

Atrazine Market and Production in China 2023

**The Tenth Edition
February 2024**

Researched & Prepared by:

Kcomber Inc.

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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 2020–2023, the capacity of atrazine technical remained at 140,000 t/a. The output of atrazine technical dropped in 2023 after a short-term recovery in 2022, with the output reaching 62,900 tonnes, down by around 28% YoY.

- Import & export

China's atrazine is export-oriented. Export volume of atrazine technical and formulations (converted to 100% technical) usually takes a large proportion of the domestic annual output; the figure was some 80% in 2020–2021. The export volume of atrazine products in China in Jan.–Oct. 2023 was only 21,435 tonnes, down by 69.90% YoY. Argentina was the largest importer of China's atrazine products during this period, accounting for 28.94% of the total.

- 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 2023, the price first kept stable in H1 and then slipped, along with the price of its key raw material—cyanuric chloride stayed quite high.

- Consumption

In 2023, the actual domestic consumption volume of atrazine formulations is expected to stand at 15,389 tonnes (converted to 100% technical) and it sees a 19.89% year-on-year increase, due to the increasing corn-growing areas under food security policy in China.

Introduction & methodology

Atrazine Market and Production in China is CCM's tenth edition report on China's atrazine industry, finished in Feb. 2024.

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 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 USD/CNY exchange rate, Jan. 2018–Feb. 2024

Year	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
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
2023	6.9475	6.7492	6.9400	6.8805	6.9054	7.0965	7.2157	7.1283	7.1788	7.1789	7.1778	7.1104	7.0424
2024	7.0770	7.1049	-	-	-	-	-	-	-	-	-	-	7.0910

Source: The People's Bank of China

1 Overview of atrazine industry in China

1.1 Brief introduction to pesticide industry in China

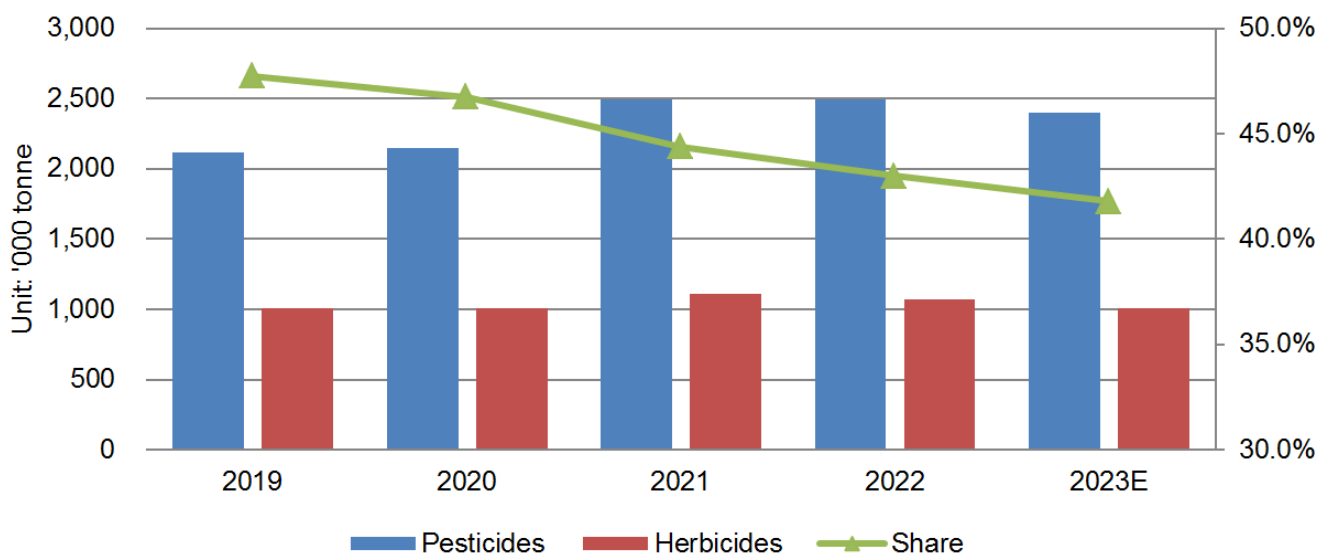
- Supply and demand

China is now the world's largest exporter of pesticides, and herbicide is an important pesticide category. In recent years, amid rising labour 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. In 2022, China's herbicide output marked a slight drop from that in 2021, standing at 1,074,000 tonnes (converted to 100% technical, same below), nudging down by 3.20% year on year.

In terms of export, China exported 1,927,020 tonnes of pesticides in 2022, with a year-on-year drop of 12.49%. Yet the export volume of herbicides in 2022 stood at 1,517,969 tonnes, up by 9.21% year on year, accounting for 78.77% of the total pesticide exports. The total value of herbicide exports raked in USD7.67 billion, rocketed by 56.51% from 2021 (=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 still predominates in China's pesticide market in 2019–2023, accounting for above 40% of the total each.

Figure 1.1-1 Output and share of herbicides in China's pesticide industry, 2019–2023



Note: All the volumes are calculated by 100% technical.

Source: National Bureau of Statistics of China

- Import and export

Table 1.1-1 China's imports and exports of pesticides and herbicides, 2018–2022

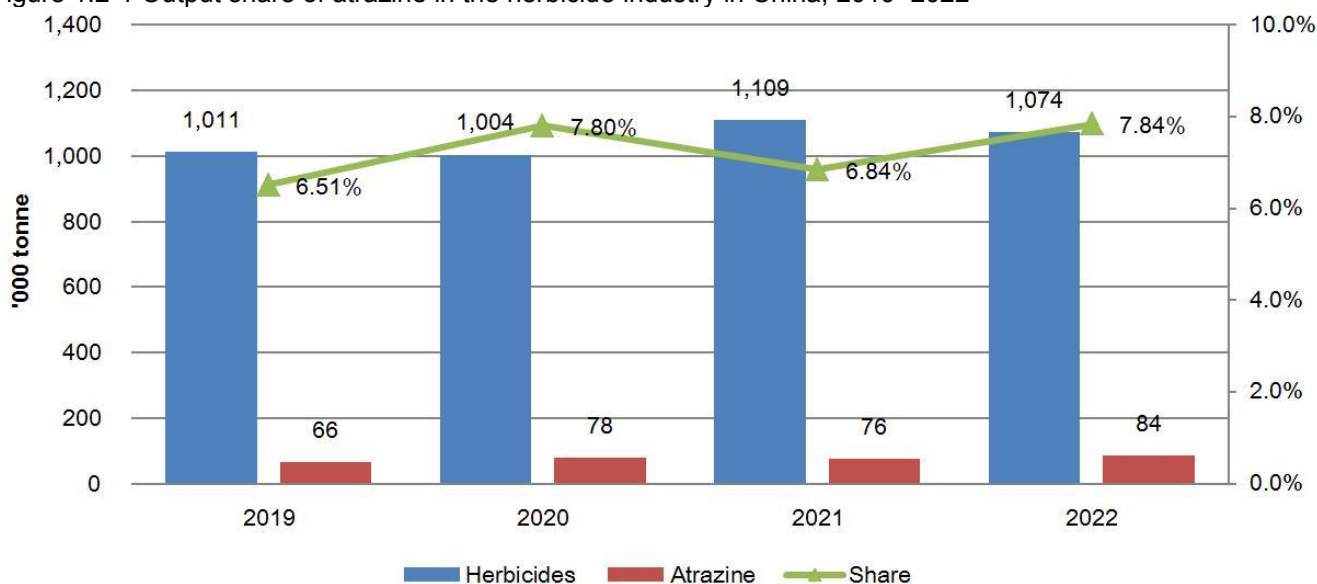
Year	Pesticides				Herbicides				Share of herbicides/pesticides			
	Import		Export		Import		Export		Import		Export	
	Volume, tonne	Value, million USD	Volume, tonne	Value, million USD	Volume, tonne	Value, million USD	Volume, tonne	Value, million USD	Volume	Value	Volume	Value
2018	79,000	489	1,405,400	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%
2022	51,535	719	1,927,020	10,363	13,070	127	1,517,969	7,669	25.36%	17.70%	78.77%	74.01%

