step 6: 180 days after the release is sent, the control takes effect.

The INCB is the UN lead for monitoring surveillance and enforcement of precursor chemical control and identifying new controlled substances.<sup>403</sup> The Board is composed of narcotics subject matter specialists, member state appointees, and WHO-nominated medical/pharmaceutical experts. The INCB uses various international tools<sup>404</sup> to monitor legal international trade and prevent diversion, in particular the “International Special Surveillance List” or ISSL, which, provides, in principle and on a voluntary basis, “the flexibility necessary to proactively address series of chemically related substances including designer precursors.”<sup>405</sup>

Aside from PEN, PEN Online Light, and GRIDS, some other key INCB enforcement programs are:

- Precursors Incident Communication System (PICS): INCB’s online platform to facilitate real-time communication and exchange of information between authorities regarding precursor chemicals and machinery used for drug production. It functions as an early warning system.<sup>406</sup>
- Cohesion and Prism Projects: these initiatives serve as a framework for international cooperation against trafficking in chemicals used in the illicit manufacture of cocaine, heroin and synthetic drugs. They are led by the Precursor Task Force.

## United States

In the United States, The Chemical Diversion and Trafficking Act of 1988 is the principal law responsible for providing guidelines for regulating the distribution of precursor chemicals as well as machines for the manufacture of synthetic drugs. It is complementary to The Controlled Substances Act of 1970. The Drug Enforcement Administration (DEA) is the entity in charge of enforcing these regulations. Individuals or companies that handle, store or distribute the substances set forth in these laws must be previously registered with the DEA.

403 Ibid.

404 International Narcotics Control Board (INCB), “[INCB Tools for Governments](#),” 2023.

405 International Narcotics Control Board (INCB), “[Alert.19](#),” 2019.

406 Precursors Incident Communications System (PICS), “[Brochure V.1](#),” September 2022.

Chemical substances are categorized by the DEA according to their level of hazardousness and legal uses in two lists. Schedule I includes chemical substances that, in addition to having legitimate uses, are used to produce substances controlled by law, almost always as precursor chemicals. Schedule II regulates substances that function as reactors or solvents in illegal production processes. Currently, 48 chemicals are regulated within the schedules. In addition to controlled substances, the Controlled Substances Act provides that analogs of Schedule I and II chemicals be treated as Schedule I controlled chemicals when they are intended to be used for human consumption. These types of provisions for handling analogs are not included in the regulations of countries such as Mexico and China, which makes their regulations more vulnerable to being circumvented using uncontrolled precursors and pre-precursors to produce synthetic drugs.

Most major chemicals identified at the international level that function as precursors or pre-precursors to methamphetamines are regulated by the DEA. However, challenges remain, as designer precursors not regulated at the international level such as ethyl alpha-phenylacetate (ethyl 3-oxo-2-phenylbutanoate) (EAPA) or Phenyl-2-Nitropropene (P2NP) are increasingly appearing.

With regard to fentanyl precursors, the United States effectively regulates the main substances for their synthesis. However, some important pre-precursors such as 4-Piperidone are still awaiting inclusion in the laws. On September 22, 2022, the DEA published its intention to include 4-Piperidone, its salts, acetals, amides and carbamates, within Schedule I controlled substances.<sup>407</sup>

## **China**

In the People's Republic of China, there are several regulations in place regarding precursor chemicals. These include: the Regulations on the Administration of Precursor Chemicals, issued in 2005 by the State Council of the People's Republic of China; the Provisions on the Administration of the Import and Export of Precursor Chemicals and on the Administration of International Control over the Import and Export of Precursor Chemicals, and the Licensing Measures for the Production and Operation of Non-Pharmaceutical Precursor Chemicals, issued in 2006; and the Narcotics Control Law of the People's Republic of China, issued in 2007. These regulations classify chemicals into three categories: high-risk substances, precursors, and other raw materials.

Over the past 20 years, China has regulated more than ten precursor chemicals for methamphetamine processing, given the pressures generated by the drug's production on the Asian mainland and its interest in discouraging

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<sup>407</sup> United States Drug Enforcement Administration (DEA), "[Designation of 4-Piperidone as a Schedule I Chemical](#)," 22 September 2022.



illegal domestic methamphetamine production. Another six chemicals have been regulated for other reasons, while more than ten precursors and pre-precursors remain unregulated.

