Narcotics Crisis®

MADE IN MEXICO
WITH U.S. INGREDIENTS

An 18-liter jug of J.T. Baker acetic anhydride bought online, no questions asked, by a *Bloomberg Businessweek* reporter

The cartels make heroin and methamphetamine using chemicals produced in Mexico by U.S. companies, and then send the drugs to America

By Cam Simpson, Michael Smith, and Nacha Cattan

Photograph by Jake Naughton

Making their way down a narrow country road in the Mexican state of Sinaloa one morning in May 2019, members of a counter-narcotics squad were struck by a strong chemical smell. They pulled over, and a small reconnaissance team climbed out of their vehicles, then stalked down a trail. Behind a thicket of trees, tucked in a clearing, they found an open-air drug factory—not a huge surprise in Sinaloa, the capital of the global narcotics empire built by Joaquín "El Chapo" Guzmán. Five cauldrons for cooking heroin stood exposed to the sky, flaked with rust. In the camp's makeshift living quarters, bags of tortilla chips and a cooler of unopened Pepsis suggested the cooks had left in haste.

The soldiers discovered the source of the smell: acetic anhydride, a clear liquid that reeks like vinegar. Except for the sap drained from opium flowers, it's the only thing truly required to make heroin, and it doesn't take much of the stuff to do the job. Soldiers found some inside four 18-liter jugs that, when full, could have produced 80 pounds of high-quality "China white," with a U.S. street value of at least $3.6 million.

Acetic anhydride has legal uses in laboratories and factories—the most common use is in the production of cigarette filters. But under international drug laws it's one of the most strictly controlled "precursor and essential chemicals" for the production of illegal narcotics. For 30 years the U.S. government has aggressively pushed almost every nation in the world to sign on to global treaties and pass domestic laws to keep potential drugmaking chemicals away from narcotics syndicates. Acetic anhydride was placed in the highest category of control in 2001. Yet the acetic anhydride seized that morning in Sinaloa was bottled, branded, and sold in Mexico by a $12.3 billion publicly traded U.S. company, Avantor Inc. ▶

◀ During the decade-long U.S. heroin epidemic, Avantor has cultivated a remarkable line of business: selling acetic anhydride across Mexico in containers that are big enough to make lucrative quantities of illegal narcotics but small enough to load into the trunk of a car. Sales come via a network of distributors, online sellers, and stores spread across the country.

Without the right chemicals, it's impossible for cartels to make two drugs that are plaguing America: heroin and methamphetamine. Avantor is one of a handful of U.S. companies that supply the legal market for those chemicals in Mexico—a market the cartels have had little trouble tapping to make narcotics on a massive scale, a *Bloomberg Businessweek* investigation has found. Mexico is the source of the vast majority of the heroin and meth sold in the U.S., where more than 142,000 people died from overdoses involving the drugs from 2010 through 2018.

Easy access to drugmaking chemicals for narcos in Mexico appears to be facilitated, in part, by a lack of outside oversight. International and U.S. drug laws regulate the trade worldwide, but their reach often ends at the Mexican border for local subsidiaries of American companies. International narcotics authorities can interdict sales between nations, but not within them. In the U.S. the companies operate under tough U.S. drug laws, which charge them with ensuring their chemicals aren't being diverted to make narcotics. If they fail, the U.S. Department of Justice has broad authority to shut down their American operations or charge them criminally. But that oversight doesn't apply when the companies make and sell those chemicals in Mexico rather than shipping them there from the U.S.

The ability to operate beyond U.S. oversight may never have been more consequential than during a roughly two-year period leading up to August 2016. In that window, the Mexican subsidiary of Dallas-based Celanese Corp. lost tanker trucks of another critical drugmaking chemical, monomethylamine, in three separate hijackings, according to sources with detailed knowledge of the thefts. The company acknowledged the hijackings but wouldn't say how many trucks were lost, or how much of the chemical. Thieves got a total of at least 30,000 liters, the sources say. The thefts have not been previously reported.

Monomethylamine, or MMA, is so vital to methamphetamine production that for a company selling the chemical from U.S. soil, failing to immediately report a supply-chain loss to the Justice Department is a federal crime. Because Celanese made it in Mexico, however, none of that applied, even as executives continued sending tankers out onto Mexico's bandit-plagued highways. Without publicly disclosing the hijackings, the company ceased Mexican production of MMA in late 2016. By that point, the amount sources said had been lost could have produced at least 60,000 pounds of meth. That's more than all the meth U.S. border agents seized in 2015 and 2016 combined.

