

Atrazine Market and Production in China

The Ninth Edition

December 2022

Researched & Prepared by:

Kcomber Inc.

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1 Executive Summary

Atrazine, a triazine herbicide, is widely used worldwide, due to its good herbicidal effect, safety to crops and cost-effectiveness. China is not only a big atrazine consumer, but also a key supplier.

- Production

During 2020–2022, the capacity of atrazine technical remained at 140,000 t/a. The output of atrazine technical recovered in 2020, but dropped slightly in 2021. In 2022, the output is expected to hit 86,800 tonnes, 11% higher than that in 2021.

- Import & export

China's atrazine is export-oriented. Export volume of atrazine technical and formulations (converted to 100% technical) usually takes large proportion to the domestic annual output; the figure was some 80% in 2020–2021. The export volume of atrazine products in China in Q1–Q3 2022 was some 56,395 tonnes, up by about 14% from 49,375 tonnes in Q1–Q3 2021. And Brazil was the largest importer of China's atrazine products in 2019–Q3 2022.

- Price

The ex-work price of atrazine technical increased since H2 2020, resulting from higher cost of its intermediates like cyanuric chloride, ethylamine and isopropylamine. Along the journey to recovery, it first climbed quietly then shot up in late 2021. In Jan–Nov. 2022, the ex-works price of atrazine technical in China has followed an overall downtrend though the price of its key raw material—cyanuric chloride stayed quite high.

- Consumption

In 2022, affected by the reducing planting area of corn and sugarcane and the policies of cutting down unit consumption of pesticides, the actual consumption volume of atrazine formulations in China is expected to reduce by 23.29% year on year.

2 Introduction & methodology

Atrazine Market and Production in China is CCM's eighth edition report on China's atrazine industry, finished in Dec. 2022.

Methodology and source

Desk research

Sources of desk research are various including published magazines, journals, government statistics, industrial statistics, customs statistics, association seminars as well as information from the Internet. A lot of work has been done to compile and analyse the information obtained. When necessary, checks were made with Chinese market players regarding market information such as production, demand, and competition.

Telephone interviews

CCM carried out extensive telephone interviews with major participants in the industry chain of the products mentioned in this report throughout upstream to downstream.

The interviewees cover:

- Manufacturers
- Traders
- Industrial associations
- Local governments
- Researchers and experts
- Farmers

Data processing and presentation

The data collected and compiled are sourced from:

- Published articles from Chinese periodicals, magazines, and journals
- Government statistics & customs statistics
- Telephone interviews with Chinese manufacturers, traders, government and farmers
- Comments from industrial experts
- CCM's database
- Information from the Internet
- Third-party databases

The data from various channels have been combined to make this report as precise and scientific as possible. Throughout the process, a series of internal discussions have been held in order to analyse the data and draw conclusions from them.

Definition and glossary

In this report, atrazine technical refers to 97% atrazine technical (TC); atrazine formulations refer to atrazine 38% SC, atrazine 48% WP, atrazine 50% SC, atrazine 80% WP and atrazine 90% WDG; when "atrazine" is mentioned, it includes both atrazine technical and atrazine formulations.

Apparent consumption equals production + import - export, which is one of the factors reflecting demand. Assuming the inventory stays the same every year, the apparent consumption also equals to the actual consumption.

Unit

USD: US dollar, currency unit in the US

RMB: currency unit in China, also named Renminbi

Tonne: ton, equals to metric ton in this report

/t: per tonne

t/a: tonne per year, tonne/annum

Table 2-1 Main abbreviations and their full names in the report

Abbreviation	Full name
AI	Active ingredient
ICAMA	The Institute for the Control of Agrochemicals, Ministry of Agriculture and Rural Affairs
SC	Suspension concentrate
SE	Suspension emulsion
WDG	Water dispersible granule
WP	Wettable powder
AS	Aqueous solution
EC	Emulsifiable concentrate
OD	Oil dispersion
CAGR	Compound annual growth rate

Source:CCM

Table 2-2 USD/CNY exchange rate, Jan. 2017–Dec. 2022

Year	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
2017	6.8918	6.8713	6.8932	6.8845	6.8827	6.8019	6.7772	6.7148	6.5909	6.6493	6.6300	6.6067	6.7662
2018	6.5079	6.3045	6.3352	6.2764	6.3670	6.4078	6.6157	6.8293	6.8347	6.8957	6.9670	6.9431	6.6070
2019	6.8482	6.7081	6.6957	6.7193	6.7344	6.8896	6.8716	6.8938	7.0883	7.0726	7.0437	7.0262	6.8826
2020	6.9614	6.9249	6.9811	7.0771	7.0690	7.1315	7.0710	6.9980	6.8498	6.7796	6.7050	6.5921	6.9284
2021	6.5408	6.4623	6.4754	6.5584	6.4895	6.3572	6.4709	6.4660	6.4680	6.4604	6.4192	6.3693	6.4615
2022	6.3794	6.3580	6.3014	6.3509	6.5672	6.6651	6.6863	6.7467	6.8821	7.0992	7.2081	7.1225	6.6972

Source:The People's Bank of China

3 Overview of atrazine industry in China

3.1 Brief introduction to pesticide industry in China

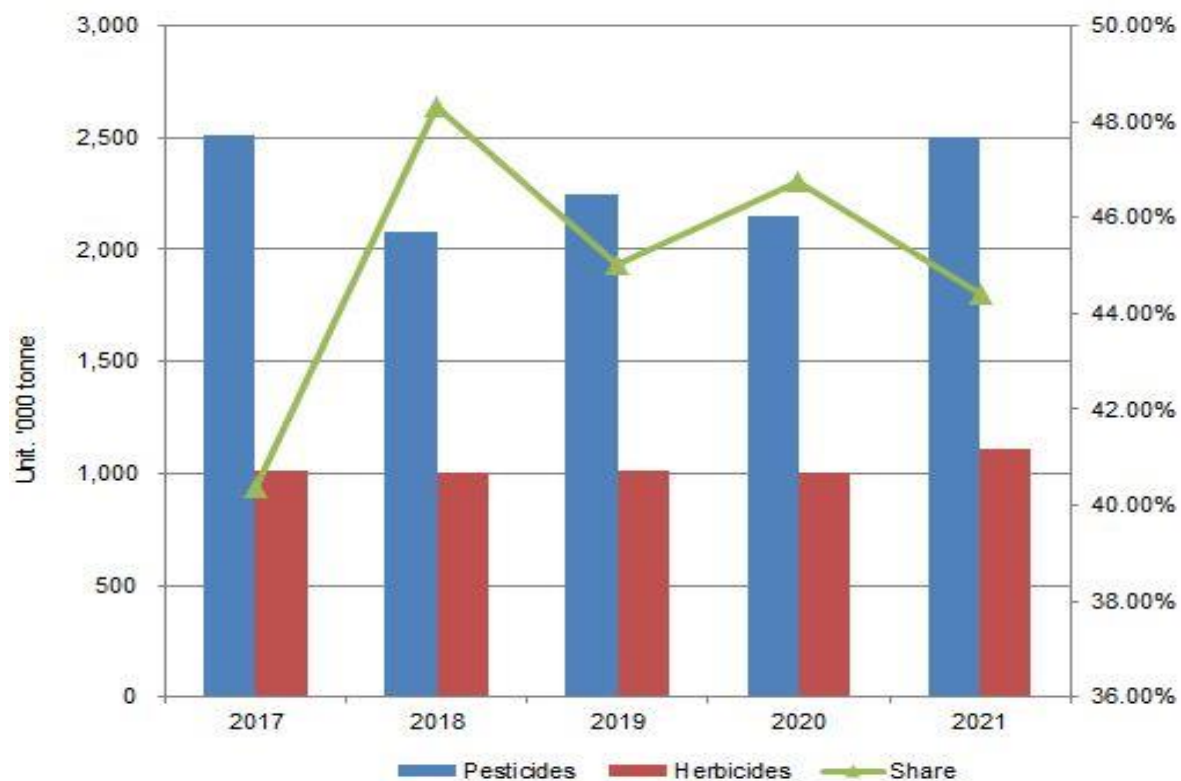
- Supply and demand

China is now the world's largest exporter of pesticides, and herbicide is an important pesticide category. In recent years, amid rising labor costs as well as the pursuit of higher efficiency and cost-effectiveness, herbicides have been widely used in agricultural production. However, the abuse of herbicides can easily lead to deterioration of the ecological environment and soil fertility. Therefore, in recent years, multiple environmental protection policies have been rolled out and the output of herbicides in China showed a general downward trend. But in 2021, China's herbicide output resumed growth, standing at 1,109,000 tonnes (converted to 100% technical, the same as below) and increasing by 10.46% year on year.

In terms of export, in 2021 China exported 2,202,000 tonnes of pesticides, a year-on-year drop of 12.41%. Yet the export volume of herbicides in 2021 stood at 1,390,000 tonnes, up by 12.46% year on year, accounting for 63%+ of the total pesticide exports, with the shares nearly 14% higher than that in 2020. The total value of herbicide exports rocketed by some 60% year on year to USD4.9 billion.

Thanks to the structural adjustment conducted in the pesticide industry and development of products with higher added value and efficacy, the structure of pesticide output in China has improved. China's output of herbicides showed a general uptrend in 2017–2020. In 2021, the shares of herbicides (calculated by 100% technical) was around 44.40%, which means that the herbicide still predominate in China's pesticide market.

Figure 3.1-1 Output and share of herbicides in China's pesticide industry, 2017–2021



Note: All the volumes are calculated by 100% technical.
Source: National Bureau of Statistics of China

