



**US Manufactured Premium Pharmaceutical Ingredients**

**Reshoring and Onshoring  
Premium Pharmaceutical Ingredients  
for over 25 years**

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# Onshoring and Reshoring US Based Drug Manufacturing

## US Manufactured Premium Pharmaceutical Ingredients

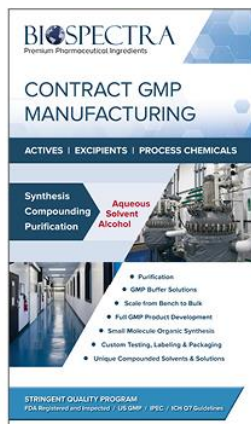
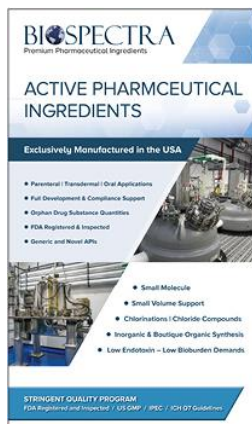


- **Reshoring:** bring manufacturing back to the USA
- **Onshoring:** bring manufacturing to the USA that is only being done overseas.
- **Creates** secure Supply Chains for critical drugs.
- **Reduces** dependency on foreign manufacturers at risk.
- **Providing** sustainable US economic expansion.

# Secure Drug Supply Chains - Insights and Perspective

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- With **80-90%** of all **drug ingredients** being imported today, the crisis for critical drug supply is **far greater** than most people realize. **Solving** that problem, however, will have a **tremendously positive economic impact!**
- More than **100 site visits** with foreign chemical manufacturers has **provided** BioSpectra with a **unique understanding** of the **risks** and the **delicate balance** in the supply of offshore chemicals – many of which are only made overseas.
- Consequently, the **BioSpectra model** presents the **best path** to provide **secure and sustainable supply chains** for all US drugs and drug ingredient manufacturing.

