Air Pollution Control in China

Industry Study with Forecasts to 2010 & 2015

Study #2163 | April 2007 | $4900 | 191 pages
Table of Contents

EXECUTIVE SUMMARY

MARKET ENVIRONMENT
General .............................................. 4
Demographic Trends ................................ 5
Macroeconomic Outlook .......................... 8
Manufacturing Outlook .......................... 10
Energy Consumption Overview ................. 12
  Energy Sources ................................ 12
    Coal ........................................... 13
    Oil ........................................... 14
    Natural Gas ................................ 14
    Other .......................................... 15
Energy Consumption Outlook ..................... 16
Pollution Abatement Overview .................. 17
Environmental & Regulatory Factors ............ 20
International Agreements ......................... 23
Montreal Protocol ................................ 23
Kyoto Protocol ................................... 24
Historical Market Trends ......................... 26
Foreign Trade ................................... 28

EMISSIONS OVERVIEW
General ............................................. 31
Gaseous Pollutants ............................... 34
  Sulfur Dioxide ................................ 35
  Nitrogen Oxides ............................... 37
  Other Gaseous Emissions ...................... 39
Particulates ...................................... 40
  Smog ........................................... 42
  Dust ........................................... 43
Air Pollution Emissions by Source .............. 45
  Utilities ...................................... 45
  Manufacturing ................................ 47
  Transportation ................................. 49
Other Industries ................................ 50
Greenhouse Gases ............................... 52
  Carbon Dioxide ............................... 54
  Methane ...................................... 56
  Nitrous Oxide ................................ 56
Fluorinated Gases ................................ 57

EQUIPMENT & CONSUMABLES
General ............................................. 58
  Equipment & Systems ......................... 61
    Particulate Removal ........................ 62
      Electrostatic Precipitators .............. 63
    Baghouse .................................... 65
    Other ........................................ 66
  Gaseous Pollutant Control .................... 67
    Sulfur Dioxide ................................ 68
    Nitrogen Oxides ............................ 70
    Other Stationary ............................ 71
    Mobile Sources ............................. 72

MARKETS
General ............................................. 82
  Manufacturing ................................ 84
    Chemicals & Petroleum ..................... 86
      Acid ....................................... 86
      Refinery .................................. 87
    Metals ....................................... 88
      Blast Furnaces ............................ 88
      Coke Ovens ................................ 89
      Basic Oxygen Furnaces ................... 89
    Electric Furnaces ........................... 90
    Sinter Plants ................................ 90
    Cement ...................................... 90
Other Manufacturing ................................ 92
  Utilities ...................................... 92
    Utilities Industry Overview ............... 92
    Utilities Market Demand .................... 93
Transportation .................................... 95
  Automobile Industry Overview .............. 96
    China’s WTO Membership .................... 96
    Competitive Pressure ....................... 97
Other Transportation Industries Overview .... 98
  Transportation Market Demand ............... 99
Other Markets ................................... 101

REGIONAL TRENDS
General ............................................. 104
  Regional Demographic & Economic Trends ... 107
    Population Patterns ......................... 108
  Economic Outlook ............................. 109
  Air Pollution Emissions in China by Region 110
    Air Pollution Control Product .......... 111
      Demand in China ........................... 112
      Central-North ................................ 115
      Northeast ................................... 119
      Central-East ................................ 123
      Central-South ................................ 126
      Southwest .................................. 130
      Northwest .................................. 134

INDUSTRY STRUCTURE
General ............................................. 137
  Market Share .................................. 138
    Fujian Longking ............................. 139
    Zhejiang Feida ................................ 140
    Jiangsu Sujing .............................. 140
    Henan SINOMA ................................ 140

