

CONTENT

	Page
Foreword	v
Introduction : The Fertilizer Industry of the United States	1
1. Nitrogen	10
Section 1 : Conversion of Ammonia to Fertilizer Materials	10
Section 2 : Conversion of Ammonia to Urea and ureaforms	37
2. Phosphate Ore : Geology	55
3. Phosphate Rock	68
Section 1 : Mining, Washing, and Beneficiation	68
Section 2 : Factors in the Grinding of Phosphate as Related to Production of Superphosphate	85
4. Phosphate Rock : Handling and Storage	93
5. Phosphate Rock : manufacture of Normal Superphosphate	105
6. Phosphate Rock : Reactivity Scales for Ground Rock	116
7. Normal Superphosphate : chemistry and Technology	129
8. Manufacture of Triple Superphosphate	167
9. Wet-Process Phosphoric Acid Manufacture	197
10. Diammonium Phosphate as Produced at by-Product Coke-Oven Plants	251
11. General Considerations on Operating Techniques, Equipment, and Practices in manufacture of Granular Mixes Fertilizers	269
12. Manufacture of Concentrated Water-Soluble Fertilizers Based on Ammonium Phosphate	299
13. Miscellaneous Phosphate Fertilizers	321
14. Thermal Processes for Producing Phosphate Fertilizers	345
15. Potash : Occurrences, Processes, Production	367
16. Plant practices in the Manufacture of Nongranulated Mixed Fertilizers	403
17. Minor and Secondary Elements in Mixed Fertilizers	434
Introduction	434
Section 1 : Production and use of Trace Salts in Fertilizers	435
Section 2 : Calcium and Magnesium in Mixed Fertilizers	446
18. Caking of Mixed Fertilizers	454
19. Drying and Cooling of Fertilizers and Fertilizer Materials	480
20. Liquid Fertilizers	513
21. Structural and X-Ray Data on Chemical Compounds Found in Fertilizers The Influence of Structure on Behavior	538
22. Corrosion : Materials of Construction for Fertilizer Plants and Phosphoric Acid Service	576
23. Materials –handling Equipment	633
24. Gaseous Effluents from Fertilizer Granulation Plants	648
Index	685