Source: National Bureau of Statistics of China

1.2 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 1.2-1 Output share of atrazine in the herbicide industry in China, 2019–2022



Note: The data above are calculated by 100% technical.
Source: The National Bureau of Statistics of China & CCM

2 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 2 Feb., 2024, there were 1,050 registrations of atrazine in China, of which 178 were single formulations (technical products excluded) and 847 mixed formulations. Registrations of atrazine technical were held by 25 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., Shandong Aokun Crop Science Co., Ltd. and Liaoning Sanzheng Chemical Co., Ltd.

Table 2-1 Annual new registrations of atrazine in China, as of 2 Feb., 2024

Year	Technical	Formulations	Total
Before 2015	19	459	478
2015	0	107	107
2016	1	80	81
2017	5	151	156
2018	0	136	136
2019	0	0	0
2020	0	12	12
2021	0	51	51
2022	0	7	7
2023	0	22	22
Total	25	1,025	1,050

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

Table 2-2 Registrations of atrazine technical in China, as of 2 Feb., 2024

No.	Registration code	Registrant	Registrant (CN)	Content	Expiry date
1	PD20094984	Liaoning Sanzheng Chemical Co., Ltd.	辽宁三征化学有限公司	96%	2024/4/21
2	PD20096276	Anhui Zhongshan Chemical Co., Ltd.	安徽中山化工有限公司	97%	2024/7/22
3	PD20097438	Shandong Eshung Industrial Co., Ltd.	山东亿盛实业股份有限公司	95%	2024/10/29
4	PD20160978	Hebei Lingang Chemical Co., Ltd.	河北临港化工有限公司	95%	2026/8/1
5	PD20170559	Weihai Hanfu Biochemical Medicine Co., Ltd.	威海韩孚生化药业有限公司	98%	2027/4/9
6	PD20171053	Inner Mongolia Lingsheng Crop Technology Co., Ltd.	内蒙古灵圣作物科技有限公司	98%	2027/5/30
7	PD20121068	Jingma Chemicals Co., Ltd.	捷马化工股份有限公司	97%	2027/7/11
8	PD20070230	Shandong Vicome Greenland Chemical Co., Ltd.	山东胜邦绿野化学有限公司	95%	2027/8/7

No.	Registration code	Registrant	Registrant (CN)	Content	Expiry date
9	PD20172024	Ningxia Gerui Fine Chemical Co., Ltd.	宁夏格瑞精细化工有限公司	98%	2027/9/18
10	PD20171964	Xiangshui Zhongshan Biological Technology Co., Ltd.	响水中山生物科技有限公司	97%	2027/9/18
11	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
12	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
13	PD20080517	Nanjing Huazhou Pharmaceutical Co., Ltd.	南京华洲药业有限公司	96%	2028/4/28
14	PD93105	Jilin Lvsheng Agrochemical Co., Ltd.	吉林市绿盛农药化工有限公司	92%	2028/5/27
15	PD20080706	Zhanhua Guochang Fine Chemical Co., Ltd.	沾化国昌精细化工有限公司	98%	2028/6/3
16	PD20080805	Zhejiang Zhongshan Chemical Industry Group Co., Ltd.	浙江中山化工集团股份有限公司	95%	2028/6/19
17	PD93105-2	Zhejiang Changxing First Chemical Co., Ltd.	浙江省长兴第一化工有限公司	97%	2028/6/26
18	PD20081023	Shoujian Technology Co., Ltd.	首建科技有限公司	98%	2028/8/5
19	PD20081482	Jilin Jinze Pesticide Co., Ltd.	吉林金泽农药有限公司	92%	2028/11/3
20	PD20081892	Syngenta AG	瑞士先正达作物保护有限公司	96%	2028/11/19
21	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%	2028/11/24
22	PD20085579	Heilongjiang Jixiang Agrochemical Co., Ltd.	黑龙江吉翔农化有限公司	97%	2028/12/24
23	PD20091306	Shandong Dacheng Biochemical Co., Ltd.	山东大成生物化工有限公司	95%	2029/1/31
24	PD20093639	Shandong Dehao Chemical Co., Ltd.	山东德浩化学有限公司	97%	2029/3/24
25	PD20094227	Guangxi Research Institute of Chemical Industry	广西化工研究院有限公司	95%	2029/3/30

Source: ICAMA & CCM

Table 2-3 Registrations of atrazine formulations in China, as of 2 Feb., 2024

Item	Content	Number
Single formulation	SC	99
	WG	36
	WP	35
	OD	8
	Sub-total	178
Mixed formulation	Nicosulfuron•Atrazine	160
	Mesotrione•Atrazine	131
	Nicosulfuron•Mesotrione•Atrazine	97
	Propisochlor•Atrazine	64
	Acetochlor•Atrazine	43
	Others	352
	Sub-total	847
Total		1,025