COMPANY PROFILES
Anhui Yiyi Environmental Protection Equipment ........................................ 148
Beijing Greentec Environment Group ............ 149
Beijing Yingtelai Technology .................... 151
BG Group ......................................... 152
BWF Offermann, Schmid & Company ................ 154
Calgon Carbon ................................... 156
China Energy Conservation Investment ......... 158
Chongqing Height Environment Preservation Technology ...................................... 159
Dandong Shifa Industry Filter Cloth .......... 160
Donaldson Company ................................ 161
Enelco Environmental Technology Anhui ...... 164
EnvironSys International ......................... 165
Foshan Analytical Instrument .................... 166
Fujian Longking .................................. 167
Gore (WL) & Associates Incorporated .......... 168
Guilin REECAT Environmental Industrial .... 170
Hebei Botou Dust Remover Manufacturing Installation Engineering ......................... 172
Henan SINOMA Environmental Protection Technology .................................... 173
Jiangsu Sujing Purification Group ............... 174
Johnson Matthey plc ............................ 175
Muyang Group .................................... 176
Shaanxi KaiDa Chemical Engineering .......... 177
Sichuan Hengtai Environmental Technology .. 178
Taijuan Zhonglu Environmental Protection Technology .................................. 179
Weifu High-Technology .......................... 180
Wuhan Tianhong Intelligent Apparatus .......... 181
Wujian Kelin Group ............................... 182
Xi’an UnionFilter Engineering .................... 183
Xiamen Savings Environmental Industrial ... 184
Yuanda Environmental Industrial ................ 185
Zhejiang Feida Environmental Science & Technology ............................... 186
Zhejiang Huate Environment Protection Equipment .......................................... 186
Zhejiang Jiahu Electronics ....................... 187
Zhejiang Jiehua Environment Science and Technology ..................................... 188
Zhejiang Tianlan Desulfurization and Dust-Removal ..................................... 189
Other Companies Mentioned in Study .......... 190
List of Tables & Charts

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

MARKET ENVIRONMENT
1 Population of China .............................. 7
Chn Population of China by Age ............. 7
2 Gross Domestic Product
 of China .................................................. 10
3 Manufacturing Value Added
in China ................................................... 12
4 Energy Consumption Overview ..... 17
5 Pollution Control Expenditures .... 20
6 Air Pollution Control Product
Demand, 1995-2005 ...................... 27
Chn Air Pollution Control Product
Demand, 1995-2005 ............... 28
7 Chinese Foreign Trade in
Air Pollution Control
Equipment & Consumables ......... 30

EMISSIONS OVERVIEW
1 Air Pollution Emissions by Type .. 33
Chn Air Pollution Emissions
by Type, 2005 ......................... 33
2 Gaseous Pollutant Emissions
by Type ........................................... 34
3 Sulfur Dioxide Emissions
by Source ....................................... 37
4 Nitrogen Oxides Emissions
by Source ....................................... 39
5 Other Gaseous Emissions
by Source ........................................ 40
6 Particulate Emissions by Type ... 41
7 Smog Emissions by Source ... 43
8 Dust Emissions by Source ....... 44
9 Air Pollution Emissions
by Source) ................................. 45
10 Utilities Industry Emissions ...... 47

11 Manufacturing Industry
Emissions ......................................... 48
12 Transportation Industry
Emissions ........................................ 50
13 Other Industries Emissions ..... 51
14 Greenhouse Gas Emissions
in China .......................................... 54

EQUIPMENT & CONSUMABLES
1 Air Pollution Control Product
Demand .............................................. 60
Chn Air Pollution Control Product
Demand, 2005 ......................... 61
2 Air Pollution Control
Equipment & Systems
Demand ........................................ 62
3 Particulate Removal
Equipment & Systems
Demand ........................................ 63
4 Electrostatic Precipitator
Demand ........................................... 65
5 Gaseous Pollutant Removal
Equipment & Systems
Demand ........................................ 68
6 Sulfur Dioxide Removal
Equipment & Systems
Demand ........................................ 69
7 Nitrogen Oxides Removal
Equipment & Systems
Demand ........................................ 71
8 Mobile Sources Air Pollution
Control Equipment &
Systems Demand ...................... 73
Chn Air Pollution Control Markets,
2005 .............................................. 83

