Recruiting and retaining talent who make life-saving medicine

State of the Pharmaceutical Manufacturing Workforce in Indiana

August 2022

Ascend

BioCrossroads®

Executive Summary

Indiana is experiencing significant statewide growth in pharmaceutical manufacturing, but this boom in high-quality, high-paying jobs is challenged by a shortage of qualified workers. BioCrossroads, in partnership with Ascend Indiana, convened pharmaceutical manufacturers, postsecondary education institutions, and state officials to explore how to develop a robust talent pipeline to support continued growth.

Attendees identified the types of positions that are most in-demand for their companies, the associated knowledge, skills, and abilities (KSAs) for each role, and the challenges involved in filling open positions and retaining employees. They discussed desired outcomes and urged the industry, educators, and state government to focus on strategies to build career awareness, develop training pathways, overcome stigmas about the pharmaceutical industry, and make Indiana an attractive place to live and work.

"I mean, how cool is it to make medicine that's saving people's lives or helping people live longer and better?"

Through these discussions, attendees shared their appreciation for the opportunity to collaborate with their peers at the Talent Summit and believed engaging collaboratively around solutions will improve their ability to attract additional talent and create career pathways for them.

INDIANA: A LIFE SCIENCES LEADER

The life sciences industry is a major economic driver for Indiana. In 2021 alone, 23 life sciences companies committed to invest over $500 million in new projects, providing jobs for 2,100 Hoosiers.[1] Unlike life sciences hubs in other states, our presence isn't limited to one region or market. Cities large and small throughout Indiana are home to facilities of life sciences leaders, and our top-tier universities have launched innovative technologies and startups in the sector.

Manufacturing of all types has long been central to Indiana's economy. While many think of Indiana in terms of heavy logistics and manufacturing, the reality is two-thirds of life sciences jobs are manufacturing-focused, accounting for more than 40,000 jobs, with more than 17,000 of those involving the production of pharmaceuticals.[2] In fact, the state's pharmaceutical manufacturing jobs increased by 22 percent between 2018 and 2021, despite the pandemic.[3]

A GROWING GAP

Based upon new projects in the pipeline and growth plans, Indiana's pharmaceutical manufacturing jobs are expected to grow significantly over the next four years. At the same time, Indiana's postsecondary education providers will produce nearly 4,000 annual graduates with degrees applicable to the industry.[4] Unfortunately, not all will pursue pharmaceutical manufacturing careers and many of those graduates will leave Indiana for other states. Even if the industry were to hire all 4,000 graduates each year, there would still be a projected shortfall of approximately 6,000 employees between now and 2026.

1. BioCrossroads. "2021 Indiana Life Sciences Capital Report," April 2022.
2. BioCrossroads. "Essential: The Impact of the Health-care and Life Sciences Sector in Indiana," April 2022.
3. EMSI Burning Glass data.
4. ibid.

For Indiana to maintain and grow its leadership in pharmaceutical manufacturing, leaders from industry, education, and the state officials will need to collaborate around strategies to address a critical gap in talent.

MEETING FOR CHANGE

On August 4, 2022 BioCrossroads, in partnership with Ascend Indiana, convened leaders from pharmaceutical manufacturers, representatives of postsecondary education institutions, and state officials to determine the most effective steps for developing a robust talent pipeline capable of supporting Indiana's continued growth in this sector.

The Talent Summit was designed to:

- Explore the talent needs of pharmaceutical manufacturing
- Identify barriers to recruiting and retaining talent
- Discuss practical, actionable strategies to support talent pipelines at all levels.

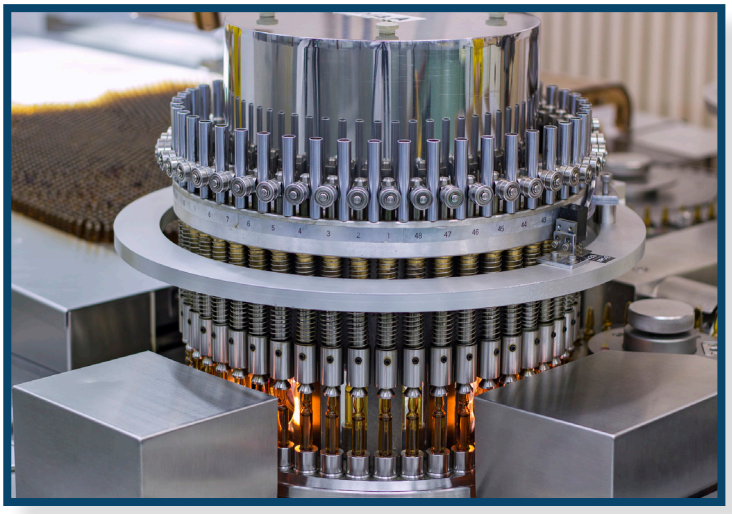
This document provides a summary of the collaborative discussions.

