Global biocide demand to grow 5.4% annually through 2009

World demand for biocides is projected to increase 5.4 percent per year to $6.9 billion in 2009. North America and Western Europe will remain the largest regional markets, accounting for over two-thirds of demand. The Asia/Pacific region, due mainly to continued rapid growth in China, is expected to register the fastest growth among the major regions through this decade. Eastern Europe is also expected to register above average growth, but will still account for less than five percent of global demand.

In more mature markets, such as Japan, the United States and Western Europe, advances will be modest, with gains spurred by the replacement of traditional products with higher value formulations offering a combination of broad-spectrum efficacy, low toxicity, minimal effect on finished product quality and reduced environmental impact. Much of this shift will be prompted by the sizable regulatory framework under which the biocide industry operates.

Food, beverage biocides to remain dominant, grow the fastest

Food and beverage processing will remain the largest preservative market, and is expected to register the fastest growth as well. Gains for food and beverage biocides will be fastest in Asia and other developing areas, where use of chemical preservatives is now becoming widespread and growth in food and beverage processing itself is generally more rapid. Paints and coatings are also expected to register above average growth, due in part to faster growth in global coatings production. The shift to water-based coatings within the architectural paint segment is essentially complete in the US and Western Europe, but is ongoing in many other parts of the world. Growth for biocides in coatings will also be boosted by the increasing trend toward aqueous formulations in the industrial coating segment, where solvent-based formulations have continued to maintain a greater market presence.

Disinfectants to benefit ammonium, phenolic biocides

In many regions worldwide, particularly in developing regions, the growing use of disinfectant cleaning products will boost demand for quaternary ammonium compounds and phenolic biocides such as triclosan. In water treatment, biocides have made significant inroads in the industrial and recreational segments. However, growth will still be limited by widespread use of commodities such as chlorine in municipal and commercial applications, as well as by greater use of nonchemical techniques, including ultraviolet irradiation and ozonation.

Study coverage

Details on these and other key findings are available in World Biocides, a 331-page Freedonia industry study priced at $5200. The study provides historical demand data (1994, 1999, 2004) plus forecasts to 2009 and 2014 by biocide product and market, and for six world regional and 24 major national markets.

The study also examines the effect of external market trends and economic indicators, considers the impact of regulatory and environmental issues, assesses industry composition, evaluates company market shares and profiles 36 industry competitors worldwide.
Freedonia Industry Study #1952 - “World Biocides”

**Table of Contents**

**EXECUTIVE SUMMARY**

**INTRODUCTION**

**MARKET ENVIRONMENT**

- General
- World Economic Overview
- Macroeconomic Outlook
- Per Capita Gross Domestic Product
- Fixed Investment Trends
- Consumer Spending Trends
- World Construction Overview
- World Demographic Overview
- Population
- Urbanization Patterns
- World Manufacturing Outlook
- Food & Beverages
- Wood
- Pulp & Paper
- Environmental & Regulatory Issues
- North America
- Western Europe
- Japan
- Other
- World Trade Overview
- World Biocide Demand by Region
- Biocides’ Relationship to Gross Domestic Product

**PRODUCT OVERVIEW**

- General
- Halogen Compounds
- Organosulfurs
- Nitrogen Compounds
- Metallic Compounds
- Organic Acids
- Other

**MARKET OVERVIEW**

- General
- Preservative
- Food & Beverages
- Paints & Coatings
- Wood Preservation
- Other
- Water Treatment
- Disinfectants & Industrial Processing
- Pulp & Paper
- Other

**NORTH AMERICA**

- General
- United States
- Canada
- Mexico

**WESTERN EUROPE**

- General
- France
- Germany
- Italy
- The Netherlands
- Spain
- United Kingdom
- Austria
- Belgium
- Sweden
- All Other

**ASIA/PACIFIC**

- General
- Australia

**EXECUTIVE SUMMARY**

This study can help you:

- Determine your market & sales potential
- Complement your research & planning
- Learn more about industry competitors
- Assess new products & technologies
- Identify firms to merge with or acquire
- Gather data for presentations
- Confirm your own internal data
- Make better business decisions

**TABLE VII-11**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Resident Population (mil)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GDP/capita</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gross Domestic Product</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Consumer Spending</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Manufacturing Value Added</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Food &amp; Beverage Mfg Val Added</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Construction Expenditures</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Paper &amp; Board Pbd (mil ton)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sawmwood Production (mil cu m)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**TABLE VII-12**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Gross Domestic Product (bil 2000$)</td>
<td>551</td>
<td>94</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$ biocide/mil $ GDP</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Biocide Demand</td>
<td>52</td>
<td>25</td>
<td>13</td>
<td>19</td>
<td>10</td>
</tr>
<tr>
<td>Preservatives</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Food &amp; Beverage</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Paints &amp; Coatings</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>19</td>
<td>13</td>
<td>13</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Water Treatment</td>
<td>19</td>
<td>13</td>
<td>13</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Disinfect &amp; Industrial Processing</td>
<td>19</td>
<td>13</td>
<td>13</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>% South Korea</td>
<td>8.2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asia/Pacific Biocide Demand</td>
<td>633</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**ASIA/PACIFIC**