Source: ICAMA & CCM

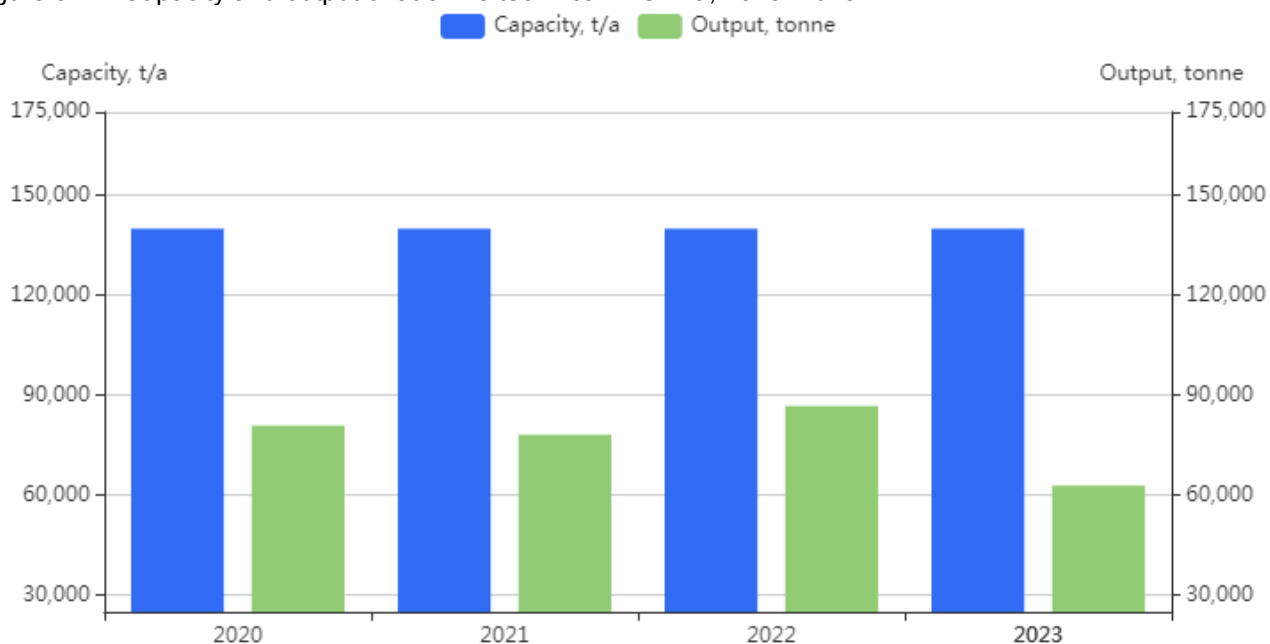
3 Supply of atrazine in China, 2020–2023E

3.1 Summary of atrazine technical production

During 2020–2023, the capacity of atrazine technical remained at 140,000 t/a in China. As to the output of atrazine technical, due to strong overseas demand, China's atrazine output surged by 11.00% year-on-year in 2022; while it dropped in 2023—the domestic output reached 62,900 tonnes, down by 27.54% year on year, with a shrank of exports in value and volume to major destinations, such as Brazil, Argentina and the US.

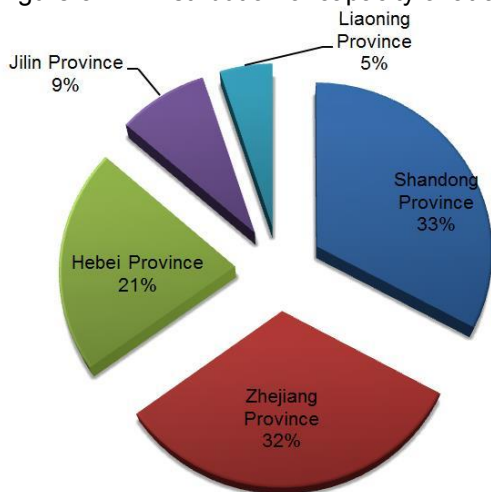
Atrazine technical production is highly concentrated in East China and North China. In 2023, at least 65% of atrazine capacity and output was concentrated in Shandong and Zhejiang provinces; the output from regions beyond Zhejiang, Shandong and Hebei made up only some 3% of the total. Besides, the top three atrazine technical producers (by output) contribute over 70% to the domestic total.

Figure 3.1-1 Capacity and output of atrazine technical in China, 2020–2023E



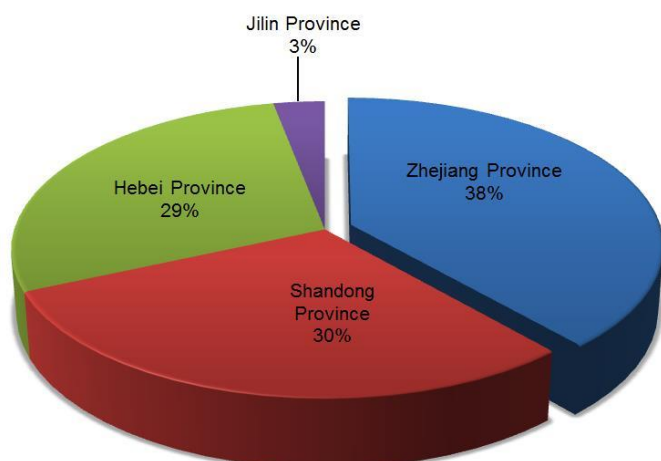
Note: The output and capacity in 2023 are estimated.
Source: CCM

Figure 3.1-2 Distribution of capacity of atrazine technical in China by region, 2023E



Note: Distribution of capacity of atrazine technical in China in 2023 is estimated.
Source: CCM

Figure 3.1-3 Distribution of output of atrazine technical in China by region, 2023E



Note: 1. It is based on major producers' output of atrazine technical only. 2. The distribution of capacity of atrazine technical in China in 2023 is estimated.

Source: CCM

3.2 Key atrazine technical manufacturers

In 2023, 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. Moreover, the EIA approval of Hebei Lingang Chemical Co., Ltd.'s 180,000 t/a triazine agrochemical expansion project was publicised on the government website on 8 Jan., 2024. With the total investment of USD14.07 million (RMB100 million), the project proposed to construct the production capacity of 107,840 t/a atrazine technical and 72,160 t/a for other triazine series agrochemicals.

Table 3.2-1 Capacity and output of major atrazine technical producers in China, 2020–2023E

No.	Producer	Abbreviation	Location	Status, as of Feb., 2024	2023		2022		2021		2020	
					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	21,000	30,000	27,800	30,000	25,400	30,000	27,800
2	Hebei Lingang Chemical Co., Ltd. (previously Hebei Shanli Chemical Co., Ltd.)	Hebei Lingang	Hebei	Active	30,000	18,000	30,000	24,100	30,000	17,900	30,000	19,000
3	Zhejiang Changxing First Chemical Co., Ltd.	Zhejiang Changxing	Zhejiang	Active	15,000	3,250	15,000	5,700	15,000	5,700	15,000	6,900
4	Shoujian Technology Co., Ltd. (previously Shandong Qiaochang)	Shandong Shoujian	Shandong	Active	15,000	2,600	15,000	3,600	15,000	3,500	15,000	4,600

No.	Producer	Abbreviation	Location	Status, as of Feb., 2024	2023		2022		2021		2020	
					Capacity, t/a	Output, tonne	Capacity, t/a	Output, tonne	Capacity, t/a	Output, tonne	Capacity, t/a	Output, tonne
	Chemical Co., Ltd.)											
6	Jilin Jinze Pesticide Co., Ltd. (previously Jilin Jinqiu Pesticide Co., Ltd.)	Jilin Jinze	Jilin	Active	12,000	1,900	12,000	3,200	12,000	3,100	12,000	2,200
5	Shandong Weifang Rainbow Chemical Co., Ltd.	Weifang Rainbow	Shandong	Active	12,000	6,000	12,000	4,800	12,000	4,900	12,000	3,200
7	Shandong Kesai Agrochem Biotechnology Co., Ltd.	Shandong Kesai	Shandong	Active	10,000	5,500	10,000	9,600	10,000	9,200	10,000	8,900
8	Shandong Binnong Technology Co., Ltd.	Shandong Binnong	Shandong	Active	9,000	4,650	9,000	8,000	9,000	8,500	9,000	8,300
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	0	0
Total					140,000	62,900	140,000	86,800	140,000	78,200	140,000	80,900