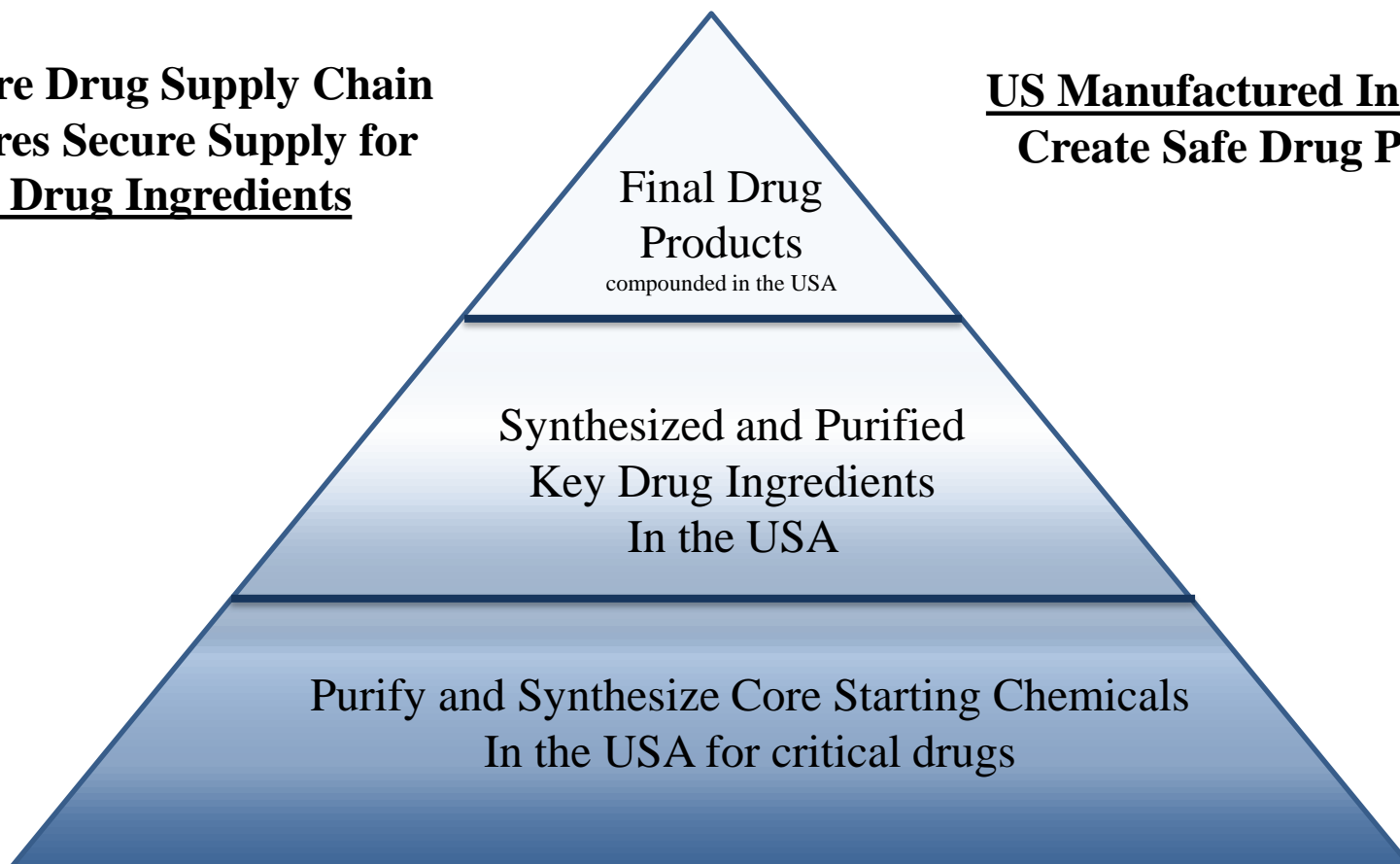


# Vertically Integrated US Based Drug Manufacturing For Critical Drug Products

US Manufactured Premium Pharmaceutical Ingredients

**A Secure Drug Supply Chain  
Requires Secure Supply for  
All Drug Ingredients**

**US Manufactured Ingredients  
Create Safe Drug Products**



# Benefits to Onshoring/ Reshoring Drug Supply Chains

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- **Significant, Direct Economic Impact:**
  - Economic expansion in manufacturing of over **\$500bn** per year.
  - Job Creation: estimated at 800,000 – direct, industry-related fulltime jobs.
- **Significant, Indirect Economic Impact:**
  - Manufacturing supplies and raw materials.
  - Manufacturing equipment and instrumentation.
  - Consumption of vast amounts of resources for employees.





# Further Benefits of Onshoring/ Reshoring

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- **Supports** key **federal initiatives** for **secure supply** of critical drugs while **reducing dependency** on high-risk foreign companies.
- **Ensures quality** of drug products and **patient safety**.
- **Drives advancements** in **technology** and **innovation** that will **keep America first** in drug development and manufacturing.

# Twenty-Five Years of Experience Onshoring & Reshoring

## US Manufactured Premium Pharmaceutical Ingredients



- **Highly Experienced Team with Comprehensive Technical Knowledge:**
  - ✓ Chemical synthesis & purification.
  - ✓ Critical ingredient manufacturing.
  - ✓ cGMP / ICH Q7 / 21 CFR 210-211
- We provide **short-term security** and **suitability** of ingredients by **purifying offshore** chemicals.
- We provide **long-term security** by **synthesizing** our own versions of key ingredients when requested.

# BioSpectra: An Example of the Power of Private Business

## US Manufactured Premium Pharmaceutical Ingredients



- BioSpectra **quickly** develops new, key ingredients for drug formulations.
- Our success is based on our ability to **design** and **build** custom manufacturing **equipment** and **systems** for chemical synthesis and purification of a wide range of drug ingredients.
- Our private ownership allows us to take **calculated risks** to quickly **solve** critical problems in **time frames** atypical of other corporate environments.




# Proven Track Record – The BioSpectra Model

## US Manufactured Premium Pharmaceutical Ingredients

- A **proven track record** to serve as the **model** for reshoring across PA and the US.
- **Independent Progress:** All of our success with advanced systems, standards and innovations were accomplished without **any** support from government or outside investors.
- We **continue** to **develop** new processes and product opportunities **quickly** and **efficiently** based on three factors: our **culture**, **model** and **private** ownership.



# The Truth about Pharma Ingredients

Misconception	Reality	Solution
<b>All chemicals imported to the US are suitable for drug manufacturing</b>	Many chemicals coming overseas are <b>lower quality</b> and <b>not manufactured with the intent</b> for use in drug products	<b>These imported chemicals should be purified first</b> by a US company, ensuring their suitability
<b>It is cost effective to manage “lower-cost” offshore manufacturers</b>	It <b>costs more</b> to legitimately and effectively manage offshore suppliers	Managing legitimate US manufacturers like BioSpectra
<b>Onshoring/reshoring drug ingredients will raise drug prices</b>	<b>Raw materials</b> are a <b>small portion</b> of the overall <b>cost</b> of a final drug product	Costs can be <b>controlled by reshoring/onshoring</b> scale volumes coupled with process efficiencies
<b>Onshoring/reshoring will have a negative impact on our environment</b>	<b>Lack of</b> environmental <b>controls</b> in India and China are <b>destroying</b> our planet	The <b>technology</b> is <b>available</b> to manufacture all drug ingredients sustainably in the US
<b>Lower cost labor yields lower cost drugs</b>	<b>Lower cost labor</b> leads to <b>lower quality</b> standards at the expense of patient health	<b>Labor costs</b> are a <b>small portion</b> of the overall <b>cost</b> of manufacturing a final drug product
<b>The US lacks the knowledge to manufacture key raw materials</b>	<b>The US leads the world in new technology &amp; innovation!</b>	We need <b>Federal, State and local Government support</b> to remove the barriers!
<b>It's too late</b>	It's never too late	BioSpectra's model can lead the way 

# BioSpectra Continues to Expand

## US Manufactured Premium Pharmaceutical Ingredients



### Expansion of Research and Development- Rensselaer, NY



- This new facility will further our reshoring initiatives by developing chemical synthetic pathways for key ingredients – some of which are **only** manufactured overseas.



### Distribution Center in Northampton County, PA



- This distribution center will support expanded production of products for a secure supply chain of key ingredients for drug manufacturers in the US.



### BioSpectra commits to advancements

- BioSpectra will continue to set new standards and expectations in drug manufacturing through commitments to advance new processes, technology and product opportunities.