In-Demand Jobs

The participants began by discussing the broad set of job opportunities available in today's pharmaceutical manufacturing industry, along with the knowledge, skills, and abilities (KSAs) associated with those positions. The employers represented were of varying sizes and manufactured a broad range of products from biologics to radiopharmaceuticals. As a result, KSAs were varied; however, and importantly, there were a subset of KSAs that were common across the in-demand roles. Each role is summarized below with the common KSAs highlighted, beginning with positions often filled by entry-level workers and proceeding into more technical and specialized roles:

OPERATORS/PRODUCTION TECHNICIANS. This tends to be an entry-level role, although some radiopharmaceutical manufacturers require up to five years of previous experience working in aseptic environments. Most individuals hold a high school diploma or an associate degree, and employers provide job-specific training and/or certification programs. The role involves operating pharmaceutical manufacturing machinery, such as sampling, filling, and material handling, and monitoring the manufacturing process in accordance with Standard Operating Procedures (SOP) and Current Good Manufacturing Processes (cGMP). In addition to technical skills related to cGMP, like documentation, soft skills such as critical thinking, work ethic, and written and verbal communication are critically important. Turnover tends to be high in this role, and of all the roles discussed by the participants, this was the area of greatest demand.

QUALITY ASSURANCE / QUALITY CONTROL. This serves as both an entry-level role, as well as one where individuals are frequently promoted from other entry-level



positions based upon skills, aptitude, and interest. Most individuals hold a high school diploma or associate degree and have specific

knowledge of the regulatory landscape. Employers seek strengths in regulatory knowledge, attention to detail, documentation, and strong communications skills in candidates.

SUPPLY CHAIN. Given crises in the global supply chain, it is no surprise companies cited crucial needs for workers in warehousing and logistics. Many pharmaceutical manufacturers are global companies with complex processes involving facilities in multiple countries. Logistics is a particular challenge for radiopharmaceutical companies, given the special handling and safety protocols for radiopharma materials. Positions range from warehouse operators, who may only hold a high school diploma to warehouse associates, who may be college-educated or technically certified and perform more of a project management role. Employers seek candidates who can be trained in employer-specific warehouse software, hold regulatory and safety knowledge, and have interpersonal skills.

MAINTENANCE SPECIALISTS. This role is also in high demand given the specialized skillset required. Individuals in this role install, maintain, and repair production equipment. Individuals tend to have an associate-level education and company and/or industry certifications. Employers seek candidates with mechanical aptitude and previous pharmaceutical manufacturing experience with specific equipment.

PROJECT MANAGERS. Project managers play an important role across pharmaceutical manufacturing and require a hybrid technical and project management skillset. Most hold at least a bachelor's degree in a technical subject. Employers seek candidates who with a customer service orientation, leadership skills, Project Management Professional (PMP) or Six Sigma certification, and previous experience. Demand across all industries makes it challenging to hire experienced project managers, and often, manufacturers pull them from other industries such as construction.

PROCESS ENGINEERS. These are experts who design, manage, and improve production processes. Most are bachelor-level graduates of programs in chemical or electrical engineering. Given the high level of responsibility in these roles, employers seek candidates with more than ten years of experience in the field.

SCIENTIST / RESEARCH AND DEVELOPMENT ROLES. These are chemists and other scientists with robust technical knowledge and significant years of experience to support the production process. The people overseeing the formulation process are generally doctoral-level scientists, while other scientists may hire scientists who intend to earn their PhD.

While each participant company's needs differed slightly, there was alignment around the roles of greatest need, signaling the

opportunity for industry-wide efforts to grow and attract a qualified workforce.

Barriers & Challenges

Participants discussed a variety of barriers and challenges associated with hiring talent, most of which fell into the broad categories of the supply of qualified candidates, retention of existing employees, and the attraction of new talent to Indiana.