*Note: The output and capacity in China in 2023 are estimated.
Source: CCM*

4 Circulation of atrazine in China

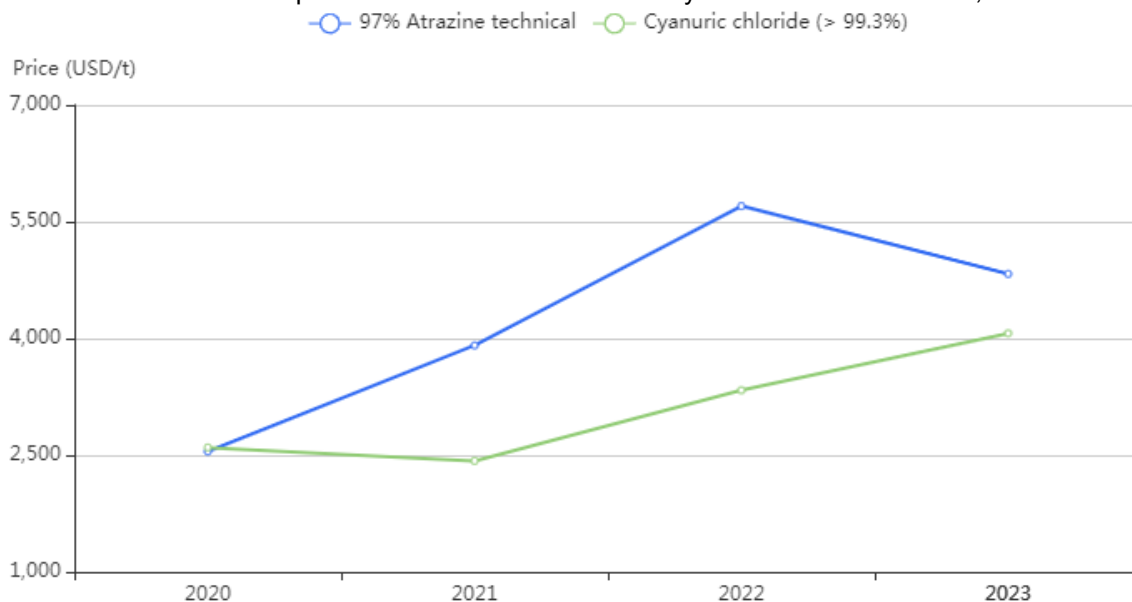
4.1 Price of atrazine in China, 2020–2023

In 2021, the ex-works price of atrazine technical in China 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 2022, the price experienced an overall downtrend though the price of cyanuric chloride stayed quite high. Since Q2 2023, the monthly ex-works price of cyanuric chloride first slipped and then kept stable in H2. As a result, the ex-works price of 97% atrazine technical in H1 hovered around USD5,204/t and then dropped at USD4,455/t on average in H2.

According to CCM, the monthly ex-works price of 97% atrazine technical in China was USD4,079/t in Dec. 2023, down by 18.17% YoY and 37.40% from the record high in Dec. 2021. Regarding atrazine 50% SC, its price in Dec. 2023 was around USD2,532/t, down by 18.04% YoY or slipping by 1.78% MoM, due to decreased demand during the off-season of China's corn-growing fields.

Figure 4.1-1 Annual ex-works prices of atrazine technical and cyanuric chloride in China, 2020–2023



Source: CCM

Figure 4.1-2 Monthly ex-works price of 97% atrazine technical in China, 2021–2023



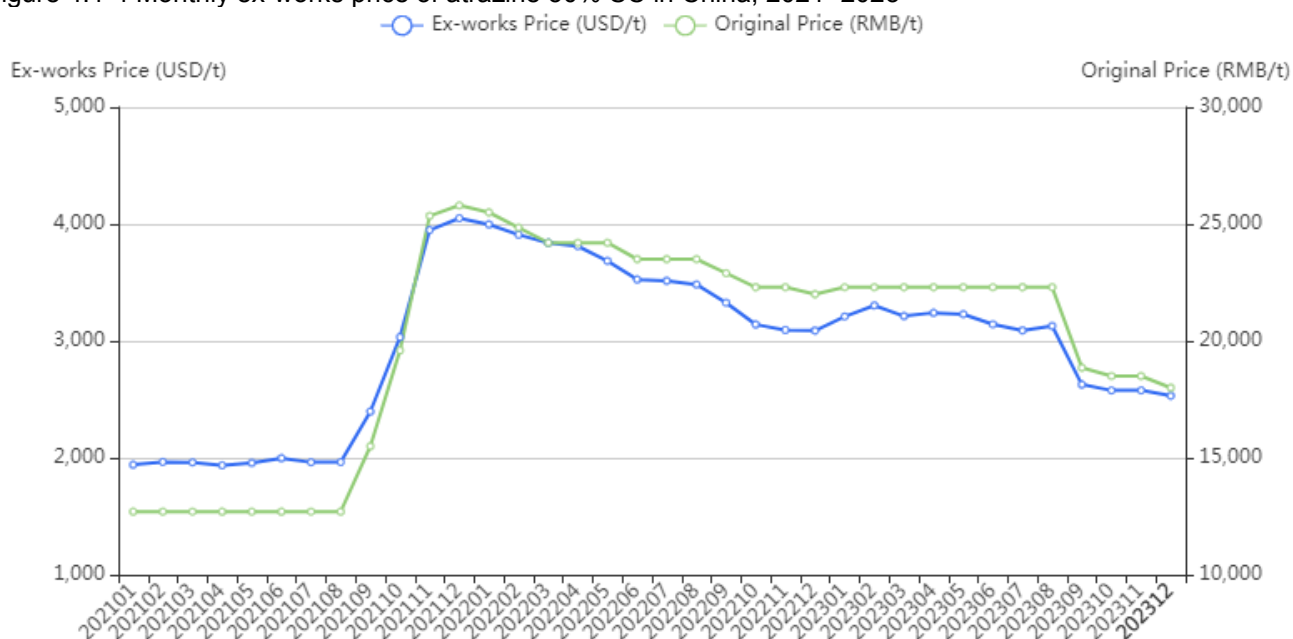
Source: CCM

Figure 4.1-3 Monthly ex-works price of cyanuric chloride (99.3%) in China, 2021–2023



Source: CCM

Figure 4.1-4 Monthly ex-works price of atrazine 50% SC in China, 2021–2023



Source: CCM

4.2 Import and export of atrazine, 2020–Oct., 2023

With low import demand and abundant atrazine supply, China is a big atrazine exporter. Since 2008, the annual export volume of atrazine technical and formulations (converted to 100% AI, same below) has accounted for about 70% of the domestic output, with the exception of 2018, which accounted for less than 60% due to low overseas demand. In 2021 and 2022, this ratio exceeded 80%.

