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Pesticides Process Encyclopedia

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PESTICIDES PROCESS ENCYCLOPEDIA

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PESTICIDES PROCESS ENCYCLOPEDIA

FOREWORD

Agricultural pesticides, properly used, are essential in supplying the food requirements of the world's evergrowing population. The economic and social benefits arising from the use of agricultural chemicals become obvious to any student of rural economy. Modern agricultural sufficiency is maintained only by the judicious use of pesticides. The benefits consist not only in increased yields of produce, but also in increased quality. In many cases the improvement in quality has been such, that a high percentage of the crop would not have been marketable if pesticidal chemicals had not been used.

Current attacks on the toxicity of today's pesticides notwithstanding, it has been estimated that throughout the United States about five dollars are saved for every dollar spent on the war against harmful pests.

This detailed treatise is based on the U.S. patent literature and technical articles. Emphasis is on the synthesis of organic compounds containing chlorine and/or phosphorus. Fermentation products, for example, *Bacillus thuringiensis* for the control of flour moths and alfalfa caterpillars, are also described.

The manufacture of modern pesticides presents a technology that requires high levels of chemical and microbial sophistication. For each chemical pesticide manufacturing process the raw materials descriptions and synthetic procedures for the intermediates are ample and to the point. Reaction conditions are depicted minutely and in great detail with weights of the ingredients, catalysts, temperatures and special precautions to be observed. The actual product isolation by optimum separation techniques is described. Often this is followed by a waste and effluent diagram indicating the recommended disposal, such as landfill or barge to sea or secondary waste treatment plant.

The book contains a total of 558 subject entries arranged in an alphabetical and encyclopedic fashion by common or generic name.

UREA AND UREA PHOSPHATE FERTILIZERS 1976

by Clifford W. Fowler

Chemical Technology Review No. 59

Ever since the end of World War II the world consumption of fertilizers has increased steadily at about 6 to 10% per year.

The fertilizer shortage which occurred in 1973-74, combined with rapidly accelerating raw material and production costs for fertilizers everywhere, greatly aggravated the worldwide food problem, especially in the developing nations.

In the United States of America fertilizers account for one-third to one-half of the total crop production, making the fertilizer industry a major U.S. industry. The high agricultural productivity enjoyed here as a result is vivid testament to the need for fertilizers and their continued use.

The high nitrogen content (46.65%) of urea makes this type of plant nutrient supply most desirable. As a consequence tremendously large urea manufacturing plants are being built around the world. With their huge outputs, these factories are likely to make urea the cheapest source of nitrogen next to ammonia. High-analysis fertilizers are now available to agriculture at low cost. They are based on a combination of urea, ammonium phosphate and ammonium polyphosphates.

This book describes over 120 processes relating to the manufacture and formulation of fertilizers containing urea and ammonium phosphate as primary nutrient sources. A much shortened table of contents follows here. Numbers in parentheses indicate the number of processes per topic. Chapter headings and some important subtitles are given here.

ISBN 0-8155-0604-X

265 pages

GRANULATED FERTILIZERS 1976

by Robert A. Hendrie

Chemical Technology Review No. 58

During the past 15 years consumption of fertilizers has more than doubled, and mixed fertilizer has become the principal form used by the farmer. Mixed fertilizers contain all three major plant nutrients: nitrogen (N), available phosphate (calculated as P_2O_5), and potassium (expressed as K_2O).

With an increase of these analytical percentages, problems of caking became serious, and the mixed product was difficult to distribute evenly. Granulation, however, lessened or prevented caking in storage and facilitated uniform application of the fertilizer. From a technological viewpoint, therefore, the most significant development was the change to granulation processes.

Granular fertilizers flow readily from a bag or storage bin. In addition they are hard and strong enough to stand mechanical handling in farm equipment.

The desirable slow release of plant nutrients is best accomplished by covering the fertilizer granules with water-resistant or almost impervious coatings which in turn may contain micronutrients. Coated fertilizers with suitable barrier layers slowly release the plant nutrients over a period of several months. This prevents leaching losses early in the growing season and subsequent deficiencies as the crop approaches maturity.

This book describes over 260 processes providing several hundred examples of production methods relating to the technology of granulated fertilizers. As such it constitutes an in-depth review of the many important worldwide process developments in the fertilizer industry. A condensed table of contents follows with numbers of processes in ( ).

ISBN 0-8155-0602-3

339 pages

LIQUID FERTILIZERS 1973

by M. S. Casper

Chemical Technology Review No. 1

Liquid mixed fertilizer use is expected to grow rapidly through this decade. The ability of liquid fertilizers to chelate micronutrients and to supply appreciable quantities of iron in chelated form to the soil (leading to good crop yields) is an important factor. The major advantage is the demonstrated convenience in handling, processing, and application that further underscores the agronomists and farmers preference for liquid over solid fertilizers.

This book presents a comprehensive survey of 120 U.S. patents relating to fluid fertilizers (liquids, suspensions, and slurries). The major portion of the work in the field is concerned with their production from crude wet process phosphoric acid. Within this broad category the review covers the production technology of the foremost producers and the industry-wide search for solutions to some of the production problems, i.e., solids settling and equipment corrosion.

Apparatus used in application techniques is also covered. Included is information on specialty fertilizers both with regard to sources other than wet process phosphoric acid and unusual applications for liquid fertilizers.

Fertilizers account for one-third to one-half of crop production in the U.S. The high agricultural productivity enjoyed as a result, is testament to the need for fertilizers and to their continued use. A partial table of contents follows. Numbers in ( ) indicate a plurality of processes per topic. Chapter headings are given, and some of the more important subheadings are mentioned.

ISBN 0-8155-0456-9

268 pages

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