The systematic failure to keep drugmaking chemicals away from Mexican cartels has many causes. The most surprising one might be the role of American commerce.

In 1874 an English chemist named Charles Alder Wright wanted to make morphine less addictive. He tried boiling it in acetic anhydride, which was used to process flavoring from vanilla beans and would later become critical to making aspirin and cigarette filters. Instead of weakening morphine's grip, Alder Wright's process yielded a narcotic several times more potent. Chemists at the German company Bayer AG developed the drug; one who tried it said he felt *heroisch*, or heroic, so Bayer branded it heroin. The name has never changed, and neither has the chemistry.

"Without acetic anhydride, well, all you have is this crude opium," says Gildardo Cruz, director of the Mexican attorney general's forensic chemicals laboratory. He makes his own heroin to study opium seized by the military from poppy fields. "It's so easy," Cruz says. "All we need is a little acetic anhydride and a little tub or bucket." It takes only 2 to 2.5 liters to make a kilogram (2.2 pounds) of China white, and just one liter can yield a kilogram of lower-grade heroin.

Acetic anhydride's critical role in heroin production has made it one of the top chemical targets of the International Narcotics Control Board, or INCB, the United Nations agency that polices drugmaking chemicals. Inside Mexico, however, it's been effectively unregulated. And heroin isn't its only yield. Cartels make meth with acetic anhydride, too.

While heroin is made in small tubs and vats, cartel chemists produce meth in industrial superlabs. It's a purely chemical concoction, involving myriad compounds, and the cartels often tweak their recipes depending on the availability of key ingredients. After U.S. authorities in 2010 choked off the supply of one critical chemical, phenylacetone, or P2P, the cartels started using acetic anhydride, along with other easy-to-get chemicals, to make P2P themselves.

How much acetic anhydride has gone to feed the supply of the two drugs to the U.S.? For heroin, as much as 1.2 million liters, or about 1,300 metric tons, from 2011 through 2018. That's according to U.S. government estimates of heroin production, drawn in part from poppy crop data. It's enough to fill a tanker train the length of two and a half football fields. The amount used to make meth is much harder to estimate, but testing and seizure data show that demand has been exponentially greater; 2011 seizures alone suggest at least 1 million liters of acetic anhydride were used for meth just that year.

The amount of methylamine sources said had been lost could have produced 60,000 pounds of meth

The supply comes from within Mexico. The INCB recently analyzed every suspect acetic anhydride transaction and trafficking case worldwide, from 2016 through 2018, a period of intense activity. They didn't find a single one involving Mexico. Investigators say that means the acetic anhydride used to make Mexico's drugs is diverted from within the country's legal trade.

Businessweek requested data from the Mexican government on the size of the country's legal market for acetic anhydride, which would provide insight on how much has gone into making drugs. The government declined to release it. But proprietary data collected from producers, distributors, and the government by Mexico's national chemical industry association, known by its Spanish acronym, ANIQ, shows huge spikes in the country's market for the chemical during the past decade, including a 17-fold increase in 2011.

It didn't have to be so easy for the cartels. The INCB made acetic anhydride one of its top targets in 2001, but Mexico resisted pressure to do the same. Until December 2018, when Mexico finally moved it onto its list of the most strictly regulated chemicals, anyone selling more than a metric ton needed to do little more than file a report with the government once a year. Below that level, there was nothing. Now a seller is supposed to ensure buyers are legitimate—factories and labs with a proven need, for example—down to every liter sold.

In two interviews earlier this year, Elvira Espinosa, who heads the regulation of drugmaking chemicals in Mexico, defended the record of her agency, the Federal Commission for Protection Against Sanitary Risk, or Cofepris. She said regulators waited almost 18 years to tighten control of acetic anhydride because they viewed the more stringent international regulations as unnecessary and too costly for companies. The change came after regulators realized small quantities were being sold widely in Mexico and that very little was needed to make drugs, she said.

But by then, Mexican heroin production had already peaked, according to U.S. government estimates. Since the change it's been harder to get, but not too hard.

Acetic anhydride is legally sold two ways in Mexico. First, factories, including those that use it to make cigarette filters, aspirin, and fragrances, buy industrial quantities in tanker trucks or 1,000-liter containers. Second, there's a thriving retail market for far smaller containers at medical supply shops, online, and from distributors.