According to Tranalysis's monitoring import and export data, China's export volume of atrazine products to 22 major destinations in Jan.–Oct. 2023, decreasing by 69.90% YoY to 21,435 tonnes, accounting for only 27.34% of the 2022 total. Export of atrazine technical also fell sharply in the first ten months of 2023. In Jan.–Feb., the export volume of atrazine experienced a short-term recovery to 6,473 tonnes in total from a continuing decline in Q4 2022; in Sept, the volume hit a low level of 788 tonnes, down by 24.22% MoM or 91.50 YoY.

In Jan.–Oct., 2023, the main specifications of atrazine products for export were 97% technical, 95% technical, 98% technical, 80% WP, 90% WDG, 50% SC and 500g/L SC. The export volume of atrazine technical products was 13,660 tonnes, accounting for over 63.73% of the total export. Argentina, the US, India and Ghana were the four major export destinations during the period, accounting for 64.40% of China's total export volume. Among them, 6,204 tonnes (28.94% of the total) were exported to Argentina and 7,599 tonnes to the US, India and Ghana, totalling 35.45% of the total.

The top four exporters were Hebei Shanli Chemical Co., Ltd., UPI Cropscience Co., Ltd., Shandong Weifang Rainbow Chemical Co., Ltd. and Zhejiang Zhongshan Chemical Industry Group Co., Ltd., contributing 38.63% of the total export. As to China's major atrazine technical producers, Hebei Shanli Chemical Co., Ltd. with its subsidiaries topped the list, followed by Shandong Weifang Rainbow Chemical Co., Ltd. and Zhejiang Zhongshan Chemical Industry Group Co., Ltd.

4.2.1 Details in Jan., 2020–Oct., 2023

By month

Table 4.2.1-1 China's exports of atrazine by month in Jan.–Oct. 2023, tonne

Month	200g/L SL	38% SC	380g/L SC	50% FW	50% SC	50% WP	500g/L SC	80% WP	90% WDG	95% Tech.	96% Tech.	97% Tech.	98% Tech.	Total volume (converted to 100% AI)	Value (million USD)
January	0.000	17.280	0.000	0.000	460.470	0.000	0.000	547.403	1,103.640	322.000	0.000	957.177	16.000	2,900.250	16
February	0.000	0.000	0.000	0.000	35.200	0.000	0.000	312.540	750.042	550.000	0.000	2,064.500	108.500	3,573.097	19
March	0.000	15.315	0.000	6.600	126.416	40.000	0.000	383.086	168.920	186.000	15.000	898.250	103.500	1,714.064	9
April	0.000	0.000	29.097	0.000	31.000	0.000	262.946	1,252.104	265.671	222.500	15.000	1,169.088	87.000	2,843.868	16
May	25.402	0.000	0.000	11.000	252.083	0.000	188.340	405.420	108.518	345.000	0.000	1,247.900	0.000	2,191.007	12
June	0.000	0.000	0.000	0.000	89.987	0.000	7.911	967.020	171.910	25.000	0.000	1,597.680	54.500	2,604.194	15
July	0.000	0.000	0.000	0.000	31.656	0.000	695.232	253.009	67.563	152.000	0.000	335.773	20.800	1,117.142	6
August	0.000	0.000	12.240	44.940	492.896	0.000	45.540	141.888	193.798	267.000	0.000	185.500	22.000	1,039.412	5
September	0.000	0.000	33.000	0.000	16.848	0.000	0.000	334.044	81.062	248.000	0.000	196.793	0.000	787.644	3
October	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	35.050	2,693.432	0.000	76.000	0.000	2,664.025	13
Total	25.402	32.595	74.337	62.540	1,536.556	40.000	1,199.969	4,596.514	2,946.174	5,010.932	30.000	8,728.661	412.300	21,434.703	114

Note: 1. Since April 2020, China's export data are sourced from data of the customs of major destinations; in 2023, only 22 destinations were concluded. 2. All the volumes in the table are based on the actual volume, except where "100% AI" is indicated.

Source: Tranalysis

Table 4.2.1-2 China's exports of atrazine by month in 2022, tonne

Month	38% SC	50% SC	58% SE	80% WP	90% WDG	95% Tech.	97% Tech.	98% Tech.	Total volume (converted to 100% AI)	Value (million USD)
January	0.000	165.025	0.000	1,155.456	297.734	3,675.000	7,808.715	320.000	12,647.540	75
February	23.478	37.220	0.000	667.280	109.300	1,515.000	4,113.682	208.000	6,291.364	37
March	8.164	52.086	0.000	294.480	478.411	805.000	4,573.958	222.000	6,112.184	38
April	15.821	22.700	0.000	140.500	934.640	1,451.000	1,578.000	41.640	3,919.789	25
May	0.655	142.549	0.000	570.050	115.268	2,255.000	2,588.000	636.000	5,901.486	33
June	1.028	423.146	0.000	313.620	79.440	4,060.000	1,018.226	165.588	5,524.375	29
July	0.000	891.973	0.000	390.530	739.571	3,550.320	1,236.500	559.000	6,508.375	37
August	5.133	84.665	0.000	191.500	1,130.196	5,449.240	3,090.020	70.000	9,453.919	49
September	10.266	61.000	0.000	39.200	1,340.481	2,691.520	5,520.102	82.000	9,261.454	51
October	0.000	159.597	0.000	57.380	1,734.200	1,144.600	2,906.800	0.000	5,587.065	32
November	0.000	791.914	0.000	568.200	751.895	2,465.100	1,243.500	18.000	5,061.226	27
December	0.000	483.120	77.760	361.000	477.050	200.000	981.600	0.000	2,127.633	11
Total	64.545	3,314.994	77.760	4,749.196	8,188.186	29,261.780	36,659.103	2,322.228	78,396.408	444

Note: 1. Since April 2020, China's export data are sourced from data of the customs of major destinations. 2. All the volumes in the table are based on the actual volume, except where "100% AI" is indicated.

Source: Tranalysis

Table 4.2.1-3 China's exports of atrazine by month, 2021, tonne

Month	38% SC	50% SC	80% WP	90% WDG	95% Tech.	97% Tech.	98% Tech.	Total volume (converted to 100% AI)	Value (million USD)
January	0.000	1,708.953	697.492	419.692	901.500	3,457.466	194.000	6,122.122	22
February	17.873	776.604	674.660	456.418	873.500	2,660.300	642.000	5,353.831	19
March	8.000	183.050	1,015.824	348.288	2,455.000	3,222.422	426.000	7,088.761	24
April	0.000	879.552	1,594.542	488.788	715.000	1,505.000	562.000	4,809.997	17
May	0.000	138.134	318.330	312.120	108.000	1,595.100	193.000	2,438.100	9
June	0.000	90.359	361.067	270.321	25.000	1,374.300	9.000	1,939.349	7
July	0.000	805.064	306.910	343.800	0.000	5,531.645	225.000	6,511.473	24
August	45.335	289.303	89.270	1,203.850	94.920	4,111.682	1,380.200	6,735.836	24
September	17.700	518.200	48.000	823.023	226.842	5,073.200	2,260.000	8,375.345	31
October	0.000	277.886	167.420	493.445	105.073	5,177.607	426.000	6,245.441	26
November	0.000	279.786	177.352	403.380	382.000	6,533.757	12.500	7,346.519	39
December	0.000	194.424	902.568	613.648	912.904	9,149.293	74.000	11,178.365	64
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

Note: 1. Since April 2020, China's export data are sourced from data of the customs of major destinations. 2. All the volumes in the table are based on the actual volume, except where "100% AI" is indicated.