- Import and export

Table 3.1-1 China's imports and exports of pesticides and herbicides, 2018–2021

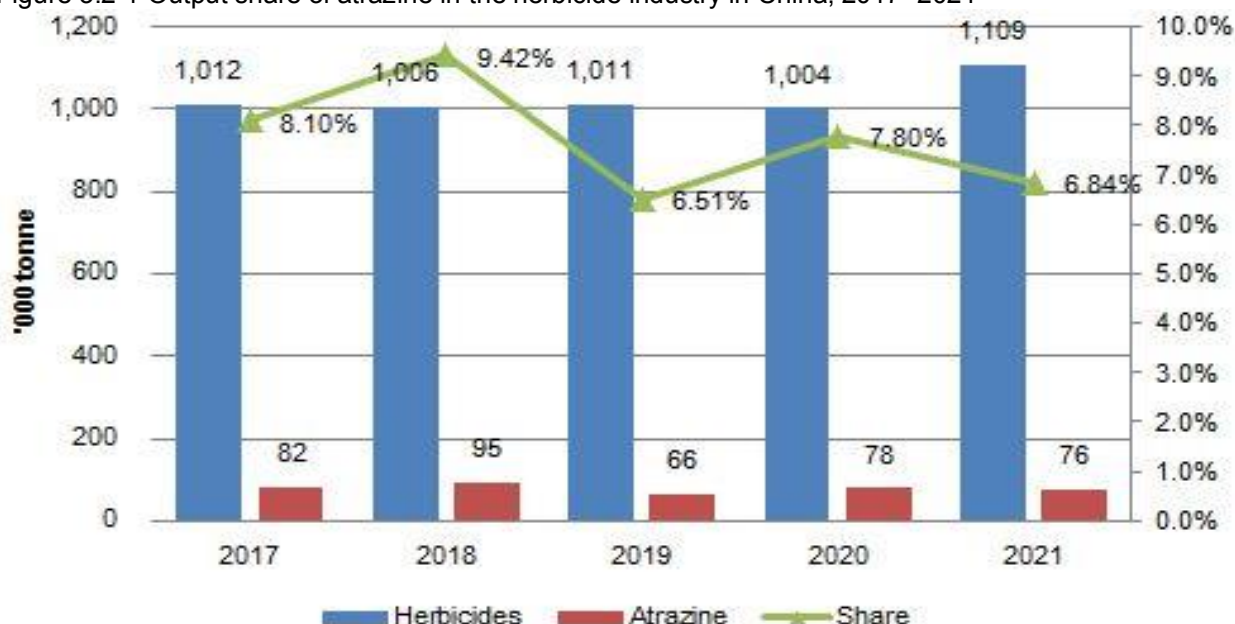
Year	Pesticides				Herbicides				Share of herbicides/pesticides			
	Import		Export		Import		Export		Import		Export	
	Volume, tonne	Value, million USD	Volume, tonne	Value, million USD	Volume, tonne	Value, million USD	Volume, tonne	Value, million USD	Volume	Value	Volume	Value
2018	79,000	489	1,405,400	8,073	23,000	149	989,900	4,355	29.11%	30.47%	70.44%	53.95%
2019	90,000	762	1,468,000	4,860	14,000	100	992,000	2,715	15.56%	13.12%	67.57%	55.86%
2020	110,000	911	2,514,000	7,624	14,000	78	1,236,000	3,069	12.73%	8.56%	49.16%	40.25%
2021	104,000	917	2,202,000	8,010	17,000	100	1,390,000	4,900	16.35%	10.91%	63.12%	61.17%

Source: National Bureau of Statistics of China

3.2 Position of atrazine in Chinese herbicide industry

Atrazine, a herbicide largely produced in China and foreign countries, is mainly used to control the growth of weeds in corn and sugarcane fields. It is popular amongst farmers for its wide-range of applications, safety to crops, good compatibility with other pesticides and high cost-effectiveness. However, atrazine has disadvantages including the long-term residual efficacy and injury to rotated crops such as soybean, wheat and rice.

Figure 3.2-1 Output share of atrazine in the herbicide industry in China, 2017–2021



Note: The data above are calculated by 100% technical.

Source: The National Bureau of Statistics of China & CCM

4 Registration of atrazine in China

Atrazine is mainly registered to control weeds in the fields of corn, sugarcane, sorghum, tea and fruit in China.

As of 30 Nov., 2022, there were 1,026 registrations of atrazine in China, of which 177 were single formulations (technical products excluded) and 823 mixed formulations. Registrations of atrazine technical were held by 26 companies. There were some registrants that held at least 20 atrazine-related registrations, such as Qiaochang Modern Agriculture Co., Ltd., Jilin Jinqiu Pesticide Co., Ltd., Liaoning Sanzheng Chemical Co., Ltd., Shandong Aokun Crop Science Co., Ltd., and Shandong Binnong Technology Co., Ltd.

Table 4-1 Annual new registrations of atrazine in China, as of 30 Nov., 2022

Year	Technical	Formulation	Total
Before 2015	21	460	481
2015	0	107	107
2016	1	80	81
2017	4	151	155
2018	0	137	137
2019	0	0	0
2020	0	13	13
2021	0	53	53
2022	0	-1	-1
Total	26	1,000	1,026

Source: The Institute for the Control of Agrochemicals, Ministry of Agriculture of the People's Republic of China (ICAMA)

Table 4-2 Registrations of atrazine technical in China, as of 30 Nov., 2022

No.	Registration code	Registrant	Registrant (CN)	Content	Expiry date
1	PD20080224	Shandong Weifang Rainbow Chemical Co., Ltd.	山东潍坊润丰化工股份有限公司	98%	2028/1/10
2	PD20070654	Liaoning Tianyi Pesticide Chemical Co., Ltd.	辽宁天一农药化工有限责任公司	97%	2027/12/16
3	PD20172024	Ningxia Gerui Fine Chemical Co., Ltd.	宁夏格瑞精细化工有限公司	98%	2027/9/18
4	PD20171964	Xiangshui Zhongshan Biological Technology Co., Ltd.	响水中山生物科技有限公司	97%	2027/9/18
5	PD20070230	Shandong Vicome Greenland Chemical Co., Ltd.	山东胜邦绿野化学有限公司	95%	2027/8/7
6	PD20121068	Jingma Chemicals Co., Ltd.	捷马化工股份有限公司	97%	2027/7/11
7	PD20171053	Inner Mongolia Miraculous Crop Science Co., Ltd.	内蒙古灵圣作物科技有限公司	98%	2027/5/30
8	PD20170559	Weihai Hanfu Biochemical Medicine Co., Ltd.	威海韩孚生化药业有限公司	98%	2027/4/9

No.	Registration code	Registrant	Registrant (CN)	Content	Expiry date
9	PD20160978	Hebei Lingang Chemical Co., Ltd.	河北临港化工有限公司	95%	2026/8/1
10	PD20097438	Shandong Eshung Industrial Co., Ltd.	山东亿盛实业股份有限公司	95%	2024/10/29
11	PD20096276	Anhui Zhongshan Chemical Co., Ltd.	安徽中山化工有限公司	97%	2024/7/22
12	PD20094984	Liaoning Sanzheng Chemical Co., Ltd.	辽宁三征化学有限公司	96%	2024/4/21
13	PD20094227	Guangxi Research Institute of Chemical Industry Co., Ltd.	广西化工研究院有限公司	95%	2024/3/31
14	PD20093639	Shandong Dehao Chemical Co., Ltd.	山东德浩化学有限公司	97%	2024/3/25
15	PD20091306	Shandong Dacheng Biochemical Co., Ltd.	山东大成生物化工有限公司	95%	2024/2/1
16	PD20085579	Heilongjiang Jixiang Agro-Chemical Co., Ltd.	黑龙江吉翔农化有限公司	97%	2023/12/25
17	PD20082125	Henan Bo'ai Huifeng Biochemical Pesticide Co., Ltd.	河南省博爱惠丰生化农药有限公司	97%	2023/11/25
18	PD20081892	Syngenta AG	瑞士先正达作物保护有限公司	96%	2023/11/20
19	PD20081482	Jilin Jinze Pesticide Co., Ltd.	吉林金泽农药有限公司	92%	2023/11/4
20	PD20081023	Shoujian Technology Co., Ltd.	首建科技有限公司	98%	2023/8/6
21	PD93105-2	Zhejiang Changxing First Chemical Co., Ltd.	浙江省长兴第一化工有限公司	97%	2023/6/26
22	PD20080805	Zhejiang Zhongshan Chemical Industry Group Co., Ltd.	浙江中山化工集团股份有限公司	95%	2023/6/20
23	PD20080706	Zhanhua Guochang Fine Chemical Co., Ltd.	沾化国昌精细化工有限公司	98%	2023/6/4
24	PD93105-3	Hebei Xuanhua Pesticide Co., Ltd.	河北宣化农药有限责任公司	92%, 88%, 85%	2023/6/3
25	PD93105	Jilin Lvsheng Agrochemical Co., Ltd.	吉林市绿盛农药化工有限公司	92%	2023/5/27
26	PD20080517	Nanjing Huazhou Pharmaceutical Co., Ltd.	南京华洲药业有限公司	96%	2023/4/29

Source: ICAMA & CCM

Table 4-3 Registrations of atrazine formulations in China, as of 30 Nov., 2022

Item	Content	Number
Single formulation	SC	99
	WG	36
	WP	35
	OD	7

Item	Content	Number
	Sub-total	177
Mixed formulation	Nicosulfuron•Atrazine	160
	Mesotrione•Atrazine	127
	Nicosulfuron•Mesotrione•Atrazine	66
	Propisochlor•Atrazine	63
	Acetochlor•Atrazine	41
	Others	366
	Sub-total	823
Total		1,000

Source: ICAMA & CCM

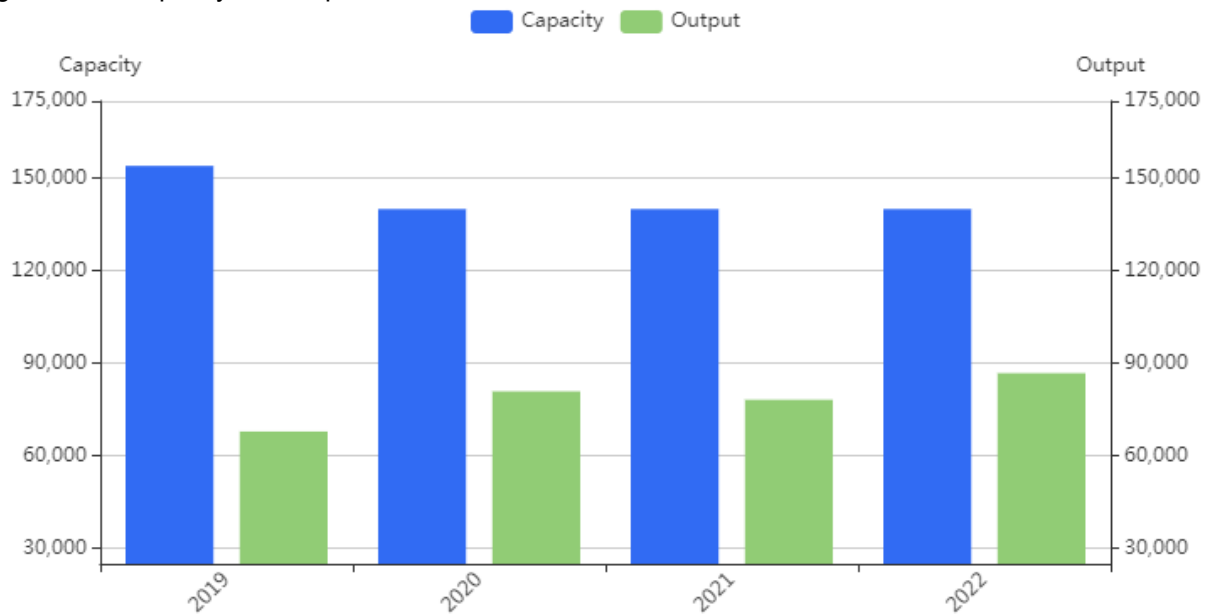
5 Supply of atrazine in China, 2019–2022E

5.1 Summary of atrazine technical production

During 2020–2022, the capacity of atrazine technical remained at 140,000 t/a in China. As to the output of atrazine technical, it showed a general upward trend. Due to strong overseas demand, domestic atrazine output surged by 19.15% year-on-year in 2020 but it dropped slightly in 2021. In 2022, the output is expected to hit 86,800 tonnes, 11% higher than that in 2021.

