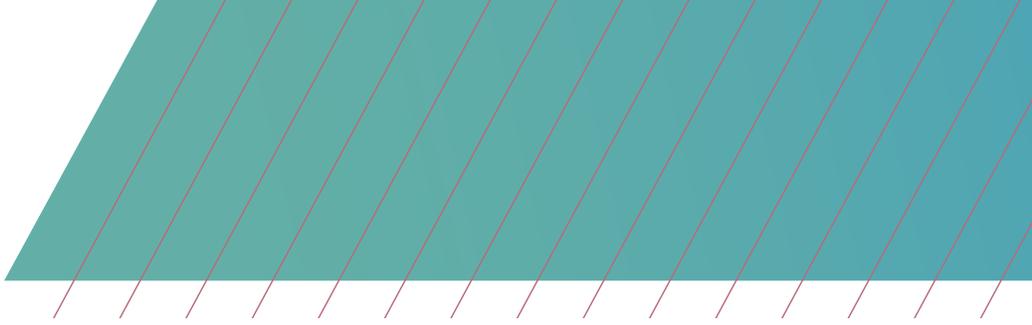




Breaking the Either-Or Paradigm of **CDMO** Selection

Choosing a contract development and manufacturing organization (CDMO) often requires “either-or” tradeoffs that divide the candidate companies into polarities of size, location and services offered. Yet a few CDMOs defy such predictable categorization – making them the ideal choice for biotech and pharma companies seeking a partnership beyond the status quo.



Introduction

Two of the most significant trends impacting the pharma/biotech industry are a growing reliance on CDMOs and consolidation of the CDMO industry. Up from US \$114.018 billion in 2015, the CDMO market size was \$130.8 billion in 2018 and is projected to reach \$278.98 billion by 2026. The pressures driving CDMO market growth are familiar and unrelenting: rising research and development costs, increasing regulatory scrutiny, and global pressures on pharmaceutical companies to develop more drugs for more markets simultaneously.

At the same time, the CDMO industry is rapidly consolidating, with between 30 and 60 mergers and acquisitions annually since 2015. Again, the drivers are predictable. CDMOs are under increased pressure from their clients to scale and expand their breadth of services in a global economy. While both trends can work in the client's favor, they also make the task of choosing a CDMO more challenging – what's the best way to find a strategic development and manufacturing partner who will be around for the long term?



\$114.018 Billion

2015 CDMO MARKET SIZE

\$130.8 Billion

2018 CDMO MARKET SIZE

\$278.98 Billion

2026 CDMO MARKET SIZE
PROJECTION



Between the Polarities: Finding a CDMO In the “Goldilocks Zone”

In cosmology, the Goldilocks Zone refers to that rare habitable zone around a star where the temperature is just right for life to emerge. Today a handful of CDMOs have created such a category within the pharma/biotech industry by blending business models to maximize key benefits while minimizing the most common downsides.



What does such a CDMO look like?

- A **full complement of professionals** such as business developers, chemists, chemical engineers, project managers and regulatory liaisons working out of an office based in the U.S. or Europe.
- Manufacturing facilities in China to **leverage lower costs** of doing business and **proximity** to suppliers of raw materials.
- A **global reach**, but without the frustrating barriers of language, culture and time zone.
- **Multiple large-scale facilities** spanning a comprehensive array of services and ensuring a complete array of talent – yet not so large as to cumbersome or bureaucratic.
- **Financially stable**, yet not staid – willing and able to invest quickly in state-of-the-art technology and methods for competitive advantage and quality control.
- An **intrapreneurial corporate culture** encouraging measured risk-taking in the service of innovation, and rewarding nimble, flexible response to client needs.

THE PROS & CONS: A TAXONOMY OF CDMOS

Not surprisingly, an Internet search for “choosing a CDMO” will return hundreds of articles. Some are written by industry analysts or journalists, some by pharma company executives, and still others, like this one, are presented by a CDMO.

CDMOs are often categorized from an either-or perspective along three axis: large/small, specialized/general, and domestic/offshore.

Large CDMOs are seen as financially and operationally stable, with high throughput capacity, a deep bench of talent, state-of-the-art technology and established supply chains. On the downside, large can also mean slower, more bureaucratic, less flexible and more costly.