Source: Tranalysis

Table 4.2.1-4 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% AI)	Value (million USD)
January	53.920	0.000	920.186	1,386.596	1,543.278	3,800.000	76.500	809.000	7,455.835	24
February	0.000	0.000	328.305	976.280	501.564	1,808.000	300.000	286.500	3,685.954	12
March	61.280	0.000	516.926	1,699.282	1,703.241	2,798.500	341.500	747.650	6,896.619	22
April	81.988	3.100	422.107	513.886	1,326.658	1,939.525	335.000	183.000	4,177.933	14
May	16.000	0.000	13.574	94.000	896.800	634.000	1,972.900	444.505	3,846.112	11
June	11.000	0.000	23.431	22.000	559.279	191.000	2,907.659	341.000	3,871.858	11
July	38.808	0.000	71.663	287.680	240.000	852.290	3,931.789	726.000	5,828.459	16
August	0.000	0.000	91.300	113.400	18.000	795.500	2,382.333	60.000	3,274.306	10
September	4.180	0.000	39.534	203.328	662.642	855.760	4,795.600	1,587.007	7,798.743	21
October	0.000	0.000	22.603	76.000	745.000	2,956.740	3,970.400	74.000	7,474.408	22
November	0.000	0.000	136.010	122.200	1,348.505	3,065.000	1,651.300	260.148	6,142.435	18
December	0.000	0.000	247.754	651.770	1,015.405	1,074.000	2,804.800	157.500	5,444.553	17
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

Note: 1. Since April 2020, China's export data are sourced from data of the customs of major destinations. 2. All the volumes in the table are based on the actual volume, except where "100% AI" is indicated.

Source: Tranalysis

By destination

Table 4.2.1-5 China's exports of atrazine by destination in Jan.–Oct., 2023, tonne

No.	Destination	200g/L SL	38% SC	380g/L SC	50% FW	50% SC	50% WP	500g/L SC	80% WP	90% WDG	95% Tech.	96% Tech.	97% Tech.	98% Tech.	Total volume (converted to 100% AI)	Value (million USD)
1	Argentina	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	6,395.801	0.000	6,203.927	36
2	The US	0.000	0.000	0.000	0.000	398.900	0.000	0.000	0.000	0.000	2,578.432	0.000	0.000	0.000	2,633.004	14
3	India	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1,305.000	0.000	1,299.500	51.000	2,550.245	11
4	Ghana	25.402	0.000	0.000	0.000	120.643	40.000	393.360	2,667.194	0.000	0.000	0.000	0.000	0.000	2,415.837	13
5	Pakistan	0.000	17.280	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1,079.500	0.000	361.320	361.300	1,736.473	8
6	Panama	0.000	0.000	0.000	0.000	484.400	0.000	744.037	0.000	796.225	0.000	0.000	0.000	0.000	1,330.821	8
7	Nigeria	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1,344.391	8.000	0.000	0.000	22.176	0.000	1,104.224	6
8	Paraguay	0.000	0.000	0.000	0.000	34.800	0.000	0.000	0.000	637.810	48.000	0.000	64.000	0.000	699.109	4
9	Mexico	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	760.304	0.000	0.000	0.000	0.000	684.274	4
10	Vietnam	0.000	0.000	0.000	0.000	0.000	0.000	0.000	198.500	0.000	0.000	26.000	286.750	0.000	461.908	2
11	Brazil	0.000	0.000	0.000	0.000	182.388	0.000	0.000	0.000	0.000	0.000	0.000	282.016	0.000	364.750	2
12	Thailand	0.000	0.000	0.000	0.000	123.108	0.000	0.000	67.208	249.972	0.000	0.000	0.000	0.000	340.295	2
13	Cameroon	0.000	0.000	0.000	0.000	0.000	0.000	0.000	80.280	238.750	0.000	0.000	0.000	0.000	279.099	2
14	Ecuador	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	239.500	0.000	0.000	4.005	0.000	219.435	1
15	The Philippines	0.000	0.000	0.000	0.000	0.000	0.000	0.000	172.426	0.000	0.000	0.000	0.000	0.000	137.941	1

No.	Destination	200g/L SL	38% SC	380g/L SC	50% FW	50% SC	50% WP	500g/L SC	80% WP	90% WDG	95% Tech.	96% Tech.	97% Tech.	98% Tech.	Total volume (converted to 100% AI)	Value (million USD)
	Others	0.000	15.315	74.337	62.540	192.317	0.000	62.572	66.515	15.612	0.000	4.000	13.093	0.000	273.361	2
	Total	25.402	32.595	74.337	62.540	1,536.556	40.000	1,199.969	4,596.514	2,946.174	5,010.932	30.000	8,728.661	412.300	21,434.703	114

Note: 1. Since April 2020, China's export data are sourced from data of the customs of major destinations; in 2023, only 22 destinations were concluded. 2. All the volumes in the table are based on the actual volume, except where "100% AI" is indicated.

Source: Tranalysis

Table 4.2.1-6 China's exports of atrazine by destination in 2022, tonne

No.	Destination	38% SC	50% SC	58% SE	80% WP	90% WDG	95% Tech.	97% Tech.	98% Tech.	Total volume (converted to 100% AI)	Value (million USD)
1	Brazil	0.000	0.000	0.000	0.000	3,024.000	22,924.000	12,473.667	1,772.000	38,335.417	190
2	Argentina	0.000	0.000	0.000	0.000	592.800	0.000	13,973.200	0.000	14,087.524	97
3	The US	0.000	1,315.863	0.000	0.000	0.000	4,306.280	8,208.910	0.000	12,658.906	71
4	Nigeria	0.000	0.000	0.000	2,565.932	241.760	0.000	0.000	0.000	2,270.330	14
5	Mexico	0.000	0.000	0.000	0.000	1,778.396	0.000	599.101	0.000	2,181.684	16
6	India	0.000	0.000	0.000	0.000	0.000	850.000	825.500	151.000	1,756.215	11
7	Ghana	0.000	28.512	0.000	1,809.404	15.000	0.000	0.000	0.000	1,474.139	10
8	Paraguay	0.000	0.000	0.000	0.000	1,432.785	0.000	165.500	18.000	1,467.682	9
9	Pakistan	0.000	0.000	0.000	0.000	0.000	891.500	20.000	290.800	1,151.309	7
10	Australia	0.000	919.675	0.000	0.000	399.554	0.000	0.000	0.000	782.649	6
11	Vietnam	0.000	18.000	0.000	167.500	0.000	0.000	321.000	31.000	484.030	3
12	South Africa	0.000	0.000	0.000	0.000	0.000	270.000	70.000	40.288	363.882	2

No.	Destination	38% SC	50% SC	58% SE	80% WP	90% WDG	95% Tech.	97% Tech.	98% Tech.	Total volume (converted to 100% AI)	Value (million USD)
13	Peru	0.000	415.651	0.000	35.640	0.000	0.000	0.000	19.140	238.469	2
14	New Zealand	0.000	158.275	0.000	0.000	164.963	0.000	0.000	0.000	221.273	2
15	Ecuador	0.000	4.368	0.000	0.000	177.085	0.000	2.000	0.000	163.326	1
	Others	64.545	454.650	77.760	170.720	361.843	20.000	0.225	0.000	759.574	5
	Total	64.545	3,314.994	77.760	4,749.196	8,188.186	29,261.780	36,659.103	2,322.228	78,396.408	444

Note: 1. Since April 2020, China's export data are sourced from data of the customs of major destinations. 2. All the volumes in the table are based on the actual volume, except where "100% AI" is indicated.