REGIONAL TRENDS
1 Population of China
by Region ........................................... 109
2 Gross Domestic Product
of China by Region ................. 110
3 Air Pollution Emissions
in China by Region .......... 112
4 Air Pollution Control Product
Demand in China by Region .... 114
Chn Air Pollution Control Demand
in China by Region, 2005 ...... 115
Chn Central-North Region of China ... 117
5 Central-North Region
of China: Air Pollution
Control Product Demand .... 119
Chn Northeast Region of China ..... 121
6 Northeast Region of China:
Air Pollution Control
Product Demand .............. 122
Chn Central-East Region of China .. 124
7 Central-East Region of China:
Air Pollution Control
Product Demand .......... 126
Chn Central-South Region of China .... 128
8 Central-South Region of China:
Air Pollution Control
Product Demand .......... 130
Chn Southwest Region of China .... 132
9 Southwest Region of China:
Air Pollution Control
Product Demand .......... 133
Chn Northwest Region of China...... 135
10 Northwest Region of China:
Air Pollution Control
Product Demand .......... 136

INDUSTRY STRUCTURE
1 Revenue Data: Selected
Air Pollution Control
Companies, 2005 ................. 138
Chn Air Pollution Control
Market Share in China
by Company, 2005 .......... 139
China was the world’s largest sulfur dioxide producer in 2005, as well as the world’s leading emitter of other air pollutants, and the government has taken actions to address these problems.

Demand in China to rise 17.7% annually through 2010

Demand for air pollution control products in China will rise nearly 18 percent annually through 2010 to ¥67 billion. Advances will be primarily driven by the government’s air pollution control spending plans and increasingly stringent environmental protection legislation.

China was the world’s largest sulfur dioxide producer in 2005, as well as the world’s leading emitter of other air pollutants, and the government has taken actions to address these problems. For example, through the Clean Development Mechanism (CDM), China provides carbon credits to developed countries if they invest in projects that help reduce carbon emissions in China. With many such CDM projects underway, the country will become increasingly active in both carbon emission control and Certified Emission Reductions trading, both of which will support growth in China’s air pollution control product market through 2010.

In addition, China has stepped up efforts to reduce greenhouse gas emissions, which have been accelerating due to the country’s rapid pace of industrialization and dependence on coal for its energy needs. For example, in April 2007 China’s Premier Wen Jiabao pledged to phase out tax breaks and discounts on land and electricity for many of the country’s worst polluters.

Particulate removal equipment to offer best prospects

Electrostatic precipitators and baghouse systems are the two major product types, accounting for nearly all of particulate removal equipment and system demand and more than half of total demand. Particulate removal products will also post the fastest gains through 2010, rising more than 20 percent annually to ¥41 billion. Among components and consumables, filters will remain the largest product type, while catalysts are expected to post the fastest gains, primarily the result of stricter emissions standards for motor vehicles.

Manufacturing to remain largest market

Manufacturing will remain the largest market for air pollution control products in 2010, with three industries -- chemicals and petroleum, metals, and cement -- accounting for nearly 40 percent of total demand. In 2005, manufacturing concerns spent over ¥1,000 on control products per metric ton of pollutant emitted, more than three times the rate for utilities. Utilities will remain the second largest market due primarily to China’s large number of coal burning power plants, and will post faster advances as more resources are devoted to curbing notoriously high levels of emissions.
MARKETS

Manufacturing

Demand for air pollution control products in manufacturing markets is forecast to advance over 16 percent annually to ¥30 billion in 2010. The three largest industry segments, chemicals and petroleum, metal production, and cement, which together accounted for more than 90 percent of air pollution control product demand in 2005, are major drivers of this growth. Although the performance of individual manufacturing industries has an impact on air pollution control expenditures, regulatory pressures are also a major factor. For example, small-scale, inefficient cement operations, which are less likely to devote expenditures to air pollution control, since their resources and potential rewards are rather small.

Manufacturing industries are the largest collective market for air pollution control products, accounting for nearly 45 percent of total demand in 2005. Manufacturing industries consume significant amounts of fossil fuels, including petroleum, coal and natural gas. Much of this fuel demand is used to run power generation equipment. In addition to emissions resulting from the combustion of fuels, manufacturing firms face a range of other potential air pollution problems, including solvent releases, particulates generation and the use of a range of chemicals, many of which pose environmental challenges. Manufacturing markets consume the entire range of air pollution control products, both equipment and consumables.

