Production and Market of Chlorpyrifos in China

The Sixth Edition

October 2018

Researched & Prepared by:
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1. Introduction
This is the sixth edition report on China's chlorpyrifos industry finished by CCM in October 2018. It attaches great importance to the following parts:

- Update the information of chlorpyrifos technical and formulations in China in the past years, including registration, supply, export, price and demand;
- Identify key producers and potential producers of chlorpyrifos in China;
- Emphasize on market demand breakdown by volume of chlorpyrifos during 2013–2017, as well as its consumption structure by crop;
- Figure out the development status and influencing factors of the chlorpyrifos industry in China including drivers and barriers;
- Forecast on chlorpyrifos in terms of supply, demand and export during 2018–2022;
- Get a clear understanding of the future development trend and identify China's position of chlorpyrifos industry from a global perspective;
- Analyse substitutes of chlorpyrifos products in the domestic market.

2. Approach for this report
The report is based on data sourced by diverse methods, as follows:

- Desk research
Desk research includes access to published magazines, journals, government statistics, industry statistics, customs statistics, association seminars as well as information on the Internet. Much work has gone into the compilation and analysis of the information obtained. Where necessary, information has been checked with Chinese insecticides participants regarding intelligence related to market structure and performance characteristics as key producers, key end users, production levels, end user demand and so on.

- Field Survey
CCM has conducted an extensive field survey using telephone interviews in order to survey the market for chlorpyrifos in China.

The interviewees included the following groups:
- Key producers
- Key end users
- Key traders
- Material suppliers
- Associations involved
- Industry experts

- Network search
CCM employs a network to contact industry participants by using B2B websites and software. CCM also obtains registration information via the network.
Data processing and presentation

The data collected and compiled was variously sourced from:

- CCM's database
- Published articles from periodicals, magazines, journals and third party databases
- Statistics from governments and international institutes
- Telephone interviews with domestic producers, joint ventures, service suppliers and government agencies
- Third-party data providers
- Customs statistics
- Comments from industrial experts
- Professional databases
- Information from the Internet

The data has been combined and cross-checked to ensure that this report is as accurate and methodologically sound as possible. Throughout the process, a series of discussions were held within CCM to systematically analyze the data and draw appropriate conclusions.

Glossary

In this report, there are many abbreviations for specifications of chlorpyrifos formulations and intermediate products. They are listed as follows:

- **STCP** 3,5,6-Trichloropyridin-2-ol sodium
- **DETC** O,O-diethyl thiophosphoryl chloride
- **AI(s)** Active ingredient(s)
- **GR** Granule
- **EW** Emulsion oil in water
- **ME** Micro-emulsion
- **RG** Bait
- **CS** Aqueous capsule suspension
- **WP** Wettable powder
- **CAGR** Compound annual growth rate
- **GDP** Gross domestic product
- **MNC(s)** Multinational corporation(s)
- **MIIT** The Ministry of Industry and Information Technology of China
- **CCPIA** The China Crop Protection Industry Association
- **ICAMA** The Institute for the Control of Agrochemicals, Ministry of Agriculture

Chlorpyrifos is defined as chlorpyrifos technical in the report, if not specified.
3. Executive summary

With fast development in recent years, China's pesticide industry becomes more and more important in the global pesticide industry chain. Chlorpyrifos, as one of the major insecticides in China, also takes an important role in the global market. China is not only a chlorpyrifos producer that can satisfy its own agricultural demand, but also an important chlorpyrifos exporter in the world.

Production & producers

Nowadays, China is a major chlorpyrifos supplier in the world. China's total capacity of chlorpyrifos technical has reached XXX t/a as of the end of 2017. And China produced about XXX tonnes of chlorpyrifos technical in 2017. The production of chlorpyrifos will be gradually concentrated in producers who have advanced production technology and wide distribution channels, such as Nanjing Red Sun Co., Ltd. (Nanjing Red Sun) and Hubei Benxing Chemical Industry Co., Ltd. (Hubei Benxing). There were XXX active players with a capacity of XXX t/a as of Aug. 2018.

Export

Generally, the total export volume of chlorpyrifos in China has seen a continuous growth, hitting XXX tonnes in 2017 (calculated as 100% AI), with a CAGR of XXX % during 2015–2017. Nanjing Red Sun is the largest exporter of chlorpyrifos technical and formulations in China. In 2017, its total export volume of chlorpyrifos (including technical and formulation products, calculated as 100% AI) was about XXX tonnes, accounting for XXX % of the total in China. Chinese chlorpyrifos now is mainly exported to XXX, XXX and XXX with an export
volume of XXX tonnes (calculated as 100% AI) in 2017, accounting for XXX % of the total.