In terms of volume, the retail market is dwarfed by industrial sales, but its small containers are well-suited to the cottage-industry nature of heroin production. Retailers and distributors say Avantor's jugs and large glass bottles of acetic anhydride, ostensibly sold for use in clinical labs, are popular with narcos and easy to get. It's one of Avantor's most heavily stocked retail products in Mexico, according to a company inventory seen by Bloomberg.

Thousands of impoverished *campesinos* in Guerrero grow opium poppies along the southern leg of the Sierra Madre mountain range. They began doing so in the past decade at the urging of the Sinaloa cartel and others based farther north, says Jorge Hernández Tinajero, who surveyed growers for a 2018 study published by the nonprofit Transnational Institute. The heroin is usually manufactured in small, makeshift labs close to the fields. Sure enough, Hernández found that shopkeepers in Guerrero, Mexico's second leading heroin producing region, routinely stock acetic anhydride. Speaking on the condition of anonymity, one Guerrero retailer who sells it says narcos especially like Avantor's J.T. Baker brand because of its reputation for purity. Distributors say the same is true in Sinaloa, the top growing region.

Avantor, based in suburban Radnor, Pa., outside Philadelphia, bought the century-old J.T. Baker brand in 2010. It's hard to know how long narcos have been using it, but three months after the purchase, photos from an Army raid on three Guerrero drug labs showed a masked soldier holding a melon-size ball of wet heroin above a 4-liter bottle of J.T. Baker acetic anhydride. It's continued to turn up since the 2018 regulations went into effect, including at the May 2019 raid in Sinaloa—the four jugs left behind by the heroin cooks bore J.T. Baker labels, according to photos police took at the scene.

On the first anniversary of Mexico's tighter regulations, a Bloomberg reporter purchased a 1-liter bottle of J.T. Baker acetic anhydride over the counter at Química Barley, a medical-supply store in Chilpancingo, Guerrero's capital, where nurse uniforms hang from clotheslines above customers' heads. The manager volunteered that he could get an 18-liter jug in three days. His only requirement was advance payment. His shop advertised J.T. Baker on its Facebook page. The sale violated the new Mexican regulations, which require sellers to record proof, such as tax ID numbers, that buyers are legitimate users. But enforcement is so weak, distributors say, the regulations are largely meaningless.

Days later, the reporter arranged the purchase of an 18-liter jug of J.T. Baker via the Mexican operation of MercadoLibre Inc., the leading e-commerce site in Latin America. Each jug can make 90,000 hits of pure white heroin. Químicos IsaaQuim, a Mexico City distributor, sold and delivered it in the reporter's name, no questions asked, to a FedEx pickup site in Iguala. The Guerrero city is synonymous with drug corruption; 43 students disappeared there in 2014, suspected victims of a narco massacre. Hector Renedo, the owner of Químicos IsaaQuim, said he didn't know the regulations had changed and that he's had no difficulty obtaining jugs of J.T. Baker to sell. Others selling them also have appeared on MercadoLibre.

Avantor has close relationships with select distributors and retailers, companies it calls "channel partners," including about two dozen in Mexico. The biggest is El Crisol, a nationwide chain of nine laboratory supply stores. Francisco Cervantes, then-sales director at El Crisol's flagship store in Mexico City, said in an interview earlier this year that the company follows the regulations for selling Avantor's jugs, but that there are "thousands of small outfits that don't follow the rules, which might sell to anyone. It's an open secret." One such seller, Científica Vela Quin, appears to be another Avantor partner in the capital. During a February visit to the store, an account manager said he would sell anyone as much as they wanted. "You can have one liter, 18 liters, or 100 liters," the account manager said, adding that no identification was necessary. He provided a written quote for 1-, 4-, and 18-liter containers of J.T. Baker acetic anhydride. The company supplies other distributors nationwide. In a subsequent statement, Científica Vela Quin said it complies with Mexican law and sells only to licensed buyers. ▶

◀ At the end of last year, Avantor had more than 8 metric tons of acetic anhydride in stock in Mexico ready to ship. More than 86% of it was in 18-liter jugs, an inventory report showed. Company sales literature has touted the jug as the largest container that's still "light enough for one operator to carry." There appear to be no permanent markings to make them traceable, only an easily removed label. Sales figures shared with Bloomberg show the company's Mexican subsidiary sold at least 21 tons last year, enough to fill more than 1,200 jugs. Avantor said some of that went to other markets in Latin America, but it declined to say how much. Total sales were about $300,000.

