

BOOK REVIEW

“ANIMAL WASTES”, EDITED BY PROFESSOR E. PAUL TAIGANIDES, APPLIED SCIENCE PUBLISHER, LTD., LONDON, 1977, 429 pp.

The book contains revised material based upon the papers presented to the Seminar on Animal Wastes, which was organized by the European Office of the W.H.O. and the Government of the Czechoslovak Socialist Republic in cooperation with the United Nations Development Programme, and held at the Czechoslovak Research and Development Centre for Environment Pollution Control, Bratislava.

In view of the ever decreasing interest in works being compilation of various subjects (such as proceedings from meetings) the “Animal Wastes” presents a remarkable exception to the rule. This is only its title that misleads the reader, as it does not cover the whole of the problems treated. The papers provide design information required by engineers, as well as largely discussed problems and auxiliary data needed for long range planning.

The separate problems, confined to large industrial animal feedlots, are discussed by the scientists, farm operators, planners and government officials responsible for the development of animal production. The total of 36 papers are presented in five chapters.

The first chapter is devoted to general trends in animal production and its impact on environment in Czechoslovakia, Soviet Union, Canada, USA, Italy, FRG, Switzerland and Sweden. The papers stress the need for and adequate supply of animal products realized by industrialization of this sector of food production. The trends in beef and dairy cattle as well as hog and poultry production are presented, and the principles of local animal feedlot development, layout and operation of farms, sanitary requirements of animal confinement units, as well as general environmental health requirement and recommendations are discussed. As far as communicable diseases are concerned it has been pointed out that chemicals and antibiotics should be carefully administered for the sake of human health. Finally, the chapter provides general parameters of the raw manures from different animals, and pertinent treatability parameters.

The second chapter is devoted to the methods of collection and transport of wastes, from poultry, cattle and swine production, and to their treatment technology. Various techniques of solids dehydration are presented and described, feasibility of poultry wastes dehydration is discussed. In aerobic treatment systems the emphasis is given to various operational modes of lagooning, i.e. aerated, algal-bacterial-aerobic, facultative, and fully anaerobic ones. Encouraging results for combined treatment of animal wastes with both municipal and industrial effluents are shown. Discussion of composting techniques, and of aerobic waste treatment based on either nitrogen and phosphorus conservation or on their removal from the final effluent, terminates this chapter. The level of nutrient removal is obviously conditioned by the method of final disposal, which is specified in the next, third chapter.

Agricultural utilization of wastewaters is discussed from the standpoint of their admissible doses, judging the potential fertilizing effectiveness of liquid manure. When the doses exceed 50 tons/ha the addition of mineral fertilizers is not necessary, whereas the dose amounting to 200 tons/ha of cow manure inhibits the seed germination. While discussing general cost, the costs of tankers were compared with those of pumping stations. The methods of protein (aerobic bacteria mass) and energy recovery from wastes are discussed emphasizing pyrolysis, hydrogenation and methane generation through anaerobic digestion. It has been stated that further research works are necessary to develop criteria for universal application of biogas

generation in all scales of animal wastes treatment. The economy being a decisive factor the subsequent chapter deals with this subject.

The fourth chapter discusses the economics of large hog feedlots in Czechoslovakia, and presents an excellent overview of cost calculation methods, with itemized cost calculation for poultry, cattle and swine feedlots, operated both in open and covered modes.

The last chapter — devoted again to feedlot waste management in selected countries — is perhaps the most diversified, offering in-depth as well as very sketchy reviews of national plans, trends and practice of animal feedlots sanitation, and methods of wastewater treatment and disposal.

Summing up, the "Animal Wastes" is a handy reference to the data on animal effluent treatment practices in various countries. It also contains sufficiently accessible information for designers of the treatment systems, stirring however interesting novel methods of nutrients recovery through agricultural utilization of effluents, direct recycle of activated sludge mixed liquor and various methods of energy recovery. The book gives the evidence that international efforts in solving the animal wastes problems are finally becoming coordinated and information flow (i.e. transfer of technology) has been materialized to the extent that promises a rapid improvement in the technology of the animal wastes treatment.

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