Price

The ex-works price of chlorpyrifos technical decreased during Nov. 2014–Aug. 2016, but it showed an upward trend from Aug. 2016 to Dec. 2017. The supply of the product remained tight on the market in 2017, so the price kept at a high level.

Domestic demand

Domestic actual consumption of chlorpyrifos has shown an uptrend from 2013 to 2014, but it decreased from XXX tonnes in 2014 to XXX tonnes in 2017, because of the decline in cotton planting area and a ban on chlorpyrifos use on vegetables in China from 31 Dec., 2016.

4. What's in this report?

Note: Key data/information in this sample page is hidden, while in the report it is not.

1 Introduction to chlorpyrifos industry in China

1.1 Overview of insecticide industry

Figure 1.1-1 Output volume and output share of insecticides in pesticides in China, 2013–2017

Note: The output was converted to 100% technical.

Source: National Bureau of Statistics of China
1.2 Position of chlorpyrifos in insecticide industry

Figure 1.2-1 Output share of chlorpyrifos technical in insecticide industry in China, 2013–2017

Source: National Bureau of Statistics of China & CCM

2 Supply & demand of chlorpyrifos in China

Table 2.2.1-2 Valid registrations of chlorpyrifos single formulations in China, as of 13 Sept. 2018

<table>
<thead>
<tr>
<th>Type</th>
<th>Common AI concentration</th>
<th>Registration number</th>
<th>Proportion</th>
</tr>
</thead>
<tbody>
<tr>
<td>EC</td>
<td>XXX</td>
<td>XXX</td>
<td>XXX</td>
</tr>
<tr>
<td>......</td>
<td></td>
<td>XXX</td>
<td>XXX</td>
</tr>
<tr>
<td>RG</td>
<td>XXX</td>
<td>XXX</td>
<td>XXX</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>XXX</td>
<td>XXX</td>
</tr>
</tbody>
</table>

Note: Due to rounding, shares added may not equal 100%.

Source: ICAMA & CCM
Table 2.2.1-3 Valid registrations of chlorpyrifos mixed formulations in China, as of 13 Sept. 2018

<table>
<thead>
<tr>
<th>Active ingredients</th>
<th>Common AI concentration (including two AIs)</th>
<th>Registration number</th>
<th>Proportion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cypermethrin·chlorpyrifos</td>
<td>XXX</td>
<td>XXX</td>
<td>XXX</td>
</tr>
<tr>
<td>...</td>
<td>XXX</td>
<td>XXX</td>
<td>XXX</td>
</tr>
<tr>
<td>XXX</td>
<td>XXX</td>
<td>XXX</td>
<td>XXX</td>
</tr>
<tr>
<td>Others</td>
<td>XXX</td>
<td>XXX</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>XXX</td>
<td>XXX</td>
<td></td>
</tr>
</tbody>
</table>

Source: ICAMA & CCM

2.2.2 Summary of technical production, 2013–2017

Table 2.2.2-1 Capacity of the 19 producers of chlorpyrifos technical in China, 2017

<table>
<thead>
<tr>
<th>No.</th>
<th>Capacity distribution</th>
<th>Number of producer</th>
<th>Capacity, 2017</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Volume, t/a</td>
</tr>
<tr>
<td>1</td>
<td>≥10,000</td>
<td>XXX</td>
<td>XXX</td>
</tr>
<tr>
<td>2</td>
<td>≥5,000 and &lt;10,000</td>
<td>XXX</td>
<td>XXX</td>
</tr>
<tr>
<td>3</td>
<td>≥3,000 and &lt;5,000</td>
<td>XXX</td>
<td>XXX</td>
</tr>
<tr>
<td>4</td>
<td>&lt;3,000</td>
<td>XXX</td>
<td>XXX</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>XXX</td>
<td>XXX</td>
</tr>
</tbody>
</table>

Source: CCM

Table 2.2.2-2 Capacity and output of main chlorpyrifos technical producers in China, 2015–2017