SUPPLY & DEMAND. Thanks to the shortfall of skilled candidates described earlier, competition among companies is fierce, with several admitting to "poaching" employees from other life sciences employers. Some noted the pharmaceutical manufacturing workforce is a rotating door, with new employees arriving from large companies like Eli Lilly, only to return to those companies or transition to others after gaining additional experience. A key result of this competition is inflated compensation and high turnover.

Companies also report a disconnect in supply and demand due to the mismatch of skills, both technical and employability. Employers have long elevated the absence of basic workplace skills such as punctuality and communication, and find early-in-career talent entering the workplace struggle with interpersonal communication and time management. More emphasis on building the technical and employability skills in education and work-based learning settings would prove beneficial.

"Growing up here, we thought it would be cool to work in an automotive plant. What if people said 'I grew up in Indiana and I want to work in medicine'?"

CAREER AWARENESS. While Indiana's pharmaceutical manufacturing sector is significant, that fact is not well-known outside those within the industry. As a result, few high school and college students who have an interest in science or manufacturing know these companies exist or have clarity around the pathways to the job opportunities. While existing degree programs are natural pathways to a variety of careers within the industry, a coordinated awareness campaign from the industry could better inform and influence talent into pursuing these pathways.

RETAINING TALENT. Given the misalignment between supply and demand, employers shared that talent frequently transition based on the incentive of higher pay from competitors. Further, participants noted employees do not always recognize the career paths available to them and believe they need to leave organizations to gain a wide breadth of experiences. Some companies focus on defining such paths, educating employees about the job potential associated with specific training opportunities. Knowing about internal opportunities for advancement reduces the perceived need to move elsewhere and encourages retention.

COAST OR HEARTLAND? One barrier to hiring cited by all the company representatives involved is the need to build Indiana's image among non-residents. The pharmaceutical manufacturing talent pool is heavily weighted toward coastal cities that have long had a strong presence in the industry, such as California's Bay Area and the Boston metro. Indiana's reputation as an agricultural state in the heart of what some deride as "flyover country" impacts recruitment efforts. Recruiters report difficulty in getting people to consider a position in Indiana until candidates get a

firsthand look at the vibrant communities in Indianapolis, Bloomington, and Lafayette, and learn about the state's many assets including affordable housing and abundant recreational opportunities. Additionally, people earning big-market salaries view compensation levels in Indiana as inadequate, often leading them to reject employer interest out of hand. When recruiters have the opportunity to explain the lower cost of living, candidates discover a comparable salary in Indiana allows them to enjoy a significantly more comfortable lifestyle.

PHARMACEUTICAL INDUSTRY REPUTATION. Finally, when the pharmaceutical industry receives media attention, it's generally for a negative issue, such as high prescription prices, dangerous side effects of medications, or the opioid crisis. That perception may lead people who would be ideal candidates to seek opportunities elsewhere. It is important for future career awareness campaigns to address these reputation issues.

Strategies & Outcomes

The Talent Summit was structured to explore the talent challenges before discussing potential strategies and desired outcomes; however, participants were eager to move to solutions, expressing a desire for a range of actions in support of recruiting and retaining talent throughout all sessions.

Once the conversations formally shifted to strategies and outcomes, the participants zeroed in on the following key goals:

- Creating clearly defined career paths with corresponding work-based learning and training programs to strengthen attraction and develop a skilled workforce across the in-demand roles
- Strengthen connectivity between employers, education partners, and talent
- Elevating the impact you can have on the lives of those in need by working in the pharmaceutical industry
- Highlighting the many benefits of working and living in Indiana

CAREER AWARENESS CAMPAIGN. It's often been said students cannot be what they do not see, and few Hoosiers outside the pharmaceutical manufacturing sector know it -- or technologies such as radiopharmaceuticals -- even exist. Participants cited a need for efforts to familiarize high school and college students with the many career opportunities in the industry. For example, many high school students with strong academic performance express an interest in becoming medical doctors, although only a tiny percentage will succeed. What if students with those interests were shown other ways their knowledge could advance medical care? Among the potential awareness-building strategies discussed were:

- Launching career exposure and experience activities in middle school and high schools, including career days, site visits, and youth apprenticeship programs
- Offering internships as a hiring path for entry-level roles
- Developing educational materials detailing career pathways
- Engaging with classes or clubs focused on STEM