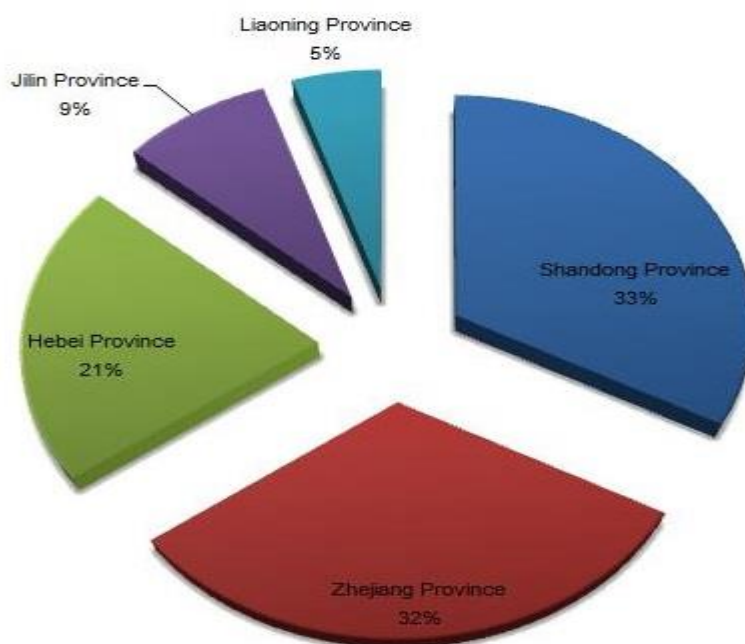
Atrazine technical production is highly concentrated in East China and North China. At least 65% of atrazine capacity and output was concentrated in Shandong and Zhejiang provinces in 2022; the output from regions beyond Zhejiang, Shandong and Hebei make up only some 4% of the total. Besides, the top three atrazine technical producers (by output) contribute around 71% to the domestic total.

Figure 5.1-1 Capacity and output of atrazine technical in China, 2019–2022E



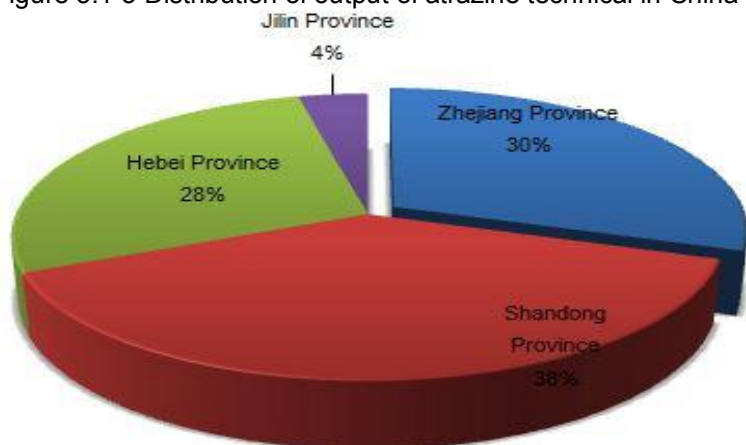
Note: The output and capacity in 2022 are estimated.
Source: CCM

Figure 5.1-2 Distribution of capacity of atrazine technical in China by region, 2022E



Note: Distribution of capacity of atrazine technical in China in 2022 is estimated.
Source: CCM

Figure 5.1-3 Distribution of output of atrazine technical in China by region, 2022E



Note:1. It is based on major producers' output of atrazine technical only. 2. The distribution of capacity of atrazine technical in China in 2022 is estimated.

Source:CCM

5.2 Key atrazine technical manufacturers

In 2022, there were mainly nine companies engaged in the production of atrazine technical in China.

Zhejiang Zhongshan Chemical Industry Group Co., Ltd. and Hebei Lingang Chemical Co., Ltd. are expected to maintain the capacity at 30,000 t/a for years; the two are expected to produce more than half of the total atrazine technical in China in 2022.

Table 5.2-1 Capacity and output of major atrazine technical producers in China, 2019–2022E

No.	Producer	Abbreviation	Location	Status, as of the end of 2022	2022		2021		2020		2019	
					Capacity, t/a	Output, tonne	Capacity, t/a	Output, tonne	Capacity, t/a	Output, tonne	Capacity, t/a	Output, tonne
1	Zhejiang Zhongshan Chemical Industry Group Co., Ltd.	Zhejiang Zhongshan	Zhejiang	Active	30,000	27,800	30,000	25,400	30,000	27,800	30,000	28,500
2	Hebei Lingang Chemical Co., Ltd. (previously Hebei Shanli Chemical Co., Ltd.)	Hebei Lingang	Hebei	Active	30,000	24,100	30,000	17,900	30,000	19,000	30,000	21,000
3	Zhejiang Province Changxing First Chemical Co., Ltd.	Zhejiang Changxing	Zhejiang	Active	15,000	9,600	15,000	5,700	15,000	6,900	15,000	0
4	Shandong Qiaochang Chemical Co., Ltd.	Zhanhua Guochang	Shandong	Active	15,000	8,000	15,000	3,500	15,000	2,200	15,000	500
6	Jilin Jinze Pesticide	Jilin Jinze	Jilin	Active	12,000	5,700	12,000	3,100	12,000	4,600	12,000	0

No.	Producer	Abbreviation	Location	Status, as of the end of 2022	2022		2021		2020		2019	
					Capacity, t/a	Output, tonne	Capacity, t/a	Output, tonne	Capacity, t/a	Output, tonne	Capacity, t/a	Output, tonne
	Co., Ltd. (previously Jilin Jinqiu Pesticide Co., Ltd.)											
5	Shandong Weifang Rainbow Chemical Co., Ltd.	Weifang Rainbow	Shandong	Active	12,000	4,800	12,000	4,900	12,000	3,200	10,000	6,000
7	Shandong Kesai Agrochem Biotechnology Co., Ltd.	Shandong Kesai	Shandong	Active	10,000	3,600	10,000	9,200	10,000	8,900	10,000	1,800
8	Shandong Binnong Technology Co., Ltd.	Shandong Binnong	Shandong	Active	9,000	3,200	9,000	8,500	9,000	8,300	15,000	10,000
9	Liaoning Tianyi Pesticide Chemical Co., Ltd.	Liaoning Tianyi	Liaoning	Idle	7,000	0	7,000	0	7,000	0	7,000	0
10	Shandong Vicome Greenland Chemical Co., Ltd.	Shandong Vicome	Shandong	Stopped	0	0	0	0	0	0	10,000	100
Total					140,000	86,800	140,000	78,200	140,000	80,900	154,000	67,900

Note: The output and capacity in China in 2022 are estimated.
Source: CCM

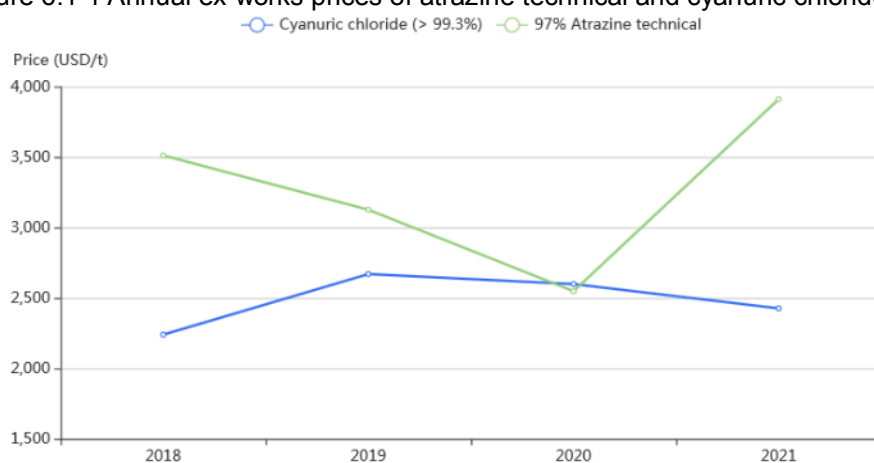
6 Circulation of atrazine in China

6.1 Price of atrazine in China, 2018–Nov. 2022

In 2020, the ex-works price of atrazine technical in China fluctuated. Since H2 2020, the price started the journey to recovery. In 2021, the price continued to rise, first at a slow pace, but then in late 2021 shooting up upon the power shortage and production restriction. The year 2021 also witnessed price increases of its intermediates like cyanuric chloride, ethylamine and isopropylamine. The annual average ex-works price of 97% atrazine technical in 2021 grew by 53.45% year on year.

In Jan–Nov. 2022, the ex-works price of atrazine technical in China has followed an overall downtrend though the price of its key raw material—cyanuric chloride stayed quite high. It is worth noting that in July 2022, the ex-works price of cyanuric chloride (99.3%) in China soared to around 4,711/t, up by 102.58% month on month. In Nov., the monthly ex-works price of 97% atrazine technical declined to around USD4,994/t, but compared with the prices recorded in Nov. 2020, the price is still at a high level, up by 96.98%. Regarding atrazine 50% SC, its monthly ex-works price in China declined to around USD3,094/t, 22.6% lower than a year earlier.

Figure 6.1-1 Annual ex-works prices of atrazine technical and cyanuric chloride in China, 2018–2021



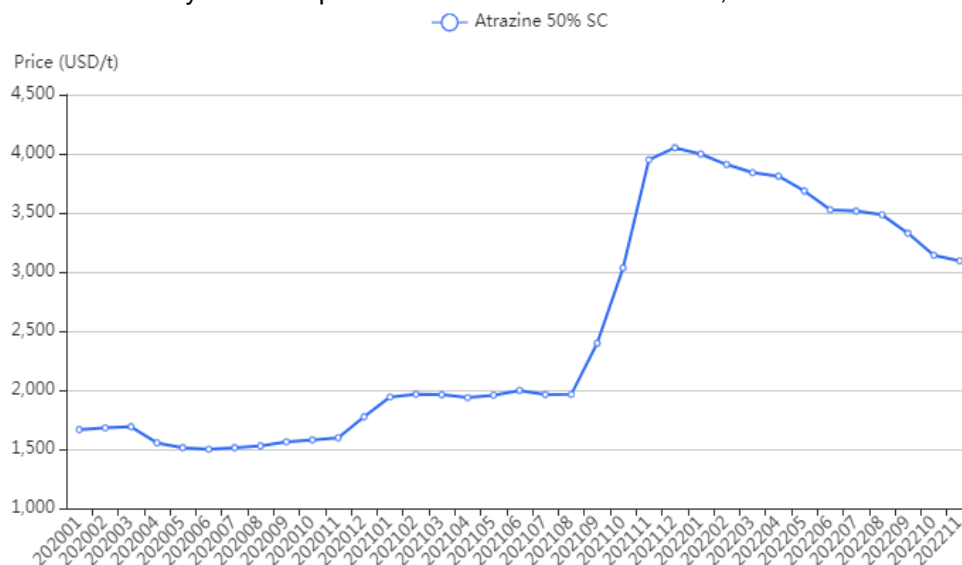
Source:CCM

Figure 6.1-2 Monthly ex-works price of 97% atrazine technical in China, Jan. 2020–Nov. 2022