**SAMPLE PAGE**

Explanations to support each table’s numbers and projections

**SAMPLE TABLE**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Resident Population (mil)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GDP/capita</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gross Domestic Product</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Consumer Spending</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Manufacturing Value Added</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Food &amp; Beverage Mfg Val Added</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Construction Expenditures</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Paper &amp; Board Pbd (mil ton)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sawmwood Production (mil cu m)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**COPYRIGHT© BY THE FREEDONIA GROUP, INC.**
### World Preservative Biocide Demand (million dollars)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>World Food &amp; Bever MVA</td>
<td>1675</td>
<td>2100</td>
<td>2620</td>
<td>3420</td>
<td>4520</td>
</tr>
<tr>
<td>$ biocide/0005 food &amp; bev</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>World Food &amp; Biocide Demand</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>North America</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Western Europe</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asia/Pacific</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other Regions</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Latin America</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eastern Europe</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Africa/Mideast</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% food &amp; beverage</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>World Preservative Biocide Demand</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Market Overview

**Preservative**

World demand for biocides in preservative applications is projected to increase from $1675 million in 1994 to $4520 million in 2009. Gains will be led by North America, while other key applications, such as paints, food, and beverages, are expected to remain steady.

Historical data through 2004 plus Freedonia forecasts to 2009 and 2014

Biocides used as preservatives in industrial and consumer products serve essentially the same function, yet face very different market challenges. Aside from fundamental safety issues, biocides used in industrial products are generally selected based on their effectiveness, cost, and minimizing effects on equipment and finished product quality. For example, the required toxicity level may vary from one application to the next, and the biocide must be compatible with the finished product in question, an enormous variety of biocide product types are used as preservatives. This variety includes one or more specific products from nearly every major biocide product type.

### COMPANY PROFILES

**TETRA Technologies Incorporated**

25025 Interstate 45 North

The Woodlands, TX 77380

281-367-1983

http://www.tetratec.com

- **Employment**: 1,530 (2004)
- **Key Products**: sodium bromide biocides, biobased fluids, biodegradable and brominated products
- **TETRA competes in the world biocide industry through the Fluids segment**, which recorded revenues of $152 million in 2004. Through the Fluids segment, the Company manufactures and markets clear brine fluids, additives and other associated products for use in a number of industries. These products are sold in North America, Latin America, Europe, Africa and the Asia/Pacific region. Among the products made by the Fluids segment is the BIORID line of sodium bromide water-based microbiocides. BIORID products are used as bactericides, fungicides, algicides, slimicides, molluscicides, disinfectants and sanitizers in a variety of industrial water treatment applications. These biocides are used in combination with an oxidizer, such as sodium hypochlorite or chlorine gas, to produce hypobromous acid. Specific markets for BIORID biocides include pulp and paper mills, wastewater treatment systems, recirculating and once-through industrial cooling water systems, air wash water systems, evaporative condenser systems, sewage systems, heat exchanger systems, industrial processing water, ornamental ponds and aquaria, and non-potable water systems.

**Company Profiles**

- **Akzo Nobel NV**
- **Albemarle Corporation**
- **Arch Chemicals Incorporated**
- **Ashland Incorporated**
- **Avecia Group plc**
- **Baker Hughes Incorporated**
- **BASF AG**
- **Bayer AG**
- **Buckman Laboratories Incorporated**
- **Chemtura Corporation**
- **Ciba Specialty Chemicals Holding**
- **Clarient International Limited**
- **Cytec Industries Incorporated**
- **Dow Chemical Company**
- **Gensan AS**
- **General Electric Company**
- **International Specialty Holdings**
- **Israel Chemicals Limited**
- **Kemira Oy**
- **KMG Chemicals Incorporated**
- **LANXESS AG**
- **Lonza Group Limited**
- **Lubrizol Corporation**
- **mg technologies ag**
- **Nalco Holdings LLC**
- **Occidental Petroleum Corporation**
- **Osmose Holdings Incorporated**
- **Raisio Group plc**
- **Rhodia SA**
- **Rockwood Specialties Group**
- **Rohm and Haas Company**
- **TETRA Technologies Incorporated**
- **Thor Group Management Limited**
- **Total SA**
- **Troy Corporation**
- **Vulcan Materials Company**

**COMPANY PROFILES feature:**

- Timely information on public/private companies
- Operations of pertinent division/sector/subsidiary
- Product lines, trade names, technical overviews
- Mergers/acquisitions, closures, expansion decisions

(continued on opposite page)
**Order Information**

To order fill out the coupon below and mail to The Freedonia Group, or place your order by phone toll free (800) 927-5900 (US) or (440) 684-9600, or by fax (440) 646-0484, or by e-mail info@freedoniagroup.com

**Free Handling and Shipping**

There is NO charge for handling and UPS shipping in the US. Expect delivery in 3 to 5 days. Outside the US, Freedonia provides free airmail service. If you require express delivery, Freedonia provides this to you at cost.

**Save Fifteen Percent**

If you order three (3) different titles at the same time, you can receive a discount of 15%. If your order is accompanied by a check, you may take a 5% cash discount (discounts do not apply to corporate use licenses).

**Credit Card Orders**

You may charge your order to either American Express, MasterCard or Visa. Please include your credit card account number, expiration date and your signature.

**Orders Outside of the US**

Checks must be paid in US funds, drawn against a US bank and mailed directly to The Freedonia Group. Wire transfers should be sent to: Fifth Third Bank, Cincinnati, OH, SWIFT No. FTBCUS3C, ABA #042000314, Account #7520576476 (please include study number and/or invoice number with all wire transfers). Or you may use a credit card.

**Corporate Use License**

Now every decision maker in your organization can act on the key intelligence found in all Freedonia studies. For an additional $2,000 you receive unlimited use of an electronic version (PDF) of the study. Place it on your Intranet, e-mail it to coworkers around the world, or print it as many times as you like! Order it today.

**Online Access**

The complete text and tables from our studies and reports can be purchased at The Freedonia Group, Inc., in US funds (Ohio residents add 7.5% sales tax)

---

**Other Titles from The Freedonia Group**

**Nonchemical Water Treatment**

Water treatment operators are increasingly using nonchemical techniques to comply with more stringent water quality demands. Nonchemical treatments such as ultraviolet disinfection are both complementing and/or replacing chemical treatments. This study analyzes the US nonchemical water treatment industry, presenting historical demand data through 2004 and forecasts to 2009 and 2014 by product, application and market. It also presents company market share data and profiles leading industry participants. 

**Disinfectant & Antimicrobial Chemicals**

The US disinfectant and antimicrobial chemical market will grow 5% yearly through 2009 based on concerns about bacterial and pathogenic threats. Phenolic compounds, iodophors, nitrogen compounds and organo-metallics will remain the top products. The dominant disinfectant segment will outpace antimicrobials. This study analyzes the $2 billion US disinfectant and antimicrobial chemical industry to 2009 and 2014 by product and market. It also evaluates market share and profiles major competitors.

**Biocides**

US demand for biocides will grow 4.8% annually through 2008 based on rebounding production in key end-use sectors. Heightened concerns about bacterial growth and foodborne pathogens, and a shift toward higher value biocides, will also support gains. Halogen compounds will remain dominant while phenolic compounds grow the fastest. This study analyzes the $1.9 billion US biocide industry to 2008 and 2013 by product, function and market. It also evaluates market share and profiles leading players.

---

**ORDER FORM**

**Name:** ____________________________

**Title:** ____________________________

**Company:** ____________________________

**Division:** ____________________________

**Street:** ____________________________

(none PO Box please)

**City/State/Zip:** ____________________________

**Country:** ____________________________

**Phone:** ____________________________

**Fax:** ____________________________

**e-mail:** ____________________________

**TITLE**

**PRICE**

World Biocides

$5200

- Corporate Use License (add to study price) + $2000

- Additional Print Copies @ $400 each

Total (including selected options): $ ____________________________

- Enclosed is my check (5% discount) drawn on a US bank and payable to The Freedonia Group, Inc., in US funds (Ohio residents add 7.5% sales tax)

- Bill my company ____________________________

- American Express ____________________________

- MasterCard ____________________________

- Visa ____________________________

**MONTH** ____________________________

**YEAR** ____________________________

**Credit Card #** ____________________________

**Expiration Date** ____________________________

**Signature:** ____________________________

---

**Need analysis on a topic not covered by Freedonia Industry Studies? Call Customer Service for details on Freedonia Custom Research**

---

Freedonia China moves to larger quarters

Freedonia opened its China office in Beijing in 2004, but staff expansion has already necessitated a move to larger quarters. The new Freedonia China office is located on the East 3rd Ring and has enough space to accomodate future expansions.