

SECURING PHARMACEUTICAL SUPPLY CHAIN: SHOWCASE OF A GLOBAL CRDMO'S INITIATIVES



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There have been several disruptions to the global supply chain in recent years, and this is likely to continue in the next couple of years. For example, lockdowns and logistics restrictions have pushed up raw material prices and disrupted the supply chain from time to time, and now the market is still recovering. This struggle is even amplified for some classified materials. Under quantity restrictions, these materials are not only difficult to acquire but also challenging for safe storage.

At the start of the pandemic, we have well-developed a Business Continuous Plan (BCP). This initiative consists of two important components – upstream supply management and project delivery assurance. With strategic management and timely communication, BCP ensured over 95% of on-time delivery, even during the peak of the pandemic.

For upstream supplies, we have developed a vendor qualification methodology. Vendors are ranked by their quality, supply chain stability, and location – vendors located in dedicated industrial districts are less prone to pandemics and lockdowns. With these criteria, we can quickly switch the supply hub if any disruption occurs. For late stage to commercial projects, which require large-scale manufacturing, we secured at least two material suppliers from different regions to guarantee a reliable supply flow. Another practice that helps us to mitigate risks is to enforce the “50% Policy” – All facilities must keep at least 50% stock for critical materials at all times. Back-integration is another important way to handle material risks. We have long been establishing many key material manufacturing capabilities in our own platform. Just to give you one example, amidites are an array of modified nucleotides – they are the starting material of oligonucleotide manufacturing. With the overwhelmingly emerging oligonucleotide drug candidates in the pipeline today, amidites are exceptionally scarce in the supply market. WuXi STA

developed its own amidite manufacturing capability for our oligo customers, saving time and cost without amidite supply risk. Furthermore, we now offer more than 300 types of catalog amidite products to the market, turning the table of amidite supply struggle around.

Technology is another strength for minimizing rare material supply risk. Although early-phase projects require less material, the large scale supply risk at later phases is an important part of our consideration. When we are talking about supply safety, we start with the end in mind – we minimize special material usage by designing alternative routes in early stages. During process development, one of our goals is to replace rare, expensive, or toxic materials with safer, more common ones with route optimization or advanced technologies, such as biocatalysis and flow chemistry.

When the supply chain is under threat, it is better to lay up for a rainy day. Ensuring the high-quality supply of our product to global customers is what drives WuXi STA's expansion in recent years. We now have 17 sites across Asia, Europe, and America.

This multi-nodal network grants us robustness against uncertainties. Manufacturing projects are often diverged into two or more sites for dual supply chains, thus eliminating downstream supply disruption.

In response to the increasing requirements of sustainability for the CDMO industry, we are also actively applying green initiatives to stay ahead of time. In order to reduce our carbon footprint, we take both “top-down” and “bottom-up” approaches. The “top-down” approach focuses on air emission treatment. “Green solvents” are chosen based on ACS green chemistry institute. Using proper containment equipment is also a common practice. Nevertheless, the most game-changing approaches are the application of process and terminal treatment devices. Local exhaust treatments (LEVs), active carbon absorption scrubbers, and reagent thermal oxidizers (RTOs) are installed in our manufacturing facilities.

“Bottom-up” approaches are energy consumption management. On a daily-operation aspect, manufacturing facilities take Energy Efficiency Index (EEI) as a key consideration during procurement, and Process Mass Intensity (PMI) is a key performance indicator. And for long-term energy-saving initiatives, we actively include new green technology in our facilities – Vapor Absorption Refrigeration (VAR) devices are installed to save commercial steam. Solar panels and other green energy are powering our manufacturing.

WuXi STA has been recognized globally for its Environment, Sustainability, and Governance (ESG) efforts. Recently, we have received the latest scores from EcoVadis rating, a trusted provider of business sustainability ratings, for active pharmaceutical ingredients (API) R&D and manufacturing from its Changzhou site and for formulation development and manufacturing from its Shanghai Waigaoqiao site and Wuxi city site, respectively. All these sites received scores of 60+ with a “Silver” rating from EcoVadis. This is one of many recognitions of WuXi STA’s ESG efforts.