Avantor acknowledged that its acetic anhydride business in Mexico is organized in a way that effectively leaves it subject solely to Mexican jurisdiction. It said it procures the chemical and "all related materials" inside Mexico, and "no acetic anhydride is imported into Mexico from any other Avantor facilities." It also said the 18-liter jug that dominates Mexican sales is a common packaging size for lab chemicals.

Avantor said it was "committed to preventing diversion or misuse of our products" and that it complies "fully with licensing and reporting requirements of all relevant regulatory bodies. We regularly review our policies and procedures to maintain the security of our supply chain and are subject to compliance audits, including by Cofepris in Mexico." Mexican law doesn't require Avantor to take responsibility for the final users of its products, which the company said rests solely on its distributors and retailers, or others further down the sales chain. It said its sales contracts contain an anti-diversion clause. It also said Mexican officials hadn't raised concerns about diversions, and that it doesn't facilitate unauthorized e-commerce sales.

Listed in 2019 on the New York Stock Exchange by majority owners New Mountain Capital, a private equity firm, and Goldman Sachs Group Inc., Avantor sells chemicals for use in labs, by the pharmaceutical industry, and for specialized manufacturers. Its motto: "Setting science in motion to create a better world." A former executive, speaking on the condition of anonymity, said U.S. managers pushed for increased Mexican sales in 2018 before the stock sale—the second-largest initial public offering on Wall Street last year. Avantor gave distributors incentives, including discounts for advance payment, which helped boost sales in Mexico more than 20%, the former executive said.

Before the runup to the IPO, Avantor also became the only U.S. company to have international sales of its acetic anhydride blocked by authorities from 2016 through 2018, according to officials involved and INCB records. The attempted sales, in 2017, were to a suspicious buyer in the United Arab Emirates, identified by U.S. officials as a hub for Afghan heroin traffickers.

Price is perhaps the best indicator of how readily available the chemical remains in Mexico. In Afghanistan, the world's leading heroin producer, possessing any amount of it is a crime, and it's available only on the black market. Prices there have reached about $400 per liter, according to the UN. In Mexico, Avantor's jug cost the Bloomberg reporter less than $18 a liter.

Jugs and bottles never could have been enough to slake the cartels' thirst for acetic anhydride, especially after methamphetamine cooks discovered it. They've needed to tap Mexico's industrial supply.

Because there haven't been any public prosecutions stemming from diversions of the chemical, it's difficult to know precisely how the cartels have purchased such vast quantities. But the same two U.S. chemical companies that dominate the industrial sale of acetic anhydride globally also dominate it in Mexico, according to distributors, the INCB, and private market data. They are Celanese and Eastman Chemical Co., based in Kingsport, Tenn.

Celanese has singlehandedly made Mexico one of the world's major producers of acetic anhydride. It accounted for the vast majority of the 285 million liters the country exported last year. Its plant in the state of Veracruz holds at least 97% of Mexico's production capacity, according to consultant Tecnon OrbiChem Ltd. Celanese and Mexican regulators declined to say how much the company sold in Mexico. Celanese also declined to discuss its sales practices or customers in Mexico, but said it "exercises the same care and prudence around acetic anhydride that we do with all of our regulated products." Celanese said it follows all applicable laws. It uses the bulk of its acetic anhydride in-house to make cigarette filters, which have been its top source of global revenue through sales to virtually all of the world's major tobacco companies.

Police photos from a May 2019 bust of an open-air drug lab in Sinaloa

COURTESY SECRETARÍA DE SEGURIDAD PUBLICA OF SINALOA (2)

Eastman dominates exports into Mexico for industrial customers. Clark Jordan, an Eastman vice president who heads compliance, says the company takes extra care with drugmaking chemical sales in Mexico, including know-your-customer practices. A Mexican distributor who sells Eastman's acetic anhydride says his background checks are limited to seeing a buyer's license from the government regulator. To his knowledge, he says, his company has never been inspected or audited by the agency.

Rolando Hernandez, who chairs a committee of the nation's top distributors for ANIQ, the Mexican trade group, says his industry is rife with disreputable companies that don't do enough to stop chemicals from reaching narcos. Opening a chemicals distributorship in Mexico takes little more than filling out a form and having a physical address, he says, and the government does little to police the businesses. ANIQ has pushed for years for tougher oversight, fearing a scandal could turn Mexico's chemical industry into a global pariah.

