

## PREFACE

Food wastes are organic residues from the processing of agricultural raw materials to food, which arise as liquid (wastewater) and solid wastes. The wastewater results from the cleaning processes or in the form of excessive or polluted process water. Its dry material content is typically less than 5% by mass. It possibly also contains organic or inorganic cleaning agents or disinfectants. Solid food wastes with an organic origin have remarkably high water content (mostly about 80% by mass). They are usually characterized by a constant quality and purity due to the forgone processes.

The fact that these substances are removed from the production process as undesirable ingredients makes them, by definition of most European legislations, wastes. The term “by-product,” which is common in industry, points up that these are mostly ulterior usable substances, often with a market value.

Waste disposal is one of the major problems facing most food processing plants. Agriculture as the traditional way of waste utilization—a consequential outcome because most raw materials are also from agricultural origin—is no longer available due to major changes in law and technology. Furthermore, new kinds of process engineering and resultant new products and markets make the utilization of waste increasingly interesting.

This book covers the main aspects of utilization of the food industry waste (defined thereby as by-product) and the treatments necessary to discard waste to environmental acceptors. It cannot cover the entire spectrum of utilization of solid and liquid wastes of the food industry. The multiplicity of possible utilizable ingredients and technologies alone would exceed such an undertaking. For this reason many utilization possibilities are briefly and exemplarily mentioned.

The first chapter shows the exigency for utilization of food wastes and gives an overview about ways of utilization. The next chapter introduces the main ideas on treatment of food waste according to the ISO 14001 standards and the EU directives concerning the environmental performance of the food industry. The following chapters cover processes for wastewater treatment in general and applications of treatment of specific wastewater from different branches. The technology of anaerobic fermentation, thereby used among others for biogas production, is described in Chapter 9 as a method for specific degradation of solid wastes. The energy generation with biogas production is economically interesting, but direct substantial utilization of food waste is also efficient. Different examples with direct practical applicability demonstrate this substantial utilization. The range of possible usable wastes is among fish, fruit, fats and spent grains (Chapters 10–13). They can be used for the production of food ingredients, e.g.,

polyphenols, protein isolates, and dietary fibers, but also for nonfood products like bricks or fuel. Despite the generally high water content incineration is technically feasible as exemplified by spent grains in Chapter 14. Finally, composting of agricultural and food waste is covered in Chapter 15.

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