<table>
<thead>
<tr>
<th>No.</th>
<th>Producer</th>
<th>Abbreviation</th>
<th>Location</th>
<th>Status, as of Aug. 2018</th>
<th>Launch time</th>
<th>2017</th>
<th>2016</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Capacity, t/a</td>
<td>Output, tonne</td>
<td>Capacity, t/a</td>
</tr>
<tr>
<td>1</td>
<td>Hubei Benxing Chemical Industry Co., Ltd.</td>
<td>XXX</td>
<td>XXX</td>
<td>XXX</td>
<td>XXX</td>
<td>XXX</td>
<td>XXX</td>
<td>XXX</td>
</tr>
<tr>
<td>2</td>
<td>XXX</td>
<td>XXX</td>
<td>XXX</td>
<td>XXX</td>
<td>XXX</td>
<td>XXX</td>
<td>XXX</td>
<td>XXX</td>
</tr>
<tr>
<td></td>
<td>XXX</td>
<td>XXX</td>
<td>XXX</td>
<td>XXX</td>
<td>XXX</td>
<td>XXX</td>
<td>XXX</td>
<td>XXX</td>
</tr>
<tr>
<td></td>
<td>XXX</td>
<td>XXX</td>
<td>XXX</td>
<td>XXX</td>
<td>XXX</td>
<td>XXX</td>
<td>XXX</td>
<td>XXX</td>
</tr>
</tbody>
</table>

Note: Manufacturers are ranked by capacity 2017.

Source: CCM
Figure 2.2.2-1 Capacity and output of chlorpyrifos technical in China, 2013–2017

Source: CCM

Table 2.2.2-3 Capacity and output distribution of chlorpyrifos technical in China, 2017

<table>
<thead>
<tr>
<th>No.</th>
<th>Province</th>
<th>Number of active producer, 2017</th>
<th>Capacity, 2017</th>
<th>Output, 2017</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Volume, t/a</td>
<td>Share</td>
</tr>
<tr>
<td>1</td>
<td>Jiangsu</td>
<td>XXX</td>
<td>XXX</td>
<td>XXX</td>
</tr>
<tr>
<td>2</td>
<td>XXX</td>
<td>XXX</td>
<td>XXX</td>
<td>XXX</td>
</tr>
<tr>
<td></td>
<td>......</td>
<td>XXX</td>
<td>XXX</td>
<td>XXX</td>
</tr>
<tr>
<td>8</td>
<td>XXX</td>
<td>XXX</td>
<td>XXX</td>
<td>XXX</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>XXX</td>
<td>XXX</td>
<td>XXX</td>
</tr>
</tbody>
</table>

Source: CCM
2.3 Circulation

Figure 2.3.1.1-1 Export volume of chlorpyrifos in China, 2015–2017, tonne

![Bar chart showing export volume of chlorpyrifos in China, 2015–2017.]

Source: China Customs & CCM

Table 2.3.1.1-1 Export of chlorpyrifos in China by month, 2017

<table>
<thead>
<tr>
<th>Month</th>
<th>Technical</th>
<th>40% EC</th>
<th>480g/L EC</th>
<th>Other formulations</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Volume, tonne</td>
<td>Price, USD/kg</td>
<td>Volume, tonne</td>
<td>Price, USD/kg</td>
</tr>
<tr>
<td>1</td>
<td>XXX</td>
<td>XXX</td>
<td>XXX</td>
<td>XXX</td>
</tr>
<tr>
<td>2</td>
<td>XXX</td>
<td>XXX</td>
<td>XXX</td>
<td>XXX</td>
</tr>
<tr>
<td>......</td>
<td>XXX</td>
<td>XXX</td>
<td>XXX</td>
<td>XXX</td>
</tr>
<tr>
<td>12</td>
<td>XXX</td>
<td>XXX</td>
<td>XXX</td>
<td>XXX</td>
</tr>
</tbody>
</table>

Source: China Customs & CCM

Table 2.3.1.1-4 Export of chlorpyrifos in China by exporter, 2017, tonne

<table>
<thead>
<tr>
<th>No.</th>
<th>Exporter</th>
<th>400g/L EC</th>
<th>480g/L EC</th>
<th>Technical</th>
<th>Others</th>
<th>100% AI volume</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Nanjing Red Sun Co., Ltd.</td>
<td>XXX</td>
<td>XXX</td>
<td>XXX</td>
<td>XXX</td>
<td>XXX</td>
</tr>
<tr>
<td>2</td>
<td>XXX</td>
<td>XXX</td>
<td>XXX</td>
<td>XXX</td>
<td>XXX</td>
<td>XXX</td>
</tr>
<tr>
<td>......</td>
<td>XXX</td>
<td>XXX</td>
<td>XXX</td>
<td>XXX</td>
<td>XXX</td>
<td>XXX</td>
</tr>
<tr>
<td>20</td>
<td>XXX</td>
<td>XXX</td>
<td>XXX</td>
<td>XXX</td>
<td>XXX</td>
<td>XXX</td>
</tr>
<tr>
<td>Others</td>
<td>XXX</td>
<td>XXX</td>
<td>XXX</td>
<td>XXX</td>
<td>XXX</td>
<td>XXX</td>
</tr>
<tr>
<td>Total</td>
<td>XXX</td>
<td>XXX</td>
<td>XXX</td>
<td>XXX</td>
<td>XXX</td>
<td>XXX</td>
</tr>
</tbody>
</table>