ANIQ has tried to get distributors to commit to a code of conduct consistent with international drug laws, but just a dozen have signed on. To determine how many distributors are in business, ANIQ had to conduct a study; it identified 350. Subscription-based directories list about 40 specifically advertising acetic anhydride sales. One told a reporter that phoning them was a bad idea. "If you're looking into these types of things, and you call the wrong company, they're going to ask around about who you are—and why you're looking into things that are none of your business," he said.

It's difficult to find two places harder hit than the communities Celanese and Avantor call home

Methylamine is strictly regulated in Mexico, at least on paper. It's a highly specialized pharmaceutical chemical used as a building block for other compounds. Toxic, and reeking like dead fish, it can be used to make pesticides. Celanese was its only manufacturer in Mexico.

The hijackers who seized Celanese's tankers overcame unarmed escorts and other security measures, according to several former employees and others familiar with the thefts, who spoke on the condition of anonymity. At least one employee was feeding shipment details to narcos, according to a source familiar with an internal investigation. Armed gangs in SUVs cut off the tankers, often in roughly the same location, and jammed cellphone and tracking-device signals, the sources said. The hijackers used compressed gas to pump out the chemical, just as factories do.

For MMA made in America, federal drug laws make it the chief duty of a U.S. company to effectively safeguard the chemical from theft or other diversions, and to immediately report losses to the Justice Department. It's not just a threat. In 2015 one of Celanese's competitors, Taminco Inc., pleaded guilty to federal criminal charges for failing to report barrels filled with MMA made at a plant in Florida that were diverted by suspected narcos after being exported into Mexico in March 2010, according to court records.

Celanese responded to questions about the hijackings by giving Bloomberg two statements, one on Aug. 6 and one on Aug. 20. In the first statement, the company said tanker trucks of MMA were stolen in three separate hijacking incidents—which matched what sources with detailed knowledge of the hijackings told Bloomberg. In the second statement two weeks later, Celanese said there were only two hijackings, with a third thwarted by enhanced security measures.

The company declined to say how many trucks or how much MMA was lost, but said the narcos left an unspecified portion in one truck that was recovered.

Celanese announced the shutdown of Mexican MMA production in a July 2016 statement, but made no mention of the hijackings. In response to questions for this story, the company said executives in Mexico and the U.S. "carefully evaluated the situation throughout this time and determined that in light of the escalating developments, it was not consistent with our corporate values to be associated with the situation or to put our employees or reputation in harm's way." It also said it followed all applicable laws and regulations.

Celanese's security advisers believed the chemical went to the Jalisco New Generation cartel, two knowledgeable sources say. In 2016 the cartel, known in Spanish as CJNG, built a meth distribution hub in Dallas, according to prosecutors and a federal indictment. The hub operated out of a used car dealership in Oak Cliff, an impoverished neighborhood about 14 miles south of Celanese's headquarters. Liquefied meth was smuggled over the border and crystallized in homes converted into labs. The group trafficked thousands of pounds of the drug in one year. Nine defendants have pleaded guilty, one is awaiting trial, and two are fugitives.

The year CJNG moved to Dallas, meth use in the city, and Texas overall, reached what Jane Maxwell, a public-health expert and professor at the University of Texas at Austin, called a "silent epidemic." It eclipsed opioids and all other narcotics in key abuse indicators, including overdoses and treatment admissions. Increased cartel production in the past decade has fueled a fivefold increase in U.S. overdose deaths involving heroin, and a fourfold increase in meth deaths, from 2010 to 2017. It's hard to imagine what impact the Covid-19 pandemic might be having, given that key chemicals are in abundance inside Mexico. Police seized 65 tons of meth-making chemicals at an illegal lab in August. America's drug problem isn't going away.

It's difficult to find two places harder hit than the communities Celanese and Avantor call home. Dallas, Celanese's base, is still flooded with Mexican methamphetamine, even after authorities broke up the CJNG network in 2017. The Drug Enforcement Administration has declared meth the No. 1 drug threat in Dallas and Houston. The problem is also growing nationwide.

Avantor's headquarters are about 15 miles northwest of the Kensington neighborhood in Philadelphia, which authorities have called the largest open-air heroin market on the East Coast. The city is said to be suffering America's worst urban opioid crisis. Overdose deaths in Philadelphia reached an all-time high of more than 1,200 in 2017; that year, heroin was seized in 97% of counties statewide. The DEA says heroin sold on Philly's streets is the purest and cheapest it's tested nationwide. B

—With Isabella Cota and Lorena Rios