

# Cherokee Fermentation Services



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# Cherokee Fermentation Services

## “...who are we”

Cherokee Fermentation Services has over 45 years of experience with a variety of products including pharmaceuticals, nutraceuticals, industrial enzymes, agricultural products and food additives. Originally built to produce the life-saving compound Penicillin, the facility has produced significant human health products including:

- Mectizan®, an antiparasitic used to prevent river blindness in third world countries
- Asparaginase, an innovative treatment for childhood leukemia
- Animal health and agricultural products
- Riboflavin, an essential vitamin
- Xanthan Gum, a food thickener that also has various industrial applications

Today, the fermentation facility is a fully-integrated site that provides a full range of contract manufacturing services required to get products from research and development to commercial production. Cherokee Fermentation has developed a successful track record by combining our manufacturing facilities with the technical expertise of our staff and achieving great results for our customers.

Additionally, we provide the regulatory environment to meet your product needs.

*cGMP controls, Kosher, HACCP, Halal, and ISO9000 certifications available*

# Cherokee Fermentation Services

## “Capabilities”

Process capabilities at the Cherokee Fermentation facility include Raw Material Handling, Fermentation, Isolation, Process Development as well as our extensive Support Systems. On-site wastewater treatment facilities, and support laboratories are all part of the comprehensive systems that support the manufacturing process.

Flexible in size, we have the ability and capacity to support a wide range of volumes. From single-batch processes to multiple batch campaigns our people and facilities are well suited to manage and manufacture products that meet your needs. Unlike many contract fermentation facilities, we can handle large quantities of bulk raw materials and finished products for high-volume projects while maintaining a high level of expertise and attention to detail.

# Cherokee Fermentation Services

## “Raw Material Handling”

Our raw materials area can support a variety of manufacturing volume requirements, from small batch scale processing to very large multi-million kilogram per year rates.

### Site Capabilities

- Three continuous sterilizer systems
- Batch charge area
- Raw material warehouse (~24,500 sq. ft.)
- Tank truck receiving area
- Railcar receiving area
- Bulk raw material storage tanks



# Cherokee Fermentation Services

## “Fermentation”

The Cherokee Fermentation facility includes a variety of fermentor sizes, ranging from 150 to 40,000 gallons. This provides us with the ability to match the scale of your operations and to minimize inefficiencies and costs. In addition, our charge and feed systems, combined with off-gas analysis, allow for precise process control further optimizing our ability to manufacture and supply quality, cost competitive products.

### Site Capabilities

- Twelve 150 gallon fermentors
- Ten 1,500 gallon fermentors
- Twenty 20,000 gallon fermentors
- One 40,000 gallon fermentor
- Various charge and feed tanks
- Distributed Control System (DCS)
- Off-gas analysis



# Cherokee Fermentation Services

## “Isolation & Recovery”

Cherokee Fermentation Services can isolate and extract the desired product from the fermentation broth and purify it into a high-quality solid or liquid formulation. This area can support large-scale solvent extraction and recovery processes. Our laboratories are capable of modeling various separation technologies, and evaluating and optimizing the processes for cost-efficient, high quality production.

### Site Capabilities

- Enzyme isolation train
- DI water system
- USP water system
- Two high volume solids drying systems
- 250 gpm solvent recovery system
- 500,000 gallon solvent storage
- Box packaging system
- UF and micro-filtration systems
- Centrifugation
- Solids blending



# Cherokee Fermentation Services

## “Process Development”

The Cherokee facility has a proven track record of successful process development and optimization. Our highly-qualified, experienced staff of microbiologists, chemists, operators, mechanics and engineers, have the knowledge, experience and facilities to turn ideas into commercial success. Laboratory and pilot scale fermentation allows process optimization from flask to 1500 gallon scale.

### Site Capabilities

- Laboratory and pilot scale fermentation from flask to 1,500 gallon scale
- Downstream process development capabilities
- Cell separation modeling by centrifugation and micro-filtration
- Continuous and batch solvent extractions
- Crystallization process development and optimization
- Solvent recovery development



# Cherokee Fermentation Services

## “Support Systems”

The Cherokee Fermentation facility has the support systems that make us a cost-effective choice for your product. Our on-site wastewater treatment plant gives us a competitive advantage by reducing disposal costs.

### Site Capabilities

- Support laboratories (inoculation, media preparation, analytical and developmental)
- Two temperature controlled shaker/incubation rooms
- Chilled water and glycol process cooling utilities
- Raw material and finished goods warehouse areas
- On site waste water treatment facilities
- Waste solvent disposal
- Cold storage room



# Cherokee Fermentation Services

## “People and Culture”

Employees are organized into an innovative system of self managed work teams. These teams consist of a core group of operators, laboratory technicians and maintenance mechanics. The teams have a broad range of technical, social and business capabilities that enable them to be highly flexible and to flow to the work. The teams have a broad range of technical skills including but not limited to:

- chemical and biological processing
- analytical testing
- core mechanical and instrument skills

*All employees are cGMP Trained!*

# Cherokee Fermentation Services

## “People and Culture”

The self-managed work teams possess a high degree of employee ownership. Each team is small and flexible and able to respond quickly to customers needs. This has allowed us to achieve quick product introductions for our customers while maintaining a competitive cost.

Our workforce has a common vision to get the job done in the most competitive and efficient manner possible, always striving for continuous improvement. All employees have received Lean Manufacturing training and the site has been aggressively implementing Lean projects.

Engineers and advisors are capable of flowing to the work whether it is in manufacturing, support, process improvement, automation, or project management.



***THANK YOU***



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