Small CDMOs are portrayed as more nimble, entrepreneurial and personal, but constrained by less capital and lacking depth and breadth both of services offered and onboard expertise.

Specialized CDMOs are seen as highly focused, with deep expertise, but lacking a broad base of knowledge and unlikely to migrate innovation from other specialties.

General CDMOs are associated with a broad breadth of capabilities, integrated services, and the advantage of cross-pollination – but may have resources and people spread thin, and lack a “deep bench” in any discipline.

Domestic CDMOs are portrayed as offering close physical proximity, the benefits of shared language, culture and time zone, and familiarity with relevant IP, regulatory and environmental mandates – but usually mean a higher cost for value received, higher costs of doing business and longer development times.

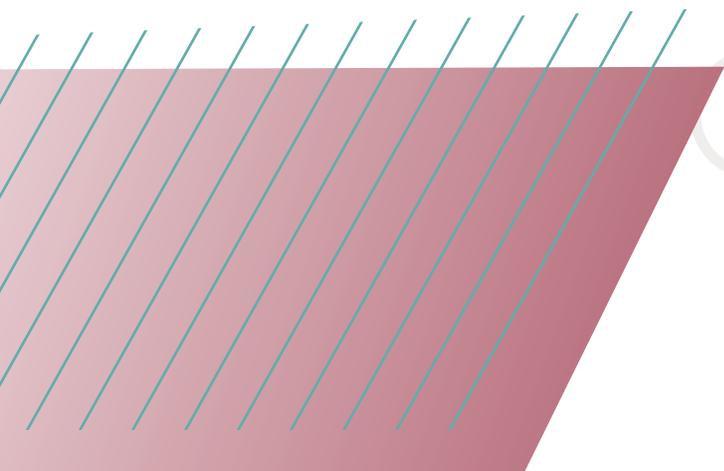
Offshore CDMOs essentially those located overseas (especially in Asia and India), are usually portrayed as less expensive, sometimes with a faster turnaround, but facing barriers of language, culture, distance and time zone, possibly with added regulatory, environmental, and quality control risks.

Finding the Right Match for You

It's not unusual for a global pharma company to work with several hundred contract partners. Yet many leading pharma companies have voiced their intention to reduce that number by 90% or more. Especially in an era of pandemic-driven liabilities and a need for robust capabilities, sponsors are paring their cadre of outsource partners to concentrate on forming strategic relationships with a handful of key CDMOs offering integrated services and strong supply chain relationships.

For smaller biotech firms, the challenge isn't to shrink an existing cadre of partners, it's to pick the right one, at the right time. In early stages, biotech firms often need a trusted strategic partner to guide them through unexpected research and development complexities. Later, their concerns are similar to the larger companies that will bring their new drug to market.

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Advantages of a Blended CDMO

Stronger, simpler, less complex supply chains: Most raw materials for API manufacturing are sourced from China and India, and many solely from China. For CDMOs with manufacturing facilities in China, most raw materials can be acquired domestically. Western-based CDMO manufacturing must contend with international shipping schedules and regulations, customs delays, politicization of trade, and potential port and logistic center shutdowns – a real concern in the era of COVID-19.

Greater supply chain accountability: Because such CDMOs are closer to suppliers physically and share a language, suppliers are more easily vetted for reliability, stability and integrity, and more easily audited for material quality and consistency.

Established contingency plans for pandemic response: CDMOs that were operating during the global SARS epidemic in 2008 already have experience in rapid, effective response for employee testing, isolation and quarantine. Those with multiple manufacturing sites also have contingency plans to ensure manufacturing continuity by shifting operations to non-impacted regions.

Assurance of compliance with CGMP, REACH and other environmental and regulatory policies: Dated misperceptions of lax standards are often nurtured by competitors based elsewhere and so linger in some minds. Yet China's environmental and regulatory standards are now among the toughest in the world, modeled after, and in some cases exceeding, U.S. and European standards.

Real-time meetings and communications with the domestic office: For sponsor companies based in North America and Europe, working through CDMO managers located in the U.S. and Europe allows for conference calls scheduled during the regular business day. The US/EU-based CDMO staff may be doing 2 a.m. conference calls to China, but not to you.

