

1. Record Nr.	UNISA996212585803316
Titolo	Production-integrated environmental protection and waste management in the chemical industry // Claus Christ, editor
Pubbl/distr/stampa	Weinheim, [Germany] : , : Wiley-VCH, , 1999 ©1999
ISBN	1-282-01045-X 9786612010453 3-527-61386-2 3-527-61387-0
Descrizione fisica	1 online resource (213 p.)
Disciplina	628.1683 660.0286
Soggetti	Green chemistry Chemical industry - Environmental aspects Chemical plants - Waste disposal Environmental management
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Production-Integrated Environmental Protection and Waste Management in the Chemical Industry; Contents; 1. Introduction; 2. Production-Integrated Environmental Protection in the Chemical Industry; 2.1. Chemical Industry and Sustainable Development.; 2.2. Formation of Residues in Chemical Processes; 2.3 Environmental Concepts in the Chemical Industry; 2.3.1. Review of the Environmental Concepts.; 2.3.2. The Concept of Integrated Environmental Protection; 2.3.3. Environmental Protection in Research and Development; 2.3.4. Integrated and Additive Concepts of Environmental Protection 2.3.5. Comparison of Integrated and Additive Environmental Protection 2.3.6. Methods of material flow and cost management; 2.4. Limitations of Production-Integrated Environmental Protection; 2.4.1. Technical Limitations; 2.4.2. Economic Limitations; 2.5. Effect of Production-Integrated Environmental Protection; 2.6. Costs of Integrated Measures; 3. Examples of Production- Integrated

Environmental Protection in the Chemical Industry; 3.1. Introduction; 3.2. Selected Examples; 3.2.1. Examples from Hoechst; 3.2.1.1. Recovery and Utilization of Residues in the Production of Viscose Staple Fiber 3.2.1.2. Recovery of Methanol and Acetic Acid in Poly (Vinyl Alcohol) Production 3.2.1.3. Acetylation without Contamination of Wastewater; 3.2.1.4 Reutilization Plant for Organohalogen Compounds; 3.2.1.5. Vacuum Technology for Closed Production Cycles; 3.2.1.6. Utilization of Exhaust Gases and Liquid Residues of Chlorination Processes for Production of Clean Hydrochloric Acid Hydrochloric Acid Hydrochloric Acid Hydroc; 3.2.1.7. Production of Neopentyl Glycol: Higher Yield by Internal Recycling; 3.2.1.8. Optimization of Ester Waxoil Production and Recovery of Auxiliary Products 3.2.1.9. Biochemical Production of 7-Aminocephalosporanic Acid 3.2.1.10. Production of; 3.2.1.11. Production of Theobromine; 3.2.1.12. Recovery of Organic Solvents; 3.2.2. Examples from Bayer; 3.2.2.1. Avoidance of Wastewater and Residues in the Production of H Acid (1-Amino-8-hydroxynaphthalene-3,6-disulfonic acid); 3.2.2.2. High-Yield Production of Alkanesulfonates by Means of Membrane Technology; 3.2.2.3. Selective Chlorination of Toluene in the; 3.2.2.4. Production of Naphthalenedisulfonic Acid with Closed Recycling of Auxiliaries 3.2.2.5. Avoiding Residues in Dye Production by Using Membrane Processes 3.2.2.6. Fuel Replacement in Sewage Sludge Combustion by Utilization of Chlorinated Hydrocarbon Side Products; 3.2.3. Examples from BASF; 3.2.3.1. Emission Reduction in Industrial Power Plants at Chemical Plant Sites by Means of Optimized Cogeneration; 3.2.3.2. Closed-Cycle Wittig Reaction; 3.2.4. Integrated Environmental Protection and Energy Saving in the Production of Vinyl Chloride (Example from Wacker Chemie); 3.2.5. Examples from Hiils; 3.2.5.1. Integrated Environmental Protection in Cumene Production 3.2.5.2. Production of Acetylene by the Hiils Plasma Arc Process

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### Sommario/riassunto

Production-integrated environmental protection is synonymous with - reducing the amount of potential pollutants at source- reducing the consumption of resources and energy- recycling and utilization of residues and used products, and therefore a topic of considerable current interest. No chemical process exists that produces only the product desired. Therefore it is an important aim of the chemical industry to reduce the environmental effects of residues of chemical processes. This can be achieved by:- optimizing processes- applying new syntheses

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