Source: China Customs & CCM
Table 2.3.1.1-7 Export of chlorpyrifos in China by destination, 2017, tonne

<table>
<thead>
<tr>
<th>No.</th>
<th>Destination</th>
<th>400g/L EC</th>
<th>480g/L EC</th>
<th>Technical</th>
<th>Others</th>
<th>100% AI volume</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>XXX</td>
<td>XXX</td>
<td>XXX</td>
<td>XXX</td>
<td>XXX</td>
<td>XXX</td>
</tr>
<tr>
<td>2</td>
<td>XXX</td>
<td>XXX</td>
<td>XXX</td>
<td>XXX</td>
<td>XXX</td>
<td>XXX</td>
</tr>
<tr>
<td>......</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>XXX</td>
<td>XXX</td>
<td>XXX</td>
<td>XXX</td>
<td>XXX</td>
<td>XXX</td>
</tr>
<tr>
<td>Others</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>XXX</td>
<td>XXX</td>
<td>XXX</td>
<td>XXX</td>
<td>XXX</td>
<td>XXX</td>
</tr>
</tbody>
</table>

Source: China Customs & CCM

2.4 Chlorpyrifos consumption in China

Table 2.4-1 Domestic consumption of chlorpyrifos in China, 2013–2017, tonne

<table>
<thead>
<tr>
<th>Year</th>
<th>Output</th>
<th>Export</th>
<th>Import</th>
<th>Apparent consumption</th>
<th>Actual consumption</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>XXX</td>
<td>XXX</td>
<td>XXX</td>
<td>XXX</td>
<td>XXX</td>
</tr>
<tr>
<td>2014</td>
<td>XXX</td>
<td>XXX</td>
<td>XXX</td>
<td>XXX</td>
<td>XXX</td>
</tr>
<tr>
<td>2015</td>
<td>XXX</td>
<td>XXX</td>
<td>XXX</td>
<td>XXX</td>
<td>XXX</td>
</tr>
<tr>
<td>2016</td>
<td>XXX</td>
<td>XXX</td>
<td>XXX</td>
<td>XXX</td>
<td>XXX</td>
</tr>
<tr>
<td>2017</td>
<td>XXX</td>
<td>XXX</td>
<td>XXX</td>
<td>XXX</td>
<td>XXX</td>
</tr>
</tbody>
</table>

Note: 1. Domestic apparent consumption=Technical output + Import - Total export
2. Data above is calculated by 97% chlorpyrifos technical.

Source: CCM

Table 2.4-2 Actual consumption of chlorpyrifos by crop in China, 2013–2017, tonne

<table>
<thead>
<tr>
<th>Year</th>
<th>Rice Consumption</th>
<th>Share</th>
<th>Fruit Consumption</th>
<th>Share</th>
<th>Cotton Consumption</th>
<th>Share</th>
<th>Vegetable Consumption</th>
<th>Share</th>
<th>Others Consumption</th>
<th>Share</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>XXX</td>
<td>XXX</td>
<td>XXX</td>
<td>XXX</td>
<td>XXX</td>
<td>XXX</td>
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Note: Consumption volume on crops is calculated by 97% chlorpyrifos technical.

Source: CCM
3 Supply of key raw materials & intermediates of chlorpyrifos

Table 3.1-1 Capacity and output of active trichloroacetyl chloride producers in China, 2017

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<th>Abbreviation</th>
<th>Location</th>
<th>Capacity, t/a</th>
<th>Output, tonne</th>
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Source: CCM

Figure 3.1-1 Ex-works price of trichloroacetyl chloride (99%) in China, May 2012–Aug. 2018

Source: CCM

http://www.cnchemicals.com
4.2 Supply and demand, 2018–2022

Figure 4.2-1 Forecast on output of chlorpyrifos technical in China, 2018–2022

Source: CCM

If you want more information, please feel free to contact us
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