Source: Tranalysis

Table 4.2.1-7 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% AI)	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
10	Paraguay	0.000	16.240	0.000	1,165.722	84.000	161.600	52.500	1,344.622	6

No.	Destination	38% SC	50% SC	80% WP	90% WDG	95% Tech.	97% Tech.	98% Tech.	Total volume (converted to 100% AI)	Value (million USD)
11	Chile	0.000	1,731.680	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		80.908	769.254	164.072	562.401	197.000	73.000	104.000	1,381.091	7
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

Note: 1. Since April 2020, China's export data are sourced from data of the customs of major destinations. 2. All the volumes in the table are based on the actual volume, except where "100% AI" is indicated.

Source: Tranalysis

Table 4.2.1-8 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% AI)	Value (million USD)
1	Brazil	0.000	0.000	0.000	0.000	1,873.925	3,440.000	11,223.400	2,578.000	18,367.671	52
2	Argentina	0.000	0.000	0.000	0.000	1,613.280	1,250.000	9,484.230	451.000	12,281.135	39
3	The US	0.000	0.000	0.000	0.000	514.240	9,455.050	2,435.211	0.000	11,807.268	31
4	India	0.000	0.000	0.000	0.000	0.000	1,533.000	1,015.000	1,148.000	3,565.940	8
5	Pakistan	84.600	0.000	148.260	21.000	330.700	2,133.600	111.100	893.148	3,424.480	10
6	Chile	0.000	0.000	421.878	0.000	142.400	1,580.000	447.000	0.000	2,272.203	7
7	Mexico	0.000	0.000	39.916	85.000	1,756.032	0.000	185.000	296.505	2,138.412	8

No.	Destination	38% SC	48% WP	50% SC	80% WP	90% WDG	95% Tech.	97% Tech.	98% Tech.	Total volume (converted to 100% AI)	Value (million USD)
8	Ghana	0.000	0.000	414.180	2,331.198	0.000	0.000	0.000	0.000	2,066.139	8
9	Nigeria	0.000	0.000	94.422	2,131.340	7.000	0.000	0.000	0.000	1,757.443	6
10	Thailand	0.000	0.000	8.360	425.080	1,138.332	0.000	0.000	0.000	1,368.743	5
11	Australia	0.000	0.000	159.116	0.000	1,057.160	0.000	30.000	0.000	1,060.102	4
12	Indonesia	7.000	0.000	221.100	0.030	0.000	688.000	162.000	0.000	921.862	3
13	Paraguay	0.000	0.000	81.800	0.000	827.675	93.200	22.000	22.000	913.976	3
14	Vietnam	0.000	0.000	0.000	327.000	0.000	13.465	228.300	77.000	571.303	2
15	Peru	0.000	0.000	434.259	37.200	239.370	0.000	0.000	0.000	451.496	2
Others		175.576	3.100	810.101	788.574	1,060.258	584.000	126.540	210.657	2,929.045	11
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

Note: 1. Since April 2020, China's export data are sourced from data of the customs of major destinations. 2. All the volumes in the table are based on the actual volume, except where "100% AI" is indicated.

Source: Tranalysis

By exporter

Table 4.2.1-9 China's exports of atrazine by exporter in Jan.–Oct., 2023, tonne

No.	Exporter	200g/L SL	38% SC	380g/L SC	50% FW	50% SC	50% WP	500g/L SC	80% WP	90% WDG	95% Tech.	96% Tech.	97% Tech.	98% Tech.	Total volume (converted to 100% AI)	Value (million USD)
1	Hebei Shanli Chemical Co., Ltd.	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2,628.432	26.000	88.788	0.000	2,608.095	13
2	UPI Cropscience Co., Ltd.	0.000	0.000	0.000	0.000	0.000	0.000	0.000	11.000	0.000	0.000	0.000	2,510.000	0.000	2,443.500	14

No.	Exporter	200g/L SL	38% SC	380g/L SC	50% FW	50% SC	50% WP	500g/L SC	80% WP	90% WDG	95% Tech.	96% Tech.	97% Tech.	98% Tech.	Total volume (converted to 100% AI)	Value (million USD)
3	Shandong Weifang Rainbow Chemical Co., Ltd.	0.000	17.280	0.000	0.000	197.216	0.000	0.000	558.148	686.487	48.000	0.000	95.000	317.300	1,617.365	9
4	Zhejiang Zhongshan Chemical Industry Group Co., Ltd.	0.000	0.000	0.000	0.000	398.900	0.000	0.000	11.600	34.800	737.000	0.000	707.820	0.000	1,610.829	7
5	Nanjing Bodao Logistics Co., Ltd.	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	805.500	0.000	36.000	0.000	800.145	4
6	Willowood (Hangzhou) Co., Ltd.	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	656.000	0.000	636.320	3
7	Jat Offshore S.A.L.	0.000	0.000	0.000	0.000	0.000	0.000	0.000	647.970	0.000	0.000	0.000	0.000	0.000	518.376	3
8	Shenzhen Baocheng Chemical Industry Co., Ltd.	0.000	0.000	0.000	0.000	0.000	0.000	393.360	300.000	0.000	0.000	0.000	0.000	0.000	436.680	2
9	Shandong Dehao Chemical Co., Ltd.	0.000	0.000	0.000	0.000	0.000	0.000	0.000	224.268	98.000	0.000	0.000	138.000	0.000	401.474	2
10	Dai Company Ltd.	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	400.000	0.000	388.000	2
11	Sinochem International Crop Care (Overseas) Pte. Ltd.	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	370.000	0.000	0.000	0.000	351.500	2
12	Wynca (Hong Kong) Limited	0.000	0.000	0.000	0.000	28.512	0.000	0.000	408.000	0.000	0.000	0.000	0.000	0.000	340.656	2
13	Hebei Huyang Import and Export Co., Ltd.	0.000	0.000	0.000	0.000	14.256	0.000	0.000	300.000	0.000	0.000	0.000	3.000	0.000	250.038	1

No.	Exporter	200g/L SL	38% SC	380g/L SC	50% FW	50% SC	50% WP	500g/L SC	80% WP	90% WDG	95% Tech.	96% Tech.	97% Tech.	98% Tech.	Total volume (converted to 100% AI)	Value (million USD)
14	China Jiangsu International Economic and Technical Cooperation Group, Ltd.	25.402	0.000	0.000	0.000	0.000	0.000	0.000	300.000	0.000	0.000	0.000	0.000	0.000	245.080	2
15	Agricore Chemical Industry Co., Ltd.	0.000	0.000	0.000	0.000	0.000	0.000	0.000	125.500	150.000	0.000	0.000	0.000	0.000	235.400	1
Others		0.000	15.315	74.337	62.540	897.672	40.000	806.609	1,710.028	1,976.886	422.000	4.000	4,094.053	95.000	8,551.244	47
Total		25.402	32.595	74.337	62.540	1,536.556	40.000	1,199.969	4,596.514	2,946.174	5,010.932	30.000	8,728.661	412.300	21,434.703	114

Note: 1. Since April 2020, China's export data are sourced from data of the customs of major destinations; in 2023, only 22 destinations were concluded. 2. All the volumes in the table are based on the actual volume, except where "100% AI" is indicated.