Not only are manufacturing markets significant consumers of air pollution control products, they also face varying degrees of regulatory pressure. In general, manufacturing industries expend larger sums on air pollution control per metric ton of pollutant generated than any other major market, primarily due to the large-scale nature of manufacturing operations and the resultant large-scale nature of air pollution control products used. For example, the cost of a catalytic converter for a motor vehicle is less than ¥1,000 in China, industrial...
**Sample Profile, Table & Forecast**

**TABLE IV-5**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Pollution Control Product Dmd</td>
<td>4765</td>
<td>8957</td>
<td>29715</td>
<td>67200</td>
<td>135000</td>
</tr>
<tr>
<td>% gaseous pollutant removal</td>
<td>31.3</td>
<td>32.4</td>
<td>34.5</td>
<td>28.6</td>
<td>23.7</td>
</tr>
<tr>
<td>Gaseous Pollutant Removal Equip Stationary Source:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sulfur Dioxide</td>
<td>1490</td>
<td>2905</td>
<td>10245</td>
<td>19250</td>
<td>32000</td>
</tr>
<tr>
<td>Nitrogen Oxides</td>
<td>1250</td>
<td>2355</td>
<td>8750</td>
<td>16755</td>
<td>27870</td>
</tr>
<tr>
<td>Sulfur Dioxide</td>
<td>900</td>
<td>1650</td>
<td>6500</td>
<td>12500</td>
<td>20500</td>
</tr>
<tr>
<td>Nitrogen Oxides</td>
<td>340</td>
<td>685</td>
<td>2215</td>
<td>4145</td>
<td>6970</td>
</tr>
<tr>
<td>Other</td>
<td>10</td>
<td>20</td>
<td>35</td>
<td>110</td>
<td>400</td>
</tr>
<tr>
<td>Mobile Source</td>
<td>240</td>
<td>550</td>
<td>1495</td>
<td>2495</td>
<td>4130</td>
</tr>
</tbody>
</table>

**Sulfur Dioxide --** Demand for equipment and systems in sulfur dioxide control applications is forecast to advance 14 percent annually to ¥12.5 billion in 2010. Growth will be most robust in catalysts, which represent a small base currently, but are increasingly being used to reduce emissions of sulfur dioxide. Growth in total sulfur dioxide control equipment and systems is projected to...

--Section IV, pg. 68
Five Convenient Ways to Order

ONLINE: www.freedoniagroup.com
MAIL: Print out and complete the order form and send to The Freedonia Group (see address at the bottom of this form)
PHONE: Call toll free, 800.927.5900 (US) or +1 440.684.9600
FAX: +1 440.646.0484 (US)
EMAIL: info@freedoniagroup.com

Free Handling & Shipping
There is NO charge for handling or UPS shipping in the US. Expect delivery in 3 to 5 business days. Outside the US, Freedonia provides free airmail service. Express delivery is available at cost.

Orders Outside of the US
Checks must be made payable in US funds, drawn against a US bank and mailed directly to The Freedonia Group. For wire transfers please contact our customer service department at info@freedoniagroup.com. Credit cards accepted.

Credit Card Orders
For convenience, Freedonia accepts American Express, MasterCard or Visa. Credit card purchases must include account number, expiration date and authorized signature.

Save 15%
If you order three (3) different titles at the same time, you can receive a 15% discount. If your order is accompanied by a check or wire transfer, you may take a 5% cash discount (discounts do not apply to Corporate Use Licenses).

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.

Click here to learn more about the Corporate Use License

Air Pollution Control in China........................................... $4900
☐ Corporate Use License (add to study price) *
☐ Additional Print Copies @ $500 each *
Total (including selected option) $______________
☐ Enclosed is my check (5% discount) drawn on a US bank and payable to The Freedonia Group, Inc., in US funds (Ohio residents add 7.75% sales tax)
☐ Bill my company ☐ American Express ☐ MasterCard ☐ Visa
MM□YY□
☐ Signature

☐ 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.

☐ 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
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.