Given the challenges the experts discussed, it is clear the most effective awareness campaign would be multifaceted, working hand-in-hand with a broader marketing campaign for Indiana's life sciences sector, and should at the very least include:

- Enhancing employer awareness of pathways within high schools and postsecondary providers

- Promoting Indiana's many benefits as a place to live, work, and play
- Elevating pharma's image as an industry focused on creating healthier communities

CAREER PATHWAYS. As noted earlier, employees who are unaware of opportunities within their employer or resources to help them pursue those opportunities may believe they have to move to another company to advance their career. By developing clearly defined career paths linked to training, companies can work with employees to explore other roles and functional areas, and find the best fit for them. Common industry pathways would also be helpful when recruiting entry-level employees, allowing them to see their career potential in an industry that they are not familiar with.

The mapping of career pathways will also enable the design and launch of training programs and work-based learning opportunities that are directly aligned with the entry point jobs and the roles that individuals are looking to advance into. Participants believed such programs would be more attractive and effective if they involved a partnership of numerous companies, instead of simply being single-company efforts.

BUILDING RELATIONSHIPS. In addition to discussing how to build new talent pipelines for the industry, participants identified the need strengthen the relationships with programs and individuals who are already well-positioned for a career in pharmaceutical manufacturing. This includes building connections with local high schools, relevant Career and Technical Education programs, and post-secondary institutions who are graduating STEM talent. Additionally, stronger relationships with organizations who are already connecting qualified talent with employers, like INvets and the Ascend Network, can support the sector in expanding their reach across Indiana.

SALUTING VETERANS. Participants emphasized the value of critical thinking, communication, problem-solving, and a strong technical understanding of processes and procedures. In particular, there was general agreement that people with military experience were outstanding candidates for pharmaceutical manufacturing, displaying discipline and maturity, a respect for procedures and the importance of personal protective equipment, strong communication skills, and a willingness to handle tasks some college graduates may view as beneath them, such as sanitizing areas.

POSITIVE IMAGE. When participants discussed their own companies and roles, their pride in the industry was obvious. They saw their roles as helping companies and medical professionals save lives by fighting cancer and other deadly diseases, extending longevity while enhancing quality of life. They recognized a need to emphasize this positive narrative in light of some negative impressions of pharmaceuticals. The radiopharmaceutical manufacturers addressed the additional stigma associated with "nuclear" medicine, requiring efforts to explain the risks and mitigation measures so prospective employees understand they won't be exposed to dangerous levels of radiation.

"There's something special about making medicine."

LOCATION, LOCATION, LOCATION. Throughout the discussion, the participants returned again and again to the amount of work involved with addressing outside perceptions of working and living in the Hoosier state. Several of them were transplants who have experienced firsthand the hesitation in taking positions in Indiana and the affection they now have for their adopted state. All validated the need to improve efforts to share the advantages of living and working in Indiana.

Turning Knowledge into Action

The experiences faced by companies in Indiana's pharmaceutical manufacturing industry in filling in-demand jobs are not unique to each company – instead there were common in-demand skills and talent challenges shared by every company represented at the Talent Summit. With this understanding, there is an opportunity for collaborative, industry-wide initiatives to take action across the strategies elevated at the Talent Summit and others that will continue to be developed by industry stakeholders. By pooling resources and brainpower, employers will gain a louder, more effective voice in the talent marketplace than they could achieve individually. BioCrossroads and Ascend Indiana are eager to foster this collaboration in partnership with industry, education, workforce, and government stakeholders to create a talent ecosystem that will sustain a large, highly skilled pharmaceutical manufacturing workforce in Indiana for decades to come.

About BioCrossroads

One of five Central Indiana Corporate Partnership branded initiatives, BioCrossroads® advances Indiana's signature strengths in the life sciences by connecting with corporate, academic and philanthropic partners; facilitating investments in promising startups; building new enterprises; and educating through conferences, reports and market development knowledge.

About Ascend Indiana

An initiative of the Central Indiana Corporate Partnership (CICP), Ascend Indiana is committed to making Indiana a place of economic opportunity for all. Ascend connects job seekers to good and promising career opportunities through an innovative job matching platform, the Ascend Network; catalyzes partnerships and provides consulting services to meet high-demand workforce needs through Ascend Services; and conducts research through Ascend Insights to enable systems-level change that positively impacts individuals throughout the state. To learn more, visit ascendindiana.com.

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