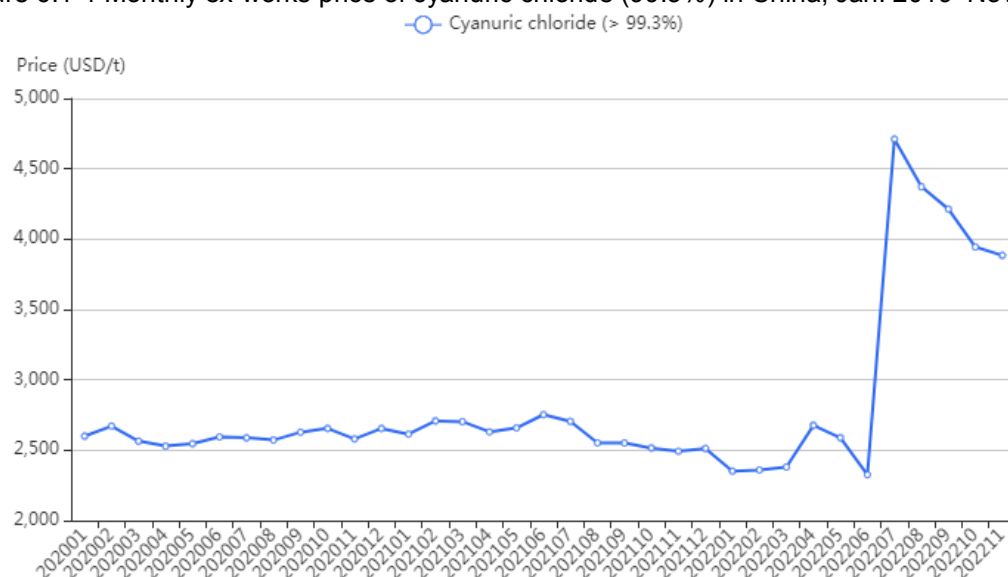
Source:CCM

Figure 6.1-3 Monthly ex-works price of atrazine 50% SC in China, Jan. 2020–Nov. 2022



Source:CCM

Figure 6.1-4 Monthly ex-works price of cyanuric chloride (99.3%) in China, Jan. 2019–Nov. 2022



Source:CCM

6.2 Import and export of atrazine, 2019–2022

6.2.1 Circulation status of atrazine in Q1–Q3 2022

With low import demand boosted by abundant atrazine supply, China is a big atrazine exporter, with annual export volume of atrazine technical and formulations (converted to 100% technical, the same as below) accounting for about 70% of domestic output since 2008, except a less-than-60% in 2018 resulting from sluggish overseas demand. In 2020 and 2021, the proportion was over 80%.

According to Tranalysis's monitoring import and export data, the export volume of atrazine products in China in Q1–Q3 2022 was some 56,395 tonnes, up by about 14% from 49,375 tonnes in Q1–Q3 2021. Export of atrazine technical achieved the highest record in Jan, but it fell sharply in the following three months. In May, the export volume of atrazine experienced a 48.47% increase from continuing decline. In Q3, though export volume increased in the first two months, it saw a 70.17% MoM decline in Sept. and slid to 2,378.44 tonnes, the lowest export volume in Q1–Q3 2022.

Main specifications of atrazine products for export in Q1–Q3 2022 were 98% technical, 97% technical, 95% technical, 38% SC, 50% SC, 80% WP and 90% WDG. The export volume of atrazine technical products was

50,125 tonnes, with a yearly increase of 29.93% and accounting for over 88% of the total export.

Brazil, Argentina, the US and Mexico were the four major export destinations in Q1–Q3 2022, accounting for about 88% of China's total export volume. Brazil imported nearly 30,449 tonnes of atrazine products from China, some 54% of the total, and Argentina and the US and imported about 17,326 tonnes, nearly 31% of the total each.

The top three exporters were Hebei Shanli Chemical Co., Ltd., Zhejiang Zhongshan Chemical Industry Group Co., Ltd. and Shandong Dehao Chemical Co., Ltd.; the three, with their subsidiaries, are China's major atrazine technical producers, contributing about 72% of the total export.

Table 6.2.1-1 China's exports of atrazine by month, Q1–Q3 2022

Month	38% SC	50% SC	80% WP	90% WDG	95% Tech.	97% Tech.	98% Tech.	Total volume (converted to 100% technical)
January	0.000	165.025	1,155.456	251.912	3,675.000	7,808.715	320.000	12,606.300
February	15.821	37.220	667.280	109.300	1,515.000	4,113.682	208.000	6,288.531
March	0.000	52.086	294.480	478.411	805.000	4,573.958	222.000	6,109.163
April	0.000	22.700	140.500	934.640	1,451.000	1,578.000	41.640	3,913.935
May	0.000	38.549	570.050	68.268	2,255.000	2,588.000	636.000	5,811.103
June	0.000	181.818	313.620	62.800	4,060.000	1,018.226	165.588	5,398.008
July	0.000	166.928	390.530	452.400	3,550.320	1,236.500	559.000	5,916.400
August	0.000	84.665	191.500	885.600	5,449.240	1,792.540	70.000	7,973.328
September	0.000	0.000	28.200	0.000	0.000	2,345.900	82.000	2,378.443
Total	15.821	748.990	3,751.616	3,243.331	22,760.560	27,055.521	2,304.228	56,395.210

Source:Tranalysis

Table 6.2.1-2 China's exports of atrazine by destination in Q1–Q3 2022, tonne

No.	Destination	38% SC	50% SC	80% WP	90% WDG	95% Tech.	97% Tech.	98% Tech.	Total volume (converted to 100% technical)
1	Brazil	0.000	0.000	0.000	885.600	19,344.000	9,833.667	1,772.000	30,449.057
2	Argentina	0.000	0.000	0.000	296.400	0.000	10,115.200	0.000	10,078.504
3	The US	0.000	0.000	0.000	0.000	1,687.560	5,818.828	0.000	7,247.445
4	Mexico	0.000	0.000	0.000	1,461.636	0.000	555.101	0.000	1,853.920
5	Nigeria	0.000	0.000	1,930.732	20.000	0.000	0.000	0.000	1,562.586
6	India	0.000	0.000	0.000	0.000	850.000	450.000	151.000	1,391.980
7	Ghana	0.000	28.512	1,619.404	5.000	0.000	0.000	0.000	1,313.139
8	Pakistan	0.000	0.000	0.000	0.000	589.000	0.000	290.800	844.534
9	South Africa	0.000	0.000	0.000	0.000	270.000	70.000	40.288	363.882

No.	Destination	38% SC	50% SC	80% WP	90% WDG	95% Tech.	97% Tech.	98% Tech.	Total volume (converted to 100% technical)
10	Vietnam	0.000	18.000	96.500	0.000	0.000	187.000	31.000	297.250
11	Peru	0.000	283.651	23.760	0.000	0.000	0.000	19.140	168.245
12	New Zealand	0.000	65.525	0.000	152.323	0.000	0.000	0.000	167.232
13	Paraguay	0.000	0.000	0.000	130.800	0.000	25.500	0.000	142.455
14	Cameroon	0.000	0.000	0.000	149.700	0.000	0.000	0.000	134.730
15	Tanzania	0.000	214.795	0.000	0.000	0.000	0.000	0.000	98.806
Others		15.821	138.508	81.220	141.872	20.000	0.225	0.000	281.446
Total		15.821	748.990	3,751.616	3,243.331	22,760.560	27,055.521	2,304.228	56,395.210

Note: Nuances in some data are mainly caused by rounding principle.

Source: Tranalysis

Table 6.2.1-3 China's exports of atrazine by exporter in Q1–Q3 2022, tonne

No.	Exporter	38% SC	50% SC	80% WP	90% WDG	95% Tech.	97% Tech.	98% Tech.	Total volume (converted to 100% technical)
1	Hebei Shanli Chemical Co., Ltd.	0.000	0.000	0.000	0.000	19,736.000	3,574.970	0.000	22,216.921
2	Zhejiang Zhongshan Chemical Industry Group Co., Ltd.	0.000	0.000	0.000	908.800	870.000	11,573.667	0.000	12,870.877
3	Shandong Dehao Chemical Co., Ltd.	0.000	0.000	203.300	5.000	0.000	5,431.600	0.000	5,435.792
4	Shandong Weifang Rainbow Chemical Co., Ltd.	0.000	155.976	323.744	1,514.959	0.000	665.326	1,754.940	4,059.414
5	CropScience Co., Ltd.	0.000	0.000	0.000	0.000	0.000	3,617.600	0.000	3,509.072
6	DAI Co., Ltd.	0.000	0.000	0.000	0.000	0.000	606.000	0.000	587.820
7	Afri Ventures FZE	0.000	0.000	652.168	0.000	0.000	0.000	0.000	521.734
8	Jiangsu High Hope International Group Corporation	0.000	0.000	518.400	0.000	0.000	0.000	0.000	414.720
9	Shandong Binnong Technology Co., Ltd.	0.000	0.000	35.000	12.600	0.000	0.000	358.000	390.180
10	Wynca (Hong	0.000	14.256	404.000	0.000	0.000	0.000	0.000	329.758

No.	Exporter	38% SC	50% SC	80% WP	90% WDG	95% Tech.	97% Tech.	98% Tech.	Total volume (converted to 100% technical)
	Kong) Limited								
11	Zhejiang Changxing Zhongshan Import and Export Co., Ltd.	0.000	0.000	0.000	228.000	0.000	100.000	0.000	302.200
12	Nanjing Haige Chemical Co., Ltd.	0.000	101.870	228.080	0.000	0.000	0.000	0.000	229.324
13	JAT Offshore S.A.L.	0.000	0.000	271.200	0.000	0.000	0.000	0.000	216.960
14	S&W International Chemical Logistics (Shanghai) Ltd.	0.000	0.000	0.000	0.000	0.000	220.000	0.000	213.400
15	Zhejiang Province Changxing First Chemical Co., Ltd.	0.000	0.000	0.000	215.200	0.000	0.000	0.000	193.680
Others		15.821	476.888	1,115.724	358.772	2,154.560	1,266.358	191.288	4,903.358
Total		15.821	748.990	3,751.616	3,243.331	22,760.560	27,055.521	2,304.228	56,395.210

Source: Tranalysis

Table 6.2.1-4 China's exports of atrazine by manufacturer in Q1–Q3 2022, tonne

No.	Manufacturer	38% SC	50% SC	80% WP	90% WDG	95% Tech.	97% Tech.	98% Tech.	Total volume (converted to 100% technical)
1	Hebei Shanli Chemical Co., Ltd.	0.000	0.000	20.000	0.000	19,736.000	3,574.970	0.000	22,232.921
2	Zhejiang Zhongshan Chemical Industry Group Co., Ltd.	0.000	316.398	399.150	1,124.000	890.000	11,599.167	0.000	13,573.155
3	Shandong Dehao Chemical Co., Ltd.	0.000	0.000	0.000	0.000	0.000	9,071.200	0.000	8,799.064
4	Shandong Weifang Rainbow Chemical Co., Ltd.	0.000	155.976	527.044	1,742.959	0.000	743.326	1,754.940	4,502.914
5	Shandong Binnong Technology Co., Ltd.	0.000	0.000	39.000	12.600	0.000	0.000	509.000	541.360
6	Jiangsu Lulilai Co., Ltd.	0.000	0.000	45.760	0.000	197.000	0.000	0.000	223.758
7	Hebei Lingang Chemical Co., Ltd.	0.000	14.256	80.000	0.000	150.000	0.000	0.000	213.058
8	Shandong Kesai Eagrow Co., Ltd.	0.000	0.000	196.000	20.000	0.000	0.000	0.000	174.800

No.	Manufacturer	38% SC	50% SC	80% WP	90% WDG	95% Tech.	97% Tech.	98% Tech.	Total volume (converted to 100% technical)
9	Jinan Kesai Agrochem Co., Ltd.	15.821	0.000	10.500	0.000	0.000	0.000	0.000	14.254
10	Shandong Vicome Greenland Chemical Co., Ltd.	0.000	0.000	11.000	0.000	0.000	0.000	0.000	8.800
Others		0.000	262.360	2,423.162	343.772	1,787.560	2,066.858	40.288	6,111.127
Total		15.821	748.990	3,751.616	3,243.331	22,760.560	27,055.521	2,304.228	56,395.210

Note: Nuances in some data are mainly caused by rounding principle.
Source: Tranalysis

6.2.2 Circulation status, 2019–2021

By month

Table 6.2.2-1 China's exports of atrazine by month, 2021

Month	38% SC		50% SC		80% WP		90% WDG		95% Tech.		97% Tech.		98% Tech.		Total volume (converted to 100% technical)	Value (million USD)
	Volume (tonne)	Unit price (USD/kg)	Volume (tonne)	Unit price (USD/kg)	Volume (tonne)	Unit price (USD/kg)	Volume (tonne)	Total volume (converted to 100% technical)	Unit price (USD/kg)	Volume (tonne)	Unit price (USD/kg)	Volume (tonne)	Unit price (USD/kg)	Volume (tonne)		
January	0.00	/	1,708.953	2.28	697.492	3.65	419.692	3.53	901.500	2.87	3,457.466	3.10	194.000	3.09	6,122.122	22
February	17.873	5.32	776.604	2.78	674.660	3.39	456.418	3.99	873.500	3.09	2,660.300	3.04	642.000	3.04	5,353.831	19
March	8.000	1.96	183.050	2.30	1,015.824	3.37	348.288	4.19	2,455.000	2.87	3,222.422	3.16	426.000	3.02	7,088.761	24
April	0.000	/	879.552	2.18	1,594.542	3.12	488.788	3.71	715.000	2.77	1,505.000	3.35	562.000	2.60	4,809.997	17
May	0.000	/	138.134	1.78	318.330	2.78	312.120	4.21	108.000	2.92	1,595.100	3.41	193.000	2.23	2,438.100	9
June	0.000	/	90.359	2.80	361.067	3.25	270.321	3.69	25.000	3.03	1,374.300	3.25	9.000	6.95	1,939.349	7
July	0.000	/	805.064	2.11	306.910	2.87	343.800	4.08	0.000	/	5,531.645	3.48	225.000	3.15	6,511.473	24
August	45.335	4.86	289.303	2.35	89.270	3.56	1,203.850	3.69	94.920	3.00	4,111.682	3.36	1,380.200	3.43	6,735.836	24

Month	38% SC		50% SC		80% WP		90% WDG		95% Tech.		97% Tech.		98% Tech.		Total volume (converted to 100% technical)	Value (million USD)
	Volume (tonne)	Unit price (USD/kg)	Volume (tonne)	Unit price (USD/kg)	Volume (tonne)	Unit price (USD/kg)	Volume (tonne)	Total volume (converted to 100% technical)	Unit price (USD/kg)	Volume (tonne)	Unit price (USD/kg)	Volume (tonne)	Unit price (USD/kg)	Volume (tonne)		
September	17.700	2.76	518.200	2.52	48.000	3.29	823.023	2.90	226.842	3.41	5,073.200	3.44	2,260.000	3.81	8,375.345	31
October	0.000	/	277.886	4.14	167.420	4.09	493.445	3.57	105.073	4.40	5,177.607	3.90	426.000	3.16	6,245.441	26
November	0.000	/	279.786	4.07	177.352	3.40	403.380	4.11	382.000	4.73	6,533.757	5.10	12.500	4.16	7,346.519	39
December	0.000	/	194.424	3.18	902.568	5.03	613.648	5.92	912.904	6.18	9,149.293	5.39	74.000	6.58	11,178.365	64
Total	88.908	4.28	6,141.315	2.52	6,353.435	3.54	6,176.773	3.91	6,799.738	3.48	49,391.772	3.99	6,403.700	3.39	74,145.141	305

Source: Tranalysis

Table 6.2.2-2 China's exports of atrazine by month, 2020

Month	38% SC		48% WP		50% SC		80% WP		90% WDG		95% Tech.		97% Tech.		98% Tech.		Total volume (converted to 100% technical, tonne)	Value (million USD)
	Volume (tonne)	Unit price (USD/kg)	Volume (tonne)	Unit price (USD/kg)	Volume (tonne)	Unit price (USD/kg)	Volume (tonne)	Unit price (USD/kg)	Total volume (converted to 100% technical, tonne)	Volume (tonne)	Unit price (USD/kg)	Volume (tonne)	Unit price (USD/kg)	Volume (tonne)	Unit price (USD/kg)	Volume (tonne)		
January	53.920	2.59	0.000	/	920.186	2.06	1,386.596	2.85	1,543.278	3.43	3,800.000	2.84	76.500	2.70	809.000	2.51	7,455.835	24
February	0.000	/	0.000	/	328.305	2.02	976.280	2.96	501.564	3.55	1,808.000	2.80	300.000	2.62	286.500	2.59	3,685.954	12
March	61.280	2.31	0.000	/	516.926	2.35	1,699.282	2.83	1,703.241	3.51	2,798.500	2.64	341.500	2.66	747.650	2.52	6896.619	22
April	81.988	2.53	3.100	2.37	422.107	2.27	513.886	2.87	1,326.658	3.58	1,939.525	2.71	335.000	2.44	183.000	2.53	4,177.933	14

Month	38% SC		48% WP		50% SC		80% WP		90% WDG		95% Tech.		97% Tech.		98% Tech.		Total volume (converted to 100% technical, tonne)	Value (million USD)
	Volume (tonne)	Unit price (USD/kg)	Volume (tonne)	Unit price (USD/kg)	Volume (tonne)	Unit price (USD/kg)	Volume (tonne)	Unit price (USD/kg)	Total volume (converted to 100% technical, tonne)	Volume (tonne)	Unit price (USD/kg)	Volume (tonne)	Unit price (USD/kg)	Volume (tonne)	Unit price (USD/kg)			
May	16.000	1.45	0.000	/	13.574	2.65	94.000	2.44	896.800	3.30	634.000	2.19	197.290	2.82	444.505	2.16	3,846.112	11
June	11.000	1.76	0.000	/	23.431	2.15	22.000	1.30	559.279	3.55	191.000	2.17	290.765	2.63	341.000	2.36	3,871.858	11
July	38.808	1.62	0.000	/	71.663	2.21	287.680	1.91	240.000	3.33	852.290	2.19	393.178	2.89	726.000	2.31	5,828.459	16
August	0.000	/	0.000	/	91.300	1.72	113.400	2.74	18.000	3.04	795.500	2.20	238.233	3.09	60.000	2.43	3,274.306	10
September	4.180	3.03	0.000	/	39.534	1.79	203.328	2.77	662.642	3.09	855.760	2.04	479.560	2.69	1,587.007	2.34	7,798.743	21
October	0.000	/	0.000	/	22.603	4.56	76.000	2.31	745.000	3.23	2,956.740	2.43	397.040	2.89	74.000	2.20	7,474.408	22
November	0.000	/	0.000	/	136.010	2.81	122.200	2.44	1,348.505	3.18	3,065.000	2.40	1,651.300	2.90	260.148	3.13	6,142.435	18
December	0.000	/	0.000	/	247.754	2.21	651.770	3.35	1,015.405	3.33	1,074.000	2.79	280.480	2.76	157.500	2.55	5,444.553	17
Total	267.176	2.27	3.100	2.37	2,833.392	2.20	6,146.422	2.84	10,560.372	3.38	20,770.315	2.56	25,469.781	2.81	5,676.310	2.43	65,897.215	199

Source: Tranalysis

Table 6.2.2-3 China's exports of atrazine by month, 2019

Month	38% SC		48% SC		48% WP		50% SC		80% WP		90% WDG		95% Tech.		97% Tech.		98% Tech.		Total volume (converted to 100% technical, tonne)	Value (million USD)
	Volume (tonne)	Unit price (USD/kg)	Volume (tonne)	Unit price (USD/kg)	Volume (tonne)	Unit price (USD/kg)	Volume (tonne)	Unit price (USD/kg)	Volume (tonne)	Total volume (converted to 100% technical, tonne)	Unit price (USD/kg)	Volume (tonne)	Unit price (USD/kg)	Volume (tonne)	Unit price (USD/kg)	Volume (tonne)	Unit price (USD/kg)	Volume (tonne)		
January	17.000	3.61	0.000	/	15.000	2.16	712.508	2.54	1,716.180	3.44	1,842.074	4.14	0.000	/	3,555.700	3.20	433.500	3.14	7,245.835	28
February	0.000	/	0.000	/	0.000	/	558.744	2.74	796.660	3.40	495.072	4.08	0.000	/	1,261.000	3.21	528.000	3.29	3,080.525	12
March	48.175	4.67	0.000	/	0.000	/	352.929	2.74	1,013.862	3.52	941.891	4.05	0.000	/	2,196.300	3.25	0.000	/	3,969.375	16
April	38.040	1.96	0.000	/	38.000	2.44	266.007	2.62	667.680	3.55	529.057	4.23	0.000	/	2,665.550	3.31	130.000	3.07	3,877.957	14
May	193.664	2.69	0.000	/	0.000	/	559.257	2.61	736.900	3.52	546.433	3.91	0.000	/	2,231.100	3.31	243.000	3.22	3,836.837	15
June	30.240	1.76	7.000	3.41	16.000	2.22	300.520	2.22	533.080	3.25	630.695	3.94	0.000	/	6,360.900	3.15	1,073.000	2.87	8,376.171	27
July	117.846	2.04	0.000	/	0.000	/	999.954	2.74	269.158	3.55	936.709	4.01	0.000	/	3,662.500	3.23	730.300	2.92	5,816.529	22
August	0.000	/	0.000	/	5.875	3.80	810.977	3.02	87.400	3.38	318.620	4.03	0.000	/	3,373.700	3.14	1,338.100	2.96	5,316.375	18
September	46.112	3.24	0.000	/	0.000	/	468.632	2.63	59.520	3.39	1,381.330	3.86	0.000	/	4,381.400	3.01	2,976.300	2.73	8,688.364	29
October	12.152	4.17	0.000	/	34.125	3.09	606.025	2.61	65.000	3.08	801.200	3.73	0.000	/	3,437.300	3.09	891.025	2.81	5,280.113	17
November	35.092	2.84	0.000	/	0.000	/	635.026	2.71	256.680	3.38	848.170	4.24	9.000	2.45	1,535.000	2.86	643.700	2.52	3,402.299	12

Month	38% SC		48% SC		48% WP		50% SC		80% WP		90% WDG		95% Tech.		97% Tech.		98% Tech.		Total volume (converted to 100% technical, tonne)	Value (million USD)
	Volume (tonne)	Unit price (USD/kg)	Volume (tonne)	Unit price (USD/kg)	Volume (tonne)	Unit price (USD/kg)	Volume (tonne)	Unit price (USD/kg)	Volume (tonne)	Total volume (converted to 100% technical, tonne)	Unit price (USD/kg)	Volume (tonne)	Unit price (USD/kg)	Volume (tonne)	Unit price (USD/kg)	Volume (tonne)	Unit price (USD/kg)	Volume (tonne)		
er																				
December	0.000	/	0.000	/	20.000	3.42	1,056.617	2.44	1,133.670	3.07	957.732	3.71	0.000	/	3,266.100	2.82	872.000	2.58	6,287.215	21
Total	538.321	3.00	7.000	3.41	129.000	2.85	7,327.195	2.63	7,335.790	3.38	10,228.983	4.00	9.000	2.45	37,926.550	3.13	9,858.925	2.92	65,177.595	229

Source: Tranalysis

By destination

Table 6.2.2-4 China's exports of atrazine by destination in 2021, tonne

No.	Destination	38% SC	50% SC	80% WP	90% WDG	95% Tech.	97% Tech.	98% Tech.	Total volume (converted to 100% technical)	Value (million USD)
1	Brazil	0.000	65.200	0.000	1,072.840	0.000	19,156.000	4,215.200	23,707.764	99
2	Argentina	0.000	0.000	91.200	704.010	0.000	13,529.253	0.000	13,829.944	52
3	The US	0.000	785.615	0.000	0.000	1,370.738	9,941.656	0.000	11,306.990	54
4	India	0.000	0.000	0.000	0.000	3,505.000	2,370.000	1,300.000	6,902.650	21
5	Pakistan	8.000	0.000	23.000	0.000	1,643.000	902.200	732.000	3,174.704	11
6	Nigeria	0.000	114.250	2,966.783	459.336	0.000	0.000	0.000	2,839.384	13
7	Mexico	0.000	114.912	1,045.005	1,160.163	0.000	768.000	0.000	2,677.970	14
8	Canada	0.000	0.000	0.000	0.000	0.000	1,922.466	0.000	1,864.792	6
9	Ghana	0.000	711.986	1,544.450	0.000	0.000	0.000	0.000	1,563.074	7

No	Destination	38% SC	50% SC	80% WP	90% WDG	95% Tech.	97% Tech.	98% Tech.	Total volume (converted to 100% technical)	Value (million USD)
10	Paraguay	0.000	16.240	0.000	1,165.72 2	84.000	161.600	52.500	1,344.622	6
11	Chile	0.000	1,731.68 0	0.000	211.118	0.000	261.872	0.000	1,240.595	6
12	Australia	0.000	482.216	0.000	841.183	0.000	0.000	0.000	978.884	4
13	Vietnam	0.000	12.600	518.925	0.000	0.000	305.725	0.000	717.489	3
14	Tanzania	0.000	722.350	0.000	0.000	0.000	0.000	0.000	332.281	2
15	Zimbabwe	0.000	615.012	0.000	0.000	0.000	0.000	0.000	282.906	2
Others		80.90 8	769.254	164.072	562.401	197.000	73.000	104.000	1,381.091	7
Total		88.90 8	6,141.31 5	6,353.43 5	6,176.77 3	6,799.73 8	49,391.77 2	6,403.70 0	74,145.141	305

Note: Nuances in some data are mainly caused by rounding principle.
Source: Tranalysis

Table 6.2.2-5 China's exports of atrazine by destination in 2020, tonne

No	Destination	38% SC	48% WP	50% SC	80% WP	90% WDG	95% Tech.	97% Tech.	98% Tech.	Total volume (converted to 100% technical)	Value (million USD)
1	Brazil	0.000	0.00 0	0.000	0.000	1,873.92 5	3,440.00 0	11,223.4 00	2,578.0 00	18,367.67 1	52
2	Argentina	0.000	0.00 0	0.000	0.000	1,613.28 0	1,250.00 0	9,484.23 0	451.000	12,281.13 5	39
3	The US	0.000	0.00 0	0.000	0.000	514.240	9,455.05 0	2,435.21 1	0.000	11,807.26 8	31
4	India	0.000	0.00 0	0.000	0.000	0.000	1,533.00 0	1,015.00 0	1,148.0 00	3,565.940	8
5	Pakistan	84.600	0.00 0	148.260	21.000	330.700	2,133.60 0	111.100	893.148	3,424.480	10
6	Chile	0.000	0.00 0	421.878	0.000	142.400	1,580.00 0	447.000	0.000	2,272.203	7
7	Mexico	0.000	0.00 0	39.916	85.000	1,756.03 2	0.000	185.000	296.505	2,138.412	8
8	Ghana	0.000	0.00 0	414.180	2,331.1 98	0.000	0.000	0.000	0.000	2,066.139	8
9	Nigeria	0.000	0.00 0	94.422	2,131.3 40	7.000	0.000	0.000	0.000	1,757.443	6
10	Thailand	0.000	0.00 0	8.360	425.080	1,138.33 2	0.000	0.000	0.000	1,368.743	5
11	Australia	0.000	0.00	159.116	0.000	1,057.16	0.000	30.000	0.000	1,060.102	4

No	Destinati on	38% SC	48% WP	50% SC	80% WP	90% WDG	95% Tech.	97% Tech.	98% Tech.	Total volume (convert ed to 100% technical)	Value (millio n USD)
			0			0					
12	Indonesia	7.000	0.00 0	221.100	0.030	0.000	688.000	162.000	0.000	921.862	3
13	Paraguay	0.000	0.00 0	81.800	0.000	827.675	93.200	22.000	22.000	913.976	3
14	Vietnam	0.000	0.00 0	0.000	327.000	0.000	13.465	228.300	77.000	571.303	2
15	Peru	0.000	0.00 0	434.259	37.200	239.370	0.000	0.000	0.000	451.496	2
Others		175.57 6	3.10 0	810.101	788.574	1,060.25 8	584.000	126.540	210.657	2,929.045	11
Total		267.17 6	3.10 0	2,833.3 92	6,146.4 22	10,560.3 72	20,770.3 15	25,469.7 81	5,676.3 10	65,897.21 5	199

Source: Tranalysis

Table 6.2.2-6 China's exports of atrazine by destination in 2019, tonne

N o.	Destinati on	38% SC	48% SC	48% WP	50% SC	80% WP	90% WDG	95% Tec h.	97% Tech.	98% Tech.	Total volume (convert ed to 100% technica l)	Value (milli on USD)
1	Brazil	0.000	0.00 0	0.000	1,251.8 00	0.000	1,833.70 1	0.00 0	13,231.5 50	6,260.0 00	21,194.9 13	67
2	The US	0.000	0.00 0	0.000	0.000	0.000	0.000	0.00 0	10,793.6 00	700.000	11,155.7 92	33
3	Argentina	0.000	0.00 0	0.000	0.000	0.000	1,215.60 0	0.00 0	4,796.00 0	200.000	5,942.16 0	22
4	India	0.000	0.00 0	0.000	5.504	0.000	0.000	0.00 0	3,184.00 0	820.000	3,894.61 2	12
5	Nigeria	39.91 8	0.00 0	0.000	501.550	3,373.6 80	23.600	0.00 0	0.000	0.000	2,965.66 6	13
6	Chile	0.000	0.00 0	0.000	481.351	0.000	226.880	0.00 0	1,921.00 0	0.000	2,288.98 4	8
7	Thailand	0.000	0.00 0	0.000	172.968	536.120	1,284.81 2	0.00 0	120.000	0.000	1,781.88 8	7
8	Mexico	0.000	0.00 0	0.000	133.100	0.000	1,107.36 0	0.00 0	23.000	532.000	1,601.52 0	6
9	Ghana	0.000	0.00 0	0.000	401.098	1,429.7 60	0.000	0.00 0	0.000	0.000	1,320.83 3	6
10	Australia	0.000	0.00 0	0.000	60.600	0.000	1,290.78 0	0.00 0	15.000	10.000	1,213.92 8	5
11	Italy	0.000	0.00 0	0.000	0.000	0.000	0.000	0.00 0	1,010.00 0	0.000	979.700	3

No.	Destination	38% SC	48% SC	48% WP	50% SC	80% WP	90% WDG	95% Tech.	97% Tech.	98% Tech.	Total volume (converted to 100% technical)	Value (million USD)
12	Indonesia	7.000	0.000	0.000	305.120	0.000	0.000	0.000	828.000	20.000	968.225	4
13	Venezuela	0.000	0.000	0.000	591.800	0.000	734.000	0.000	0.000	0.000	932.828	6
14	Pakistan	19.000	0.000	0.000	36.000	0.000	0.000	0.000	421.200	403.500	828.950	3
15	Paraguay	0.000	0.000	0.000	0.000	0.000	760.770	0.000	23.500	118.300	823.422	3
Others		472.400	7.000	129.000	3,386.300	1,996.230	1,751.480	9.000	1,559.700	795.130	7,284.176	31
Total		538.321	7.000	129.000	7,327.195	7,335.790	10,228.983	9.000	37,926.550	9,858.925	65,177.595	229

Source: Tranalysis

By exporter

Table 6.2.2-7 China's exports of atrazine by exporter in 2021, tonne

No.	Exporter	38% SC	50% SC	80% WP	90% WDG	95% Tech.	97% Tech.	98% Tech.	Total volume (converted to 100% technical)	Value (million USD)
1	Zhejiang Zhongshan Chemical Industry Group Co., Ltd.	0.000	300.000	360.780	119.940	1,804.000	12,751.200	0.000	14,617.034	57
2	Hebei Shanli Chemical Co., Ltd.	0.000	0.000	0.000	0.000	814.138	10,515.192	0.000	10,973.167	57
3	Shandong Weifang Rainbow Chemical Co., Ltd.	0.000	706.468	1,165.151	1,988.311	0.000	622.500	3,673.200	7,250.137	30
4	Shandong Dehao Chemical Co., Ltd.	0.000	0.000	22.400	0.000	0.000	5,654.000	0.000	5,502.300	20
5	CropScience Co., Ltd.	0.000	0.000	0.000	0.000	0.000	5,109.200	0.000	4,955.924	21
6	Hebei Huyang Import and Export Co., Ltd.	0.000	14.256	140.000	200.000	0.000	1,660.000	0.000	1,908.758	9
7	Kingland Chemical Co., Ltd.	0.000	0.000	0.000	0.000	0.000	1,922.466	0.000	1,864.792	6

