

Abstracts

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**Moving From Waste Disposal to Environmental Management:  
20 Years of Evolving Sustainability at Novo Nordisk BioChem**

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**Abstract**

Novo Nordisk BioChem of North America (NNBNA) is the North American enzyme production facility of Novo Nordisk A/S, a Danish company. The NNBNA facility started operation in 1979 in Franklinton, North Carolina and produces food and technical grade enzymes by microbial fermentation.

The facility was intentionally located in a rural area to allow production wastes to be stabilized and agronomically recycled. This design for the environment reflected the operational philosophy that was in practice at Danish facilities. The facility represented a highly sustainable operation unusual amongst industries at the time. In the past 20 years, the facility has experienced the rapid pace of changing regulations in the 1980's and has focused on pollution prevention and standardized environmental management in the 1990's. Through all of these changes, NNBNA has remained a good example of sustainable development. The NNBNA experience is valuable because it illustrates and underscores that sustainability is dynamic and continuously faces challenges.

Environmental management at NNBNA started primarily as a small farming operation applying production wastes to company-owned land, and implementation of good environmental practices for other impacts (air, stormwater). Environmental management has evolved with facility growth and regulatory changes into a large scale operation affecting thousands of acres and several hundred landowners. The management focus has also grown to include a strong customer service orientation with an emphasis on building a sustainable partnership with farm owners and other stakeholders. This also includes the development and sharing of better practices. Since inception, NNBNA has recruited

management personnel with technical expertise in agricultural and environmental areas in order to meet growing demands of landowners and regulatory and public stakeholders. The strengthening of these relationships, especially with agriculture, is a vital part of the sustainability of NNBNA operations.

In recent years, environmental management has moved toward a more formalized, process of proactive improvement. Novo Nordisk has adopted the International Chamber of Commerce Charter for Sustainability and is pursuing ISO 14001 certification at several facilities. NNBNA is participating in the US EPA ISO 14001 pilot study of environmental management systems and is pursuing certification.

Beginning with the initial design of the facility, NNBNA has developed and maintained a strong relationship with North Carolina State University, in particular with regards to the agronomic reuse of the process wastes. This relationship began in response to operational challenges in the early years and has evolved today to current research projects that focus on the future sustainability of waste recycling operations. The current research focus is on optimization of the agronomic value of wastes, resource conservation, and preparing for longer term changes in local demographics resulting from the encroachment of urban development.