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Anaerobic Degradation of Animal By-Products

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9.1. INTRODUCTION

As a result of growing meat consumption and production the slaughtering and rendering industry has an increasing output of nonconsumable animal by-products. According to new European legislation the established treatment and disposal technologies are either not allowed anymore or are too costly. Therefore, new ways of treatment for raw slaughterhouse waste products and pretreated materials from rendering plants have been established. As legislation on the recovery of organic materials for animal feed is becoming tighter and more restrictive, anaerobic digestion is a promising alternative for the treatment of these materials, since the process combines material recovery and energy production (Salminen and Rintala, 2002). The careless or rash utilization of animal by-products as substrates for anaerobic digestion subsequently may cause process instability and odor emissions. The conditioning of the digestate, like nitrogen-removal or concentration, may reduce logistic costs for utilization as a fertilizer.
9.2. REQUIREMENTS OF THE EUROPEAN REGULATION
EC NO. 1774/2002

9.2.1. Hazard Potential of Animal By-products

The inefficient treatment of slaughterhouse waste or improper use of products produced from it led to the pandemic occurrence of animal diseases such as BSE and foot-and-mouth disease. Only a rigorous European Regulation on the treatment and further use of animal by-products could prevent a further spread of diseases. This very extensive Regulation governs the collection, transport, methods, and procedures of treatment, as well as the further disposal, use, or trade in the products. Therefore, the Regulation has an effect on the export to and the import from nonmember countries of the European community.

9.2.2. Definitions

*ABP (animal by-products)*: Animal by-products are all bodies or parts of animals and products of animal origin not intended for human consumption, because either they are not fit for human consumption or there is no market for them as foodstuff.

*Biogas plant according to the ABP-Regulation*: This is a plant in which biological degradation of products of animal origin is undertaken under anaerobic conditions for the production and collection of biogas.

9.2.3. The EC-Regulation (EC) No. 1774/2002

The Regulation (EC) No. 1774/2002 of the European Parliament and of the Council of October 3, 2002, lays down health rules concerning animal by-products not intended for human consumption ("ABP-Regulation" or "Hygiene Regulation" in committees working on environmental issues) and regulates possible uses and processing rules of animal by-products (ABP). The Regulation was published in the official journal of the European Community of October 10, 2002, L 273, pages 1–95, and has had to be applied directly in all member states of the European Community since May 1, 2003.

Further temporary Regulations and implementing rules were laid down by the European Commission for the cushioning and modification of this Regulation. In this text all amendments that entered into force by February 2006 are included. Specific possibilities of processing and use for animal by-products are listed in this ABP-Regulation. In future, existing and newly developed methods and processes or utilization possibilities may be examined by the Scientific Steering Committee and approved by the European Commission.

9.2.4. Animal By-products in Biogas Plants

In the ABP-Regulation animal by-products are divided into three categories: