World Water Disinfection

Industry Study with Forecasts for 2012 & 2017

Study #2412 | October 2008 | $5700 | 297 pages

www.freedoniagroup.com
Table of Contents

EXECUTIVE SUMMARY

MARKET ENVIRONMENT
General .......................................................... 4
World Economic Outlook .................................. 6
World Fixed Investment .................................... 9
World Demographic Outlook ........................... 11
Population .................................................... 12
Urbanization Patterns ....................................... 13
World Water Use ............................................. 15
World Manufacturing Outlook ........................... 22
World Electricity Generation ............................. 23
Environmental & Regulatory Issues .................... 25
Water Pollution ............................................. 26
Regulations .................................................. 28
Waterborne Diseases ....................................... 31
Technology & Product Innovation ....................... 32
International Trade ......................................... 34

OVERVIEW
General .......................................................... 35
Products .......................................................... 37
Chemicals ..................................................... 40
Chlorine ....................................................... 43
Chlorine Derivatives ....................................... 45
Bromine Derivatives ....................................... 47
Other ............................................................ 49
UV Equipment ............................................... 52
Ozone Equipment .......................................... 55
Markets .......................................................... 58
Industrial ...................................................... 60
Recreational .................................................. 62
Municipal ...................................................... 65
Supply Water .................................................. 69
Wastewater .................................................... 72

NORTH AMERICA
General .......................................................... 76
Water Disinfection Product Demand .................. 77
United States .................................................. 81
Canada .......................................................... 88
Mexico ........................................................... 94

WESTERN EUROPE
General .......................................................... 100
Water Disinfection Product Demand .................. 102
France .......................................................... 105
Germany ........................................................ 110
Italy ............................................................... 116
The Netherlands ............................................ 122
Spain ............................................................. 126
United Kingdom ............................................. 131
Other Western Europe ..................................... 137

ASIA/PACIFIC
General .......................................................... 144
Water Disinfection Product Demand .................. 146
Australia ....................................................... 150
China ........................................................... 155
India ............................................................. 166
Japan ............................................................ 172
South Korea ................................................... 178
Taiwan ........................................................... 184
Other Asia/Pacific .......................................... 188

OTHER REGIONS
General .......................................................... 196
Latin America: General .................................... 197
Latin America: Water Disinfection Product Demand ........................................... 199
Brazil ............................................................ 201
Other Latin America ......................................... 206
Eastern Europe: General .................................. 211
Eastern Europe: Water Disinfection Product Demand ........................................... 213
Russia ........................................................... 215
Other Eastern Europe ....................................... 221
Africa/Middle East ........................................... 226

INDUSTRY STRUCTURE
General .......................................................... 233
Market Share .................................................. 234
Industry Restructuring ...................................... 238
Competitive Strategies ..................................... 240
Research & Development ................................ 241
Low Cost Position .......................................... 241
Focus Strategies ............................................ 242
Cooperative Agreements ................................ 244
Manufacturing ............................................... 246
Marketing & Distribution ................................ 247

COMPANY PROFILES
ALTVIVIA Corporation ...................................... 250
Arch Chemicals .............................................. 251
Ashland Incorporated ....................................... 253
Buckman Laboratories .................................... 255
BWT AG ........................................................ 256
Calgon Carbon ............................................... 258
Chemtura Corporation .................................... 260
China National Bluestar Group ......................... 261
Christ Water Technology .................................. 262
Ciba Specialty Chemicals .................................. 265
Danaher Corporation ...................................... 267
Dow Chemical ............................................... 270
Ebara Corporation ........................................... 272
General Electric .............................................. 273
Hercules Incorporated ..................................... 275
Israel Chemicals ............................................. 276

ITT Corporation .............................................. 278
Kemira Oyj .................................................... 280
Kurita Water Industries .................................... 281
Nalco Holdings ............................................. 283
Occidental Petroleum .................................... 285
Rohm and Haas ............................................. 286
Severn Trent .................................................. 288
Shanghai Duojia Water Treatment Science & Technology ........................................... 290
Siemens AG .................................................... 291
Solvay SA ...................................................... 294
Veolia Environnement ...................................... 295

List of Tables/Charts

EXECUTIVE SUMMARY
1 Summary Table ............................................ 3

MARKET ENVIRONMENT
1 World Gross Domestic Product by Region .... 9
2 World Gross Fixed Capital Formation by Region ........................................... 11
3 World Population by Region ........................................... 13
4 World Urban Population by Region ............ 14
5 World Nonagricultural Water Use by Region ........................................... 17
6 Cht Percent of Population with Access to Improved Water, 2004 ..................... 18
7 Cht Urban/Rural Difference in Access to Improved Water, 2004 ..................... 19
8 Cht Percent of Population with Access to Improved Sanitation Facilities, 2004 20
9 Cht Urban/Rural Difference in Access to Improved Sanitation Facilities, 2004 21
10 6 World Manufacturing Value Added by Region ........................................... 23
11 7 World Electricity Generation by Region .... 25

OVERVIEW
1 World Water Disinfection Product Demand by Region ........................................... 37
2 World Water Disinfection Product Demand by Type ........................................... 40
(continued on next page)
List of Tables/Charts

(continued from previous page)

  3 World Water Disinfection Chemical Demand by Region ................... 43
  4 World Water Disinfection Chlorine Demand by Region .................... 45
  5 World Water Disinfection Chlorine Derivatives Demand by Region ...... 47
  6 World Water Disinfection Bromine Derivatives Demand by Region ...... 49
  7 World Other Water Disinfection Chemical Demand by Region ........... 52
  8 World Water UV Disinfection Equipment Demand by Region ............. 55
  9 World Water Disinfection Market for Ozone Equipment by Region .... 57
 10 World Water Disinfection Markets .................................. 59
 11 World Industrial Water Disinfection Product Demand by Region ...... 62
 12 World Recreational Water Disinfection Product Demand by Region ... 65
 13 World Municipal Water Disinfection Product Demand by Segment ...... 69
 14 World Municipal Supply Water Disinfection Product Demand by Region . 72
 15 World Municipal Wastewater Disinfection Product Demand by Region .. 75

NORTH AMERICA

 1 North America: Market Environment .......................... 77
 2 North America: Water Disinfection Product Demand by Type & Market .. 80

Cht North America: Water Disinfection Product Demand by Country, 2007 .... 81
  3 United States: Market Environment .............................. 83
  4 United States: Water Disinfection Product Demand by Type ........... 85
  5 United States: Water Disinfection Markets ......................... 87
  6 Canada: Market Environment ...................................... 89
  7 Canada: Water Disinfection Product Demand by Type ................. 91
  8 Canada: Water Disinfection Markets .............................. 93
  9 Mexico: Market Environment ....................................... 95
 10 Mexico: Water Disinfection Product Demand by Type ................ 97
 11 Mexico: Water Disinfection Markets ................................ 99

WESTERN EUROPE

 1 Western Europe: Market Environment .................................. 101
 2 Western Europe: Water Disinfection Product Demand by Type & Market .. 104

Cht Western Europe: Water Disinfection Product Demand by Country, 2007 ...... 105
  3 France: Market Environment ....................................... 106
  4 France: Water Disinfection Product Demand by Type .................. 108
  5 France: Water Disinfection Markets ................................ 109
  6 Germany: Market Environment ..................................... 112
  7 Germany: Water Disinfection Product Demand by Type ................. 113
  8 Germany: Water Disinfection Markets .............................. 115
  9 Italy: Market Environment ......................................... 117
 10 Italy: Water Disinfection Product Demand by Type ................... 119
 11 Italy: Water Disinfection Markets .................................. 121
 12 The Netherlands: Market Environment ............................... 123
 13 The Netherlands: Water Disinfection Product Demand by Type ........ 124
 14 The Netherlands: Water Disinfection Markets ......................... 126
 15 Spain: Market Environment ......................................... 128
 16 Spain: Water Disinfection Product Demand by Type .................. 129
 17 Spain: Water Disinfection Markets .................................. 131
 18 United Kingdom: Market Environment ................................ 133
 19 United Kingdom: Water Disinfection Product Demand by Type ......... 134
 20 United Kingdom: Water Disinfection Markets ......................... 136
 21 Other Western Europe: Market Environment .......................... 138
 22 Other Western Europe: Water Disinfection Product Demand by Type ... 140
 23 Other Western Europe: Water Disinfection Markets .................... 142

ASIA/PACIFIC

 1 Asia/Pacific: Market Environment .................................... 146
 2 Asia/Pacific: Water Disinfection Product Demand by Type & Market .. 149

Cht Asia/Pacific: Water Disinfection Product Demand by Country, 2007 ....... 150
  3 Australia: Market Environment ..................................... 151
  4 Australia: Water Disinfection Product Demand by Type ............... 153
  5 Australia: Water Disinfection Markets ................................ 154
  6 China: Market Environment .......................................... 157
  7 China: Water Disinfection Product Demand by Type ................... 160
  8 China: Water Disinfection Markets ................................... 164
  9 India: Market Environment ........................................... 167
 10 India: Water Disinfection Product Demand by Type ................... 169
 11 India: Water Disinfection Markets ................................... 171
 12 Japan: Market Environment .......................................... 173
 13 Japan: Water Disinfection Product Demand by Type ................... 175
 14 Japan: Water Disinfection Markets ................................... 177
 15 South Korea: Market Environment .................................... 179
 16 South Korea: Water Disinfection Product Demand by Type ............. 181
 17 South Korea: Water Disinfection Markets ............................ 183
 18 Taiwan: Market Environment ......................................... 185
 19 Taiwan: Water Disinfection Product Demand by Type .................. 186
 20 Taiwan: Water Disinfection Markets .................................. 188
 21 Other Asia/Pacific: Market Environment ................................ 190
 22 Other Asia/Pacific: Water Disinfection Product Demand by Type ....... 192
 23 Other Asia/Pacific: Water Disinfection Markets ....................... 194

OTHER REGIONS

 1 Latin America: Market Environment ................................... 199
 2 Latin America: Water Disinfection Product Demand by Type & Market .... 200
 3 Brazil: Market Environment .......................................... 202
 4 Brazil: Water Disinfection Product Demand by Type .................... 203
 5 Brazil: Water Disinfection Markets .................................... 205
 6 Other Latin America: Market Environment ................................ 207
 7 Other Latin America: Water Disinfection Product Demand by Type ....... 209
 8 Other Latin America: Water Disinfection Markets ........................ 211
 9 Eastern Europe: Market Environment ................................... 213
10 Eastern Europe: Water Disinfection Product Demand by Type & Market .... 215
11 Russia: Market Environment .......................................... 217
12 Russia: Water Disinfection Product Demand by Type .................... 219
13 Russia: Water Disinfection Markets .................................... 220
14 Other Eastern Europe: Market Environment ................................ 222
15 Other Eastern Europe: Water Disinfection Product Demand by Type ...... 224
16 Other Eastern Europe: Water Disinfection Markets ........................ 225
17 Africa/Mideast: Market Environment .................................... 228
18 Africa/Mideast: Water Disinfection Product Demand by Type & Market .. 230

INDUSTRY STRUCTURE

Cht World Water Disinfection Product Market Share .............................. 235
  1 Selected Acquisitions & Divestitures ................................ 239
  2 Selected Cooperative Agreements .................................... 245
Global demand to increase 7.4% yearly through 2012

Global demand for water disinfection products is projected to increase 7.4 percent annually to $7.4 billion in 2012. Overall, growth will be fastest in China, India and other developing countries, especially those with large industrial sectors. Growth in these regions will be based on dramatic expansions in the use of relatively traditional water treatment techniques and products, which will boost overall demand for disinfection products. Industrialization in many of these areas will also drive growth for higher value specialty biocides. In many of the least developed countries -- especially in Africa -- growth will be more limited, due to spotty success in expanding infrastructures due to lack of adequate funding and local corruption.

Developed countries to also show healthy growth

The US is expected to register healthy growth due to upgrades of disinfection techniques in an otherwise mature market. This will be a continuation of a longstanding trend favoring better performing specialty chemicals at the expense of chlorine and other commodities. This shift, more or less complete in the industrial segment, is beginning to affect the municipal segment. Municipal water treatment operators have begun to use chloramines and other chemicals that allow for reductions in disinfection byproducts while maintaining chlorine residual levels in compliance with regulatory guidelines. Additionally, these same motivations are prompting greater adoption of UV and ozone disinfection, which are often used in tandem with chlorine or other chemicals.

Western Europe and Japan are fairly comparable to the US in terms of the level of maturity of their respective water infrastructures and level of technological sophistication, although there are some differences. Western Europe has been an earlier adopter of nonchemical disinfection techniques and has become less reliant on chlorine. Moreover, neither Western Europe nor Japan are nearly as large a market for recreational water treatment as the US.

Municipal water market to be fastest growing

The municipal water segment is projected to register the best growth, as there will be some level of growth in nearly every country, due to expansions or upgrades of water infrastructures, particularly in the wastewater segment. The industrial segment will register more modest growth due to the maturity of the largest industrial markets, but will be fueled by advances in developing industrial powers. The recreational segment will post the slowest growth, due to the maturity of the larger, more affluent markets that account for most of the world’s sales.
NORTH AMERICA

Mexico: Markets

The industrial segment represents the largest segment of the water disinfection market in Mexico. It accounts for about half of overall demand in the Mexican water disinfection market. Unlike the US and Canada, however, Mexico is not endowed with an enormous supply of clean water, and less of Mexico’s population has access to improved water and sanitation, although the country continues to improve in that regard. Moreover, a much larger share of water used in Mexico is dedicated to agricultural production than in either Canada or the US. The growth of the nation’s largest cities and overall population in recent decades has exacerbated the problem of water access and water quality. Mexico City, one of the world’s most populous cities, is a vivid example of the problem. The city is sinking due to the amount of groundwater that has already been pumped from beneath it. Surrounding lakes have already been drained, and an outdated delivery system loses far more of its water to leakage than do systems in Canada or the US.

Unlike the US and Canada, Mexico is not endowed with an enormous supply of clean water, and less of Mexico’s population has access to improved water and sanitation, although the country continues to improve in that regard. Moreover, a much larger share of water used in Mexico is dedicated to agricultural production than in either Canada or the US. The growth of the nation’s largest cities and overall population in recent decades has exacerbated the problem of water access and water quality. Mexico City, one of the world’s most populous cities, is a vivid example of the problem. The city is sinking due to the amount of groundwater that has already been pumped from beneath it. Surrounding lakes have already been drained, and an outdated delivery system loses far more of its water to leakage than do systems in Canada or the US.

These problems, however, do provide growth potential in the municipal market. Although some measure of this growth has been realized, it has not been as remarkable as some have expected. Wastewater disinfection represents another strong opportunity in the Mexican market, especially as reclaimed wastewater is a valuable resource in any location without abundant fresh water supplies. Treatment rates for industrial and municipal wastewater are still well below the regional average. Although there has been considerable improvement in this area, the upside for market growth for chemicals and equipment in wastewater disinfection applications remains substantial.
Sample Profile, Table & Forecast

COMPANY PROFILES

BWT AG
Walter-Simmer-Strasse 4
5310 Mondsee
Austria
43-6232-5011-0
http://www.bwt-group.com

Sales: $544 million (2007)
Geographic Sales: (2007, as percent of total) Austria and Germany 40%, France and Benelux 24%, Scandinavia 11%, Italy and Spain 8%, and Switzerland and Other Countries 16%
Employment: 2,355 (2007)

Key Products: ultraviolet light, ozone gas and chemical disinfection systems

BWT develops and produces water treatment products and solutions for residential, commercial, industrial and swimming pool applications. In addition, the Company develops fuel cell technologies and products. The Company operates in five geographic segments: Austria/Germany, France/Benelux, Scandinavia, Italy/Spain, and Switzerland/Others.

The Company participates in the world water disinfection industry through all five segments. Through these segments, BWT manufactures a variety of water treatment products, including disinfection equipment, under such brand names as AQA TOTAL ENERGY, BWT, CILLIT, PERMO and HOH for the residential, institutional, utility and commercial markets. Water disinfection offerings encompass ultraviolet (UV) light, ozone gas and chemical disinfection systems.

TABLE IV-10

MEXICO: WATER DISINFECTION PRODUCT DEMAND BY TYPE (million dollars)

<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>94.6</td>
<td>100.9</td>
<td>106.5</td>
<td>112.2</td>
<td>117.8</td>
</tr>
<tr>
<td>$ disinfection/capita</td>
<td>0.39</td>
<td>0.50</td>
<td>0.72</td>
<td>0.98</td>
<td>1.36</td>
</tr>
<tr>
<td>Water Disinfection Demand</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chemical:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chlorine</td>
<td>13.0</td>
<td>13.0</td>
<td>21.0</td>
<td>23.0</td>
<td>21.0</td>
</tr>
<tr>
<td>Chlorine Derivatives</td>
<td>11.0</td>
<td>16.0</td>
<td>20.0</td>
<td>26.0</td>
<td>34.0</td>
</tr>
<tr>
<td>Bromine Derivatives</td>
<td>2.0</td>
<td>3.0</td>
<td>5.0</td>
<td>7.0</td>
<td>8.0</td>
</tr>
<tr>
<td>Other</td>
<td>4.0</td>
<td>7.0</td>
<td>8.0</td>
<td>10.0</td>
<td>16.0</td>
</tr>
<tr>
<td>UV Equipment</td>
<td>4.0</td>
<td>7.0</td>
<td>16.0</td>
<td>33.0</td>
<td>60.0</td>
</tr>
<tr>
<td>Ozone Equipment</td>
<td>3.0</td>
<td>4.0</td>
<td>7.0</td>
<td>11.0</td>
<td>21.0</td>
</tr>
<tr>
<td>% Mexico</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NA Water Disinfection Demand</td>
<td>1168</td>
<td>1547</td>
<td>2252</td>
<td>3060</td>
<td>4060</td>
</tr>
</tbody>
</table>

"Demand for water treatment products in Mexico is projected to grow 7.4 percent per year through 2012 to $110 million, above the North American forecast average pace through the period. This represents a slowdown from the pace of the 2002-2007 period. During that timeframe, there was considerable activity undertaken to extend access to improved water and sanitation facilities to a larger share of the population, especially outside the larger metropolitan areas."

--Section XXX, pg. 000
Corporate Use License
Now every decision maker in your organization can act on the key intelligence found in all Freedonia studies. For an additional $2300, companies 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.

* Please check appropriate option and sign below to order an electronic version of the study.

☐ Individual Use License Agreement
The undersigned hereby represents that the above captioned study will be used by only ___ individual(s) who are employees of the company and that the study will not be loaded on a network for multiple users. In the event that usage of the study changes, the Company will promptly notify Freedonia of such change and will pay to Freedonia the appropriate fee based on Freedonia’s standard fee schedule then in effect. Note: Entire company corporate use license, add $2300; one additional user, add $500; two additional users, add $1000; three additional users, add $1500.

Signature

☐ Corporate Use License Agreement
The above captioned study may be stored on the company’s intranet or shared directory, available to company employees. Copies of the study may be made, but the undersigned represents that distribution of the study will be limited to employees of the company.

Signature
Consumer Water Purification & Air Cleaning Systems

This study analyzes the US consumer water purification and air cleaning system industry. It presents historical demand data (1997, 2002, 2007) and forecasts for 2012 and 2017 by technology (e.g., conventional filtration, reverse osmosis, distillation, ultraviolet disinfection, ozone treatment, electrostatic, ionization), system (e.g., point-of-entry, point-of-use, whole-house, portable) and US region. The study also considers market environment factors, evaluates company market share and profiles industry players.

#2419 ................... 10/2008 .................... $4700

Water Treatment in China

Demand for water treatment products in China will soar 15.5% annually through 2012. Filters and membranes will be the fastest growing segments, although all types will see double-digit gains. The industrial sector will remain the largest market, but will be outpaced by municipal and other end uses. The study analyzes the ¥20.4 billion water treatment product industry in China, with forecasts for 2012 and 2017 by product, market and region. It also evaluates company market share and profiles leading industry players.

#2329 ................... 04/2008 .................... $5100

Membrane Separation Technologies

US membrane material demand will rise 8.2% annually through 2012, driven by ongoing interest in higher purity process fluids and increasingly strict water/wastewater quality rules. The best opportunities will emerge in pharmaceutical and medical markets, and water and wastewater treatment will remain the largest markets. This study analyzes the $2.9 billion US membrane industry, with forecasts for 2012 and 2017 by type, application and market. It also details market share and profiles major players.

#2307 ................... 03/2008 .................... $4600

World Filters

Global filter demand will climb 5.6% annually through 2011. Developing areas will lead gains based on faster-growing economies and the enactment of stricter environmental laws. China, India and Russia will post some of the strongest sales growth. Air and fluid filters will be the fastest growing types. This study analyzes the $37 billion world filter industry, with forecasts for 2011 and 2016 by product, market, world region and for 26 countries. It also evaluates company market share and profiles major players.

#2295 ................... 03/2008 .................... $5800

World Water Treatment Products

Global demand for water treatment products will grow 6.4% annually through 2011. Advances will be the fastest in the developing world, especially China and India. Gains in more established markets will be driven by technology upgrades such as higher-end membranes in desalination and other uses. This study analyzes the $29.3 billion world water treatment product industry, with forecasts for 2011 and 2016 by product, market, world region and 20 countries. It also details market share and profiles major players.

#2276 ................... 01/2008 .................... $5800

About The Freedonia Group

The Freedonia Group, Inc., is a leading international industry market research company that provides its clients with information and analysis needed to make informed strategic decisions for their businesses. Studies help clients identify business opportunities, develop strategies, make investment decisions and evaluate opportunities and threats. Freedonia research is designed to deliver unbiased views and reliable outlooks to assist clients in making the right decisions. Freedonia capitalizes on the resources of its proprietary in-house research team of experienced economists, professional analysts, industry researchers and editorial groups. Freedonia covers a diverse group of industries throughout the United States, the emerging China market, and other world markets. Industries analyzed by Freedonia include:

- Chemicals • Plastics • Life Sciences • Packaging • Building Materials • Security & Electronics • Industrial Components & Equipment • Automotive & Transportation Equipment • Household Goods • Energy/Power Equipment

Freedonia Custom Research

Freedonia Custom Research delivers the same high quality, thorough and unbiased assessment of an industry or market as an industry study. Since the research initiative is based upon a company’s specific needs, companies harness Freedonia’s research capabilities and resources to answer unique questions. When you leverage the results of a Freedonia Custom Research engagement, you are able to obtain important answers to specific questions and issues associated with: mergers and acquisitions, new product launches/development, geographic expansion, entry into new markets, strategic business planning, and investment and funding decisions.

Freedonia Custom Research is ideal for companies seeking to make a strategic difference in the status quo and focus on future business growth. Working side by side with clients, Freedonia’s team is able to define a research project that is custom-tailored to answer specific questions and provide the basis from which a company can make informed business decisions.

The Freedonia Group, Inc. 767 Beta Drive • Cleveland, OH • 44143-2326 • USA • Web site: www.freedoniagroup.com
Tel US: 800.927.5900 or +1 440.684.9600 • Fax: +1 440.646.0484 • e-mail: info@freedoniagroup.com

Click here to learn more about Freedonia

Click here to learn more about Custom Research

Click here for complete title list

Click here to visit freedoniagroup.com