Regarding fentanyl, from 2013 to 2015, some of its analogues began to be regulated. This, from joint efforts between the Ministry of Public Security, the National Narcotics Control Committee, the National Administration of Medical Products and the National Health Commission, supervised by the State Council. Two major fentanyl precursors, ANPP and NPP, were regulated in 2017. In 2018, while the G20 summit was taking place in Argentina, China announced that it would seek to generate stronger regulations on fentanyl.<sup>408</sup> In May 2019, the government effectively banned fentanyl and all its analogs.<sup>409</sup> However, regulations remain lax on fentanyl precursor chemicals.

Major challenges remain in relation to implementation, especially at the local level. There may be as many as 160,000 chemical companies in China operating legally or illegally.<sup>410</sup> Enforcement of existing laws for these sectors is often co-opted by corruption.<sup>411</sup> Given the importance of chemical and pharmaceutical companies at the local level, mid-level officials avoid monitoring and investigating the actions of large industrialists.<sup>412</sup> Companies in different Chinese provinces that deliberately sell precursor chemicals internationally, even though they know that they can be used for illegal drug production.

Similarly, to date China has only regulated two fentanyl precursors, with little impact given that Chinese chemical and pharmaceutical industries have been creating new precursors that are not subject to national or international regulations.<sup>413</sup> According to the Congressional Research Service, as of September 2022 and partly for political reasons relating to then-Speaker Nancy Pelosi's trip to Taiwan, China has for now ruled out a Know Your Customer protocol on Chinese chemical shipments and has not reported taking action to control additional fentanyl precursors, including 4-AP, boc-4-AP, and norfentanyl.<sup>414</sup> Cooperation with regulatory bodies such as the INCB and the different affected countries remains key but is one of the areas where the least Chinese progress has been reported. Both

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408 United States Congressional Research Service, "China Primer: Illicit Fentanyl and China's Role," 8 July 2022.

409 Steven Lee Myers and Abby Goodnough, "China Bans All Types of Fentanyl, Cutting Supply of Deadly Drug to U.S. and Fulfilling Pledge to Trump," *The New York Times*, 1 April 2019.

410 InSight Crime, "Mexico's Role in the Deadly Rise of Fentanyl," February 2020.

411 Vanda Felbab-Brown, "China and Synthetic Drugs Control. Fentanyl, Methamphetamines, and Precursors," Brookings Institute, March 2022.

412 Vanda Felbab-Brown, "China and Synthetic Drugs Control. Fentanyl, Methamphetamines, and Precursors," Brookings Institute, March 2022.

413 Lauren Greenwood and Kevin Fashola, "Illicit Fentanyl from China: An Evolving Global Operation," U.S.-China Economic and Security Review Commission, 24 August 2021.

414 United States Congressional Research Service, "China Primer: Illicit Fentanyl and China's Role," 8 July 2022.

with fentanyl -- prior to its regulation — and with precursor chemicals, the Chinese government has adopted the position of blaming the countries where illegal production of the drug takes place or the countries that consume the final product, such as the United States.<sup>415</sup>

## **India**

India has the capability to take over from China as the primary supplier to North America of precursor chemicals, and overall “inadequate regulatory measures have driven India’s large pharmaceutical and chemical industries to fuel the global fentanyl grid through clandestine operations.”<sup>416</sup> The Narcotic Drugs and Psychotropic Substances Act (NDPS) of 1985, with four amendments, in 1988, 2001, 2014, and 2021, regulates narcotic and psychoactive substances in India.

The 2014 amendment introduced a list of Essential Narcotic Drugs (END) to be controlled directly by the central government to ensure uniform countrywide access to palliative care and fentanyl was designated an END in 2015. Although India has scheduled two direct fentanyl precursors, NPP and ANPP, it has overlooked fentanyl analogues and has been behind in scheduling alternative precursors.

Decentralization among oversight agencies produces coordination challenges. The Narcotics Control Bureau (NCB) of India, supervised by the Ministry of Home Affairs, is the primary government authority responsible for combating narcotics trafficking but the Central Bureau of Narcotics (CBN) oversees licensing; authorizing the manufacture, import, and export of synthetic narcotics substances scheduled in the NDPS Act and is the international liaison with the INCB and foreign governments. Other associated agencies include the Directorate of Revenue Intelligence, National Investigative Agency, and Border Security Forces.

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415 Ibid.

416 Chao Wang, Nicholas Lassi, Xiaohan Zang, and Vinay Sharma, “[The Evolving Regulatory Landscape for Fentanyl: China, India, and Global Drug Governance](#),” *International Journal of Environmental Research and Public Health*, vol. 19, no. 4 (2022).



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