A time offset that can work in your favor: Since the workday for China-based manufacturing facilities occurs during the night in Europe and the U.S., requested information, status reports or process changes are often waiting in the sponsor's inbox the next morning.

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Evaluation: Start with the Basics

Many of the areas any pharma or biotech company should investigate when evaluating a CDMO are standard fare:

- Ask for documentation of quality measures, regulatory history, type and number of projects completed each year, numbers of qualified chemists, chemical engineers, and individual degrees and certifications.
- Determine that they regularly work with both the largest pharma manufacturers and, if relevant, smaller sponsors such as biotechs. Request proof points such as notable successes, co-authored journal papers and industry awards.
- Obtain information on their audit history by relevant regulatory, safety and environmental agencies.
- Confirm their investment in a full range of state-of-the-art technologies and processes. In particular, verify their demonstrated competency in green chemistry applications such as large-scale continuous flow catalysis, photochemistry and electrochemistry. Even if your project won't involve these methods, involvement in these areas evidences a forward-leaning mindset.
- Verify that their legal policies, ethical standards, and physical and digital security measures provide watertight protection of your intellectual property.



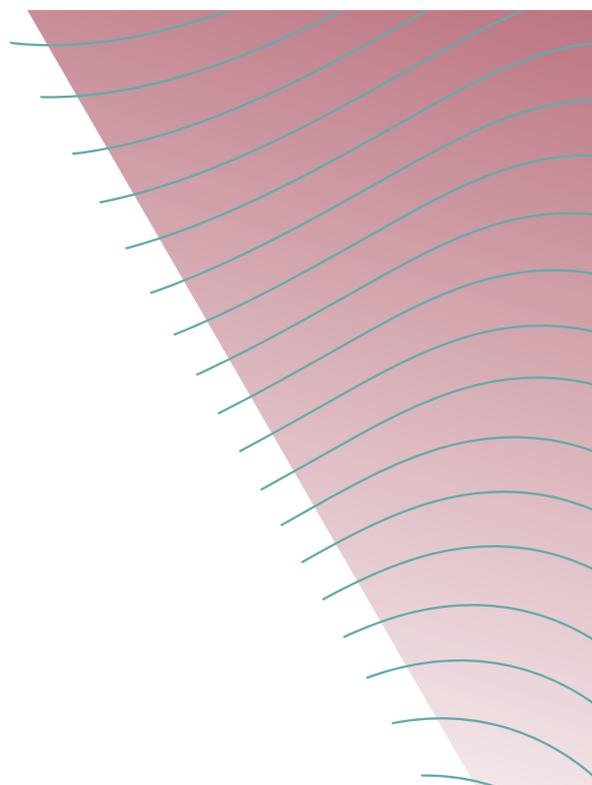
Evaluation Specific to a CDMO with Facilities in China

Ascertain that their U.S. or European office is a full operations center.

Rather than simply maintaining a sales office, ensure the CDMO has a domestic office staffed with qualified specialists with backgrounds in western pharma and ideally representing a cross-section of technical expertise in key areas, including Process Chemistry, Quality Control, Environment, Health & Safety and Project Management.

Familiarize yourself with their communications channels and protocols.

Understand how the domestic office stays on top of the manufacturing process. Ask about SOPs and escalation protocols. Request an initial conference call so the domestic team can introduce you to their colleagues in China who will be doing the hands-on work of your project.