No.	Exporter	38% SC	50% SC	80% WP	90% WDG	95% Tech.	97% Tech.	98% Tech.	Total volume (converted to 100% technical)	Value (million USD)
8	Hebei Lingang Chemical Co., Ltd.	0.000	0.000	0.000	0.000	1,825.576	12.000	0.000	1,745.937	6
9	S&W International Chemical Logistics (Shanghai) Ltd.	0.000	0.000	0.000	0.000	0.000	1,714.000	0.000	1,662.580	6
10	Shandong Binnong Technology Co., Ltd.	0.000	179.464	316.925	43.200	0.000	86.000	1,035.000	1,472.693	5
11	DAI Co., Ltd.	0.000	0.000	0.000	0.000	0.000	924.000	0.000	896.280	3
12	Shanghai Psyche Chemicals Co., Ltd.	0.000	0.000	0.000	0.000	0.000	0.000	804.000	787.920	3
13	Shandong Qiaochang Chemical Co., Ltd.	0.000	0.000	0.000	0.000	0.000	0.000	700.000	686.000	2
14	Shandong Jijia International Freight and Forwarding Co., Ltd.	0.000	459.170	0.000	311.234	0.000	0.000	0.000	491.329	2
15	Shandong Kesai Eagrow Co., Ltd.	45.335	44.256	469.140	51.000	0.000	0.000	0.000	458.344	3
Others		43.573	4,437.701	3,879.039	3,463.088	2,356.024	8,421.214	191.500	18,871.945	76
Total		88.908	6,141.315	6,353.435	6,176.773	6,799.738	49,391.772	6,403.700	74,145.141	305

Source: Tranalysis

Table 6.2.2-8 China's exports of atrazine by exporter in 2020, tonne

No.	Exporter	38% SC	48% WP	50% SC	80% WP	90% WDG	95% Tech.	97% Tech.	98% Tech.	Total volume (converted to 100% technical)	Value million USD
1	Zhejiang Zhongshan Chemical Industry Group Co., Ltd.	0.000	0.000	258.560	999.100	473.940	3,327.000	11,123.250	0.000	15,294.966	44

No	Exporter	38% SC	48% WP	50% SC	80% WP	90% WDG	95% Tech.	97% Tech.	98% Tech.	Total volume (converted to 100% technical)	Value million USD
2	Hebei Lingang Chemical Co., Ltd.	0.000	0.000	0.000	0.000	332.800	11,533.050	33.000	0.000	11,287.928	29
3	Shandong Weifang Rainbow Chemical Co., Ltd.	11.000	0.000	331.021	757.512	4,398.402	0.000	106.400	3,707.493	8,466.742	27
4	Shandong Binnong Technology Co., Ltd.	48.000	0.000	612.080	589.100	282.760	0.000	970.361	713.160	2,682.617	9
5	Shandong Dehao Chemical Co., Ltd.	0.000	0.000	0.000	0.000	0.000	0.000	2,300.000	0.000	2,231.000	7
6	CropScience Co., Ltd.	0.000	0.000	0.000	0.000	0.000	0.000	2,200.000	0.000	2,134.000	7
7	Hebei Huyang Import and Export Co., Ltd.	0.000	0.000	242.440	327.000	1,423.000	119.000	6.000	0.000	1,782.390	7
8	Shandong Runke International Trade Co., Ltd.	0.000	0.000	19.958	0.000	125.544	1,100.700	0.000	0.000	1,168.634	3
9	Zhejiang Changxing Zhongshan Import and Export Co., Ltd.	0.000	0.000	0.000	0.000	787.590	0.000	330.030	0.000	1,028.960	4
10	Shandong Kesai Agrochem Biotechnology Co., Ltd.	42.988	0.000	39.816	1,080.000	44.874	0.000	11.000	0.000	950.006	4
11	Zhejiang Province Changxing First Chemical Co., Ltd.	0.000	0.000	22.000	288.000	579.600	19.500	136.000	0.000	913.485	3
12	SANONE Co., Ltd.	0.000	0.000	19.400	0.000	44.000	440.000	440.000	1.000	894.304	3
13	Nanjing Bodao Logistics Co., Ltd.	0.000	0.000	0.000	0.000	0.000	775.000	0.000	0.000	736.250	2
14	Zhejiang	0.000	0.000	0.000	0.000	0.000	700.000	0.000	0.000	665.000	2

No.	Exporter	38% SC	48% WP	50% SC	80% WP	90% WDG	95% Tech.	97% Tech.	98% Tech.	Total volume (converted to 100% technical)	Value million USD
	Hengdian Imp. & Exp. Co., Ltd.		0								
15	Nanjing Jiaqier Chemical Co., Ltd.	0.000	0.000	0.000	0.000	0.000	600.000	0.000	0.000	570.000	2
Others		165.188	3.100	1,288.117	2,105.710	2,067.862	2,156.065	7,813.740	1,254.657	15,090.934	47
Total		267.176	3.100	2,833.392	6,146.422	10,560.372	20,770.315	25,469.781	5,676.310	65,897.215	199

Source: Tranalysis

Table 6.2.2-9 China's exports of atrazine by exporter in 2019, tonne

No.	Exporter	38% SC	48% SC	48% WP	50% SC	80% WP	90% WDG	95% Tech.	97% Tech.	98% Tech.	Total volume (converted to 100% technical)	Value (million USD)
1	Zhejiang Zhongshan Chemical Industry Group Co., Ltd.	0.000	0.000	0.000	146.830	1,481.800	1,381.527	0.000	14,999.250	0.000	17,038.149	57
2	Shandong Weifang Rainbow Chemical Co., Ltd.	0.000	0.000	0.000	1,728.328	413.760	4,111.004	0.000	399.000	5,738.300	10,838.557	38
3	Hebei Lingang Chemical Co., Ltd.	0.000	0.000	0.000	0.000	0.000	0.000	0.000	8,291.000	0.000	8,042.270	23
4	Hebei Shanli Chemical Co., Ltd.	0.000	0.000	0.000	0.000	0.000	0.000	0.000	5,081.500	0.000	4,929.055	16
5	Shandong Binnong Technology Co., Ltd.	19.000	0.000	0.000	999.242	1,405.080	1,032.091	0.000	25.000	1,998.500	4,497.341	17
6	Hebei Huyang Import & Export Limited Corporation	0.000	0.000	0.000	129.200	340.000	552.760	0.000	2,520.000	0.000	3,276.132	11
7	Zhejiang Hengdian Imp. &	0.000	0.000	0.000	0.000	0.000	136.800	0.000	1,500.000	0.000	1,578.120	6

N o.	Exporter	38% SC	48% SC	48% WP	50% SC	80% WP	90% WDG	95% Tech.	97% Tech.	98% Tech.	Total volume (converted to 100% technical)	Value (million USD)
	Exp. Co., Ltd.											
8	China Jiangsu International Economic Technical Cooperation Group Co., Ltd.	0.000	0.000	0.000	62.248	0.000	44.995	0.000	1,306.000	0.000	1,335.950	5
9	Shandong Kesai Agrochemical Biotechnology Co., Ltd.	12.152	0.000	0.000	692.892	1,192.900	57.600	0.000	1.600	0.000	1,330.939	6
10	Ningxia Gerui Fine Chemical Co., Ltd.	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1,094.000	1,072.120	3
11	Beijing Kaixiang Hengye Trade Co., Ltd.	0.000	0.000	0.000	591.800	0.000	734.000	0.000	0.000	0.000	932.828	6
12	Zhejiang Province Changxing First Chemical Co., Ltd.	6.600	0.000	0.000	35.512	160.000	624.900	0.000	230.000	0.000	932.287	4
13	Shandong Qiaochang Modern Agriculture Import & Export Co., Ltd.	0.000	0.000	0.000	58.040	8.000	21.007	0.000	0.000	840.000	876.644	3
14	Shandong Runke International Trade Co., Ltd.	0.000	0.000	0.000	55.000	38.280	566.880	9.000	20.000	20.000	616.046	2
15	Nanjing Taikenuo International Trade Co., Ltd.	0.000	0.000	0.000	0.000	0.000	0.000	0.000	600.000	0.000	582.000	2
Others		500.569	7.000	129.000	2,828.104	2,295.970	965.419	0.000	2,953.200	168.125	7,299.157	30
Total		538.321	7.000	129.000	7,327.195	7,335.790	10,228.983	9.000	37,926.550	9,858.925	65,177.595	229

Source: Tranalysis

By manufacturer

Table 6.2.2-10 China's exports of atrazine by manufacturer in 2021, tonne

No.	Manufacturer	38% SC	50% SC	80% WP	90% WDG	95% Tech.	97% Tech.	98% Tech.	Total volume (converted to 100% technical)
1	Zhejiang Zhongshan Chemical Industry Group Co., Ltd.	0.000	862.200	803.630	1,221.998	1,881.000	12,944.700	0.000	16,482.623
2	Shandong Dehao Chemical Co., Ltd.	0.000	0.000	0.000	0.000	40.000	10,780.200	0.000	10,494.794
3	Hebei Shanli Chemical Co., Ltd.	0.000	3.300	20.000	0.000	235.000	9,910.872	0.000	9,854.314
4	Shandong Weifang Rainbow Chemical Co., Ltd.	0.000	706.468	1,187.551	2,190.721	0.000	622.500	3,673.200	7,450.226
5	Hebei Lingang Chemical Co., Ltd.	0.000	0.000	80.000	0.000	2,704.714	12.000	0.000	2,645.119
6	Shandong Binnong Technology Co., Ltd.	0.000	197.089	334.925	43.200	0.000	109.100	1,747.500	2,215.858
7	Jiangsu Lulilai Co., Ltd.	0.000	0.000	69.520	0.000	707.000	60.000	0.000	785.466
8	Shandong Kesai Eagrow Co., Ltd.	0.000	58.300	469.140	51.000	0.000	0.000	0.000	448.030
9	Shandong Vicome Greenland Chemical Co., Ltd.	0.000	0.000	11.000	0.000	300.000	0.000	0.000	293.800
10	Jinan Kesai Agrochem Co., Ltd.	63.208	0.000	18.000	0.000	0.000	0.000	0.000	37.787
11	Lianyungang Liben Crop Science and Technology Co., Ltd.	0.000	0.000	38.000	0.000	0.000	0.000	0.000	30.400
12	Zhejiang Province Changxing First Chemical Co., Ltd.	0.000	59.400	0.000	0.000	0.000	0.000	0.000	27.324
Others		25.700	4,254.558	3,321.669	2,669.854	932.024	14,952.400	983.000	23,379.400
Total		88.908	6,141.315	6,353.435	6,176.773	6,799.738	49,391.772	6,403.700	74,145.141

Note: Nuances in some data are mainly caused by rounding principle.