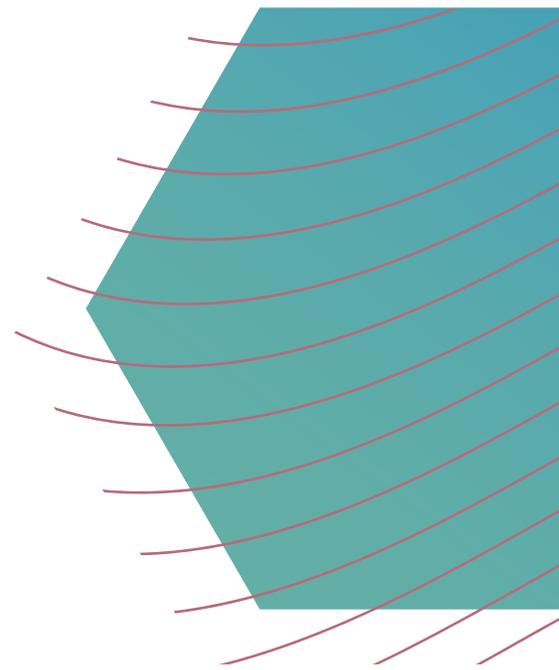


Compare corporate gatekeeping and project timelines to US- and EU-based CDMOs. How long does it take the company to respond to an RFP? To issue a PO? How many levels of bureaucracy are involved in decision-making? A good benchmark for flexibility and nimbleness is to compare projected timelines for your anticipated manufacturing process to those offered by domestic CDMOs. (It's not unusual for domestic CDMOs to need a year to 18 months to ramp up large-scale production. Choosing a CDMO with China-based facilities could cut that time in half.)

Talk to key staff members to get a sense for the company ethos and momentum. Some factors are influenced as much by a specific corporate culture as by a CDMO's location. One indicator is their willingness to take a measured risk – can they provide examples of projects where they tried something for the first time, or tried several approaches before achieving success?

Be honest with yourself about the fit. Quicker turnaround, greater value received for cost, more robust supply chains – the advantages are compelling. But no single CDMO model can please every sponsor:

- If high levels of anxiety and intense budget pressures compel sponsors to micromanage development and manufacturing, they'll be chronically frustrated by less proximity and access.
- Academic investigators seeking to commercialize highly esoteric and extremely complex processes requiring close physical supervision and continuous adjustment may want to seek a different route.
- Sponsors seeking the lowest possible cost (such as for generics) aren't likely to find a good fit. Highly versatile CDMOs likely offer highly competitive pricing and excellent value, but their commitment to employing highly degreed scientists, deep investment in state-of-the-art technologies, and adherence to "western" templates of quality, regulatory and environmental rigor all mean they're rarely the least expensive option.



Best Practices For Success

Once your choice is made, invest upfront in establishing solid relationships with the CDMO's experts in their domestic office and understand how they communicate with their counterparts at their overseas manufacturing facilities. Complete your due diligence so that you can implicitly trust both the communications process and the expertise of the development and manufacturing team.

If budget and time constraints allow, invest in a trip to visit the China facilities. You are forming a long-term partnership that will probably span several years or even decades. Seeing the actual equipment, processes and people who will be entrusted with your work can pay dividends far into the future. Once you've been there, your grasp of the CDMO's capabilities and worldview will shift from a mental concept to factual experience.

Finally, trust the process – and your own judgment. After you've established the proficiency, qualifications and track record of the CDMO's domestic specialists and the overseas manufacturing team, you should feel confident outsourcing the day-to-day worries and project management to the experts working on your behalf, so you can put your time to better use solving more strategic problems.

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About Asymchem

Since inception in 1999, Asymchem has been positioned and structured to act as a true partner for pharmaceutical and biotech companies by offering integrated solutions across all stages of drug development and into commercialization.

Today Asymchem is a leading contract manufacturer comprising eight manufacturing facilities in China and a fully staffed U.S. operations center in Research Triangle Park, North Carolina. Our staff of 4,500 employees include more than 1,800 scientists engaged in innovative research and process development from preclinical research to commercialization for both non-cGMP or cGMP products.

Asymchem's breadth of capabilities spans conventional batch manufacturing, and we are a world leader in green chemistry. Our scientists excel in the creation and manufacture of enzymes for use in bio-catalysis, and the development of practical continuous flow technologies for commercialization. In addition to strong supply chain relationships, Asymchem maintains a dedicated facility for the in-house production of raw materials and regulatory starting materials to better control quality, costs and lead times.

Asymchem has partnered with more than 400 clients across the globe, and is currently involved in more than 600 ongoing clinical projects and 30 commercial projects. We have a consistently demonstrated ability to meet project deadlines and achieve commercialization success, while exemplifying the long-term financial stability critical to project continuity and achievement. Our work has frequently won us "most valuable partner" and "strategic partner" recognition from major pharma and leading biotech companies.

Asymchem maintains an impeccable quality record and positive regulatory and environmental compliance history, with 30 successful USFDA, NMPA, TGA, MFDS inspections. Projects are handled at high standards of safety and environmental responsibility.

All intellectual property developed as a service by Asymchem under a client CDA or MSA is the property of the client and protected by both national law and company agreements.