Source: Tranalysis

Table 6.2.2-11 China's exports of atrazine by manufacturer in 2020, tonne

No.	Manufacturer	38% SC	48% WP	50% SC	80% WP	90% WDG	95% Tech.	97% Tech.	98% Tech.	Total volume (converted to 100% technical)	Value (million USD)
1	Zhejiang Zhongshan Chemical Industry Group Co., Ltd.	127.048	3.100	1,279.704	2,672.952	1,386.981	5,655.825	13,275.350	0.000	22,302.205	66
2	Hebei Lingang Chemical Co., Ltd.	0.000	0.000	281.800	331.000	1,775.800	12,387.050	39.000	0.000	13,809.448	38
3	Shandong Weifang Rainbow Chemical Co., Ltd.	11.000	0.000	372.983	765.512	5,256.516	1,100.700	451.430	3,707.493	10,645.890	34
4	Shandong Kesai Agrochem Biotechnology Co., Ltd.	47.488	0.000	55.926	1,088.000	79.669	0.000	4,637.940	0.000	5,485.453	18
5	Shandong Binnong Technology Co., Ltd.	74.640	0.000	718.443	680.600	302.760	700.000	982.161	1,767.817	4,543.575	14
6	Jiangsu Lulilai Co., Ltd.	0.000	0.000	0.000	72.130	0.000	831.740	187.000	0.000	1,029.247	3
7	Zhejiang Province Changxing First Chemical Co., Ltd.	0.000	0.000	72.600	288.000	658.620	19.500	142.000	0.000	1,015.283	3
8	Qiaochang Modern Agriculture Co., Ltd.	0.000	0.000	0.000	100.500	0.000	0.000	0.000	198.000	274.440	1
Others		7.000	0.000	51.936	147.728	1,100.026	75.500	5,754.900	3.000	6,791.674	22
Total		267.176	3.100	2,833.392	6,146.422	10,560.372	20,770.315	25,469.781	5,676.310	65,897.215	199

Source: Tranalysis

Table 6.2.2-12 China's exports of atrazine by manufacturer in 2019, tonne

N o.	Manufacturer	38% SC	48% SC	48% WP	50% SC	80% WP	90% WDG	95% Tech.	97% Tech.	98% Tech.	Total volume (converted to 100% technical)	Value (million USD)
1	Zhejiang Zhongshan Chemical Industry Group Co., Ltd.	185.444	7.000	31.000	2,602.089	3,499.190	3,155.838	0.000	20,405.250	93.100	26,805.100	96
2	Hebei Shanli Chemical Co., Ltd.	4.515	0.000	0.000	788.040	491.580	1,290.760	0.000	16,316.500	0.000	17,748.938	58
3	Shandong Weifang Rainbow Chemical Co., Ltd.	0.000	0.000	0.000	1,606.219	366.340	3,396.424	0.000	394.000	5,637.300	9,995.448	35
4	Shandong Binnong Technology Co., Ltd.	23.800	0.000	0.000	1,158.380	1,661.500	1,969.218	0.000	741.000	3,888.525	8,169.759	30
5	Shandong Kesai Agrochem Biotechnology Co., Ltd.	2.200	0.000	0.000	380.392	831.900	243.800	0.000	0.000	0.000	1,062.934	5
6	Zhejiang Province Changxing First Chemical Co., Ltd.	234.430	0.000	0.000	182.512	2.000	0.000	0.000	0.000	0.000	181.532	1
Others		87.932	0.000	98.000	609.563	483.280	172.943	9.000	69.800	240.000	1,213.882	5
Total		538.321	7.000	129.000	7,327.195	7,335.790	10,228.983	9.000	37,926.550	9,858.925	65,177.595	229

Source: Tranalysis

7 Consumption of atrazine in China, 2019–2022E

Atrazine is mainly applied to control annual weeds in corn and sugarcane fields, and it is also widely used in sorghum field, grapyery and tea garden, etc.

Domestically, atrazine formulations, mainly including 38% SC, 50% SC, 80% WP and 90% WDG, are applied. Notably, atrazine 38% SC plays the dominant role in domestic consumption. In 2022, the utilisation of 38% atrazine SC is expected to account for 65.81% of the total consumption volume.

In 2022, the actual domestic consumption volume of atrazine formulations is expected to stand at 12,850 tonnes (converted to 100% technical) and it sees a 23.29% year on year decrease, given the reducing planting area of corn and sugarcane fields the policies of cutting down unit consumption of pesticides. Since 2015, the Ministry of Agriculture and Rural Affairs of the People's Republic of China has been pushing forward the zero-growth campaign for the use of chemical fertilizers and pesticides. Statistics show that pesticide utilization rate on rice, wheat and corn in China averaged 40.60% in 2020, up by about 4% compared with that in 2015.

It should be noticed that the long residual effect of this product has been a concern for years. There are risks that it would be replaced for safety and environmental protection by other herbicide products.

Table 7-1 Apparent consumption of atrazine (converted to 100% technical) in China in 2019–2022E, tonne

Year	Output	Export	Import	Apparent consumption
2019	65,863	65,178	N/A	685
2020	78,473	65,897	N/A	12,576
2021	75,854	74,145	N/A	1,709
2022	84,196	75,628	N/A	8,568

Note:1. Apparent consumption volume = Output - Export + Import 2. The apparent consumption of atrazine in China in 2022 is estimated.

Source:CCM

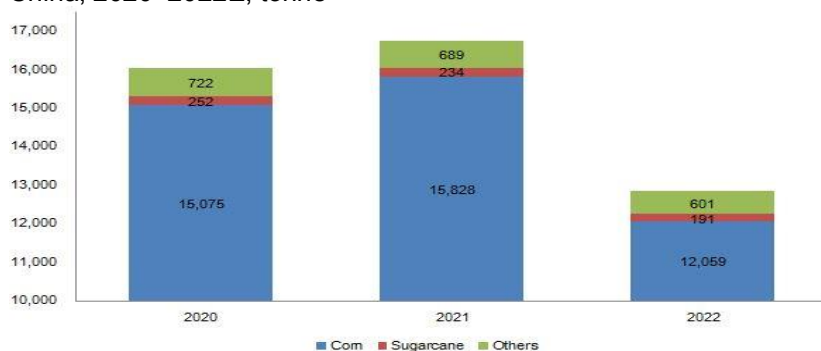
Table 7-2 Actual consumption volume of major atrazine formulations in China in 2020–2022E, tonne

Year	38% SC	50% SC	80% WP	90% WDG	Total
2020	23,263	7,311	1,727	2,997	35,298
2021	24,195	7,625	1,832	3,140	36,792
2022	18,576	5,822	1,406	2,401	28,225

Note: The actual consumption volume of major atrazine formulations in China in 2022 is estimated.

Source:CCM

Figure 7-1 Actual consumption structure of atrazine formulations (converted to 100% technical) by crop in China, 2020–2022E, tonne



Note: The actual consumption of atrazine formulations by crop in China in 2022 is estimated.

Source:CCM

8 Competing products of atrazine in China

- Atrazine and its major substitutes in China

Table 8-1 Comparison among atrazine, 2,4-D and acetochlor in China, 2022E

Item	Atrazine	2,4-Dichlorophenoxyacetic acid (2,4-D)	Acetochlor
Pesticide variety	Triazine herbicide	Phenoxyacetic herbicide	Chloroacetamide herbicide
Mode of action	Photosynthetic inhibitor	Growth regulator	Seedling growth inhibitor
Capacity of technical, t/a	140,000	250,700	89,000
Output of technical (converted to 100% AI), tonne	84,196	61,870	23,552
Operating rate	60%	25%	26%
Ex-works price, USD/t	97% TC: 5,702	96% TC: 3,660	92% TC: 6,533
Advantage	1. Good effect 2. High safety	1. High efficiency of weeding 2. Wide application areas 3. Low price	1. Broad spectrum 2. Convenient for application
Disadvantage	1. Long residual effect 2. Harmful to some rotated crops	High toxicity	1. Short pharmacodynamic period 2. Its metabolites on the surface water are hazardous to human health.

Note: The output, capacity and price in 2022 are estimated.
Source: CCM

- Other competing herbicides applied on corn

Table 8-2 Information of emerging competing herbicides applied on corn

Item	Topramezone	Amicarbazone	Tembotrione
Pesticide variety	Pyrazolone herbicide	Triazolone herbicide	Triketone herbicide
Mode of action	4-Hydroxyphenylpyruvate dioxygenase (HPPD) inhibitor	Photosynthetic inhibitor	HPPD inhibitor
First registration in China	Year 2013	Year 2016	Year 2021
Main specifications registered in China, as of 19 Dec. 2022	97% TC, 30% SC, 30% OD, 4% OD & topramezone-atrazine 310g/L SC	97% TC, 70% WG, nicosulfuron-amicarbazone 26% OD & 24% OD	95% TC, 96% TC, 97% TC, 98% TC, 8% OD, tembotrione-atrazine 23.5% SC
Advantage	1. Compared with other HPPD-inhibiting herbicides, it has a highly effective control over broad spectrum annual warm season grasses. 2. Long lasting control 3. Strongly pronounced foliar activity even against advanced weed growth stages 4. Good crop safety	1. Broad spectrum 2. Have a good selectivity profile and is a more potent herbicide than atrazine, which enables its use at lower rate. 3. Low acute toxicity	1. Broad spectrum 2. It can easily dissolve in water with safety to aquatic environment. 3. It is unlikely to enter the atmosphere and travel long distances in air.
Disadvantage	1. Insufficient control against cool season grasses 2. High price due to limited capacity and expensive raw materials	1. Inefficient if applied before rainfall 2. Poor performance upon the soil with a pH rating above 7.4	Its breakdown products have a potential to move down through the soil.

Source: CCM

9 Conclusions & trend

Atrazine is still the first herbicide choice for corn, sugarcane, fruits and vegetables etc., despite launches of new pesticides. In 2021–2022, China's atrazine industry experienced an increased output and oversea orders though the domestic consumption volume decreased as the planting area of corn and sugarcane fields dropped and the policies of cutting down unit consumption of pesticides. Unlike the sluggish domestic market, the growing overseas orders have consumed the remaining stock of atrazine products.

Currently, the domestic capacity of atrazine technical can meet domestic and foreign demands, and the industry concentration ratio is high. It is hard for a new entrant to capture much market share, and the capacity will not have a large improvement in the coming years.

Moreover, the Chinese government determines to curb the blind expansion of high-energy consumption and high-emission projects and promotes green transformation in key industries and enterprises in 2021. In the recent three years, the production capacity of atrazine technical has been maintained at 14,000 t/a with no new capacity to be built. It is expected that the atrazine market in China will be in a gradual decline in future. In Nov. 2022, China released the *Action Plan for the Amount Reduction of Chemical Pesticides by 2025*, setting the target that by 2025 the chemical pesticide use for major food crops such as rice, wheat, corn, and etc. will reduce by 5% respectively, compared with the *13th Five-Year Plan* period (2016–2020). It is expected that the demand of atrazine in China will gradually decline in future.

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