Source: Tranalysis

Table 4.2.1-10 China's exports of atrazine by exporter in 2022, tonne

No.	Exporter	38% SC	50% SC	58% SE	80% WP	90% WDG	95% Tech.	97% Tech.	98% Tech.	Total volume (converted to 100% AI)	Value (million USD)
1	Hebei Shanli Chemical Co., Ltd.	0.000	0.000	0.000	0.000	0.000	23,316.000	5,854.572	0.000	27,829.135	133
2	Zhejiang Zhongshan Chemical Industry Group Co., Ltd.	0.000	1,315.863	0.000	11.000	3,125.120	870.000	11,969.167	0.000	15,863.297	90
3	Shandong Weifang Rainbow Chemical Co., Ltd.	0.000	1,270.789	0.000	353.744	2,619.128	0.000	2,872.326	1,754.940	7,730.770	48
4	Shandong Dehao Chemical Co., Ltd.	0.000	0.000	0.000	353.300	27.000	0.000	6,239.600	0.000	6,359.352	45
5	CropScience Co., Ltd.	0.000	0.000	0.000	0.000	0.000	0.000	4,937.600	0.000	4,789.472	33
6	Shandong Binnong Technology Co., Ltd.	0.000	0.000	77.760	46.000	12.600	0.000	400.000	358.000	832.081	5
7	DAI Co., Ltd.	0.000	0.000	0.000	0.000	0.000	0.000	836.000	0.000	810.920	5

No.	Exporter	38% SC	50% SC	58% SE	80% WP	90% WDG	95% Tech.	97% Tech.	98% Tech.	Total volume (converted to 100% AI)	Value (million USD)
8	UPI Cropscience Co., Ltd.	0.000	0.000	0.000	0.000	0.000	0.000	780.000	0.000	756.600	6
9	Afri Ventures FZE	0.000	0.000	0.000	652.168	0.000	0.000	0.000	0.000	521.734	3
10	Jiangsu High Hope International Group Corporation	0.000	0.000	0.000	598.400	0.000	0.000	0.000	0.000	478.720	4
11	Nanjing Bodao Logistics Co., Ltd.	0.000	0.000	0.000	0.000	0.000	463.000	0.000	0.000	439.850	2
12	Dai Company Ltd.	0.000	0.000	0.000	0.000	0.000	0.000	440.000	0.000	426.800	2
13	S&W International Chemical Logistics (Shanghai) Ltd.	0.000	0.000	0.000	0.000	0.000	0.000	380.000	0.000	368.600	2
14	Jat Offshore S.A.L.	0.000	0.000	0.000	429.400	0.000	0.000	0.000	0.000	343.520	3
15	Agrohao Co., Ltd.	0.000	0.000	0.000	66.150	310.770	0.000	0.000	0.000	332.613	2
	Others	64.545	728.342	0.000	2,239.034	2,093.568	4,612.780	1,949.838	209.288	10,512.943	62
	Total	64.545	3,314.994	77.760	4,749.196	8,188.186	29,261.780	36,659.103	2,322.228	78,396.408	444

Note: 1. Since April 2020, China's export data are sourced from data of the customs of major destinations. 2. All the volumes in the table are based on the actual volume, except where "100% AI" is indicated.

Source: Tranalysis

Table 4.2.1-11 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
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 Jiajia 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

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)
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

Note: 1. Since April 2020, China's export data are sourced from data of the customs of major destinations. 2. All the volumes in the table are based on the actual volume, except where "100% AI" is indicated.

Source: Tranalysis

Table 4.2.1-12 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
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

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
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 Hengdian Imp. & Exp. Co., Ltd.	0.000	0.000	0.000	0.000	0.000	700.000	0.000	0.000	665.000	2
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

Note: 1. Since April 2020, China's export data are sourced from data of the customs of major destinations. 2. All the volumes in the table are based on the actual volume, except where "100% AI" is indicated.

Source: Tranalysis

By manufacturer

Table 4.2.1-13 China's exports of atrazine by manufacturer in Jan.–Oct., 2023, tonne

No.	Manufacturer	200g/L SL	38% SC	380g/L SC	50% FW	50% SC	50% WP	500g/L SC	80% WP	90% WDG	95% Tech.	96% Tech.	97% Tech.	98% Tech.	Total volume (converted to 100% AI)	Value (million USD)
1	Hebei Shanli Chemical Co., Ltd.	0.000	0.000	0.000	0.000	14.256	0.000	0.000	80.000	0.000	2,603.432	26.000	67.288	0.000	2,634.618	13
2	Zhejiang Zhongshan Chemical Industry Group Co., Ltd.	0.000	0.000	0.000	0.000	404.400	0.000	393.360	702.630	258.000	737.000	0.000	734.001	0.000	2,589.139	12
3	Shandong Weifang Rainbow Chemical Co., Ltd.	0.000	0.000	0.000	0.000	197.216	0.000	0.000	424.209	710.347	48.000	0.000	53.000	90.800	1,262.584	7

No.	Manufacturer	200g/L SL	38% SC	380g/L SC	50% FW	50% SC	50% WP	500g/L SC	80% WP	90% WDG	95% Tech.	96% Tech.	97% Tech.	98% Tech.	Total volume (converted to 100% AI)	Value (million USD)
4	Jiangsu Lulilai Co., Ltd.	0.000	0.000	0.000	0.000	0.000	0.000	0.000	62.250	0.000	956.500	0.000	36.000	0.000	993.395	5
5	Shandong Dehao Chemical Co., Ltd.	0.000	0.000	0.000	0.000	0.000	0.000	0.000	144.980	62.000	0.000	0.000	180.000	22.000	367.944	2
6	Hebei Lingang Chemical Co., Ltd.	0.000	0.000	0.000	0.000	0.000	0.000	0.000	140.000	0.000	150.000	0.000	0.000	0.000	254.500	1
7	Shandong Binnong Technology Co., Ltd.	0.000	0.000	0.000	0.000	16.848	0.000	0.000	137.000	10.900	0.000	0.000	14.000	95.000	234.514	1
8	Shandong Kesai Eagrow Co., Ltd.	0.000	15.315	29.097	0.000	28.512	40.000	0.000	80.790	0.000	0.000	0.000	0.000	0.000	115.611	1
9	Jinan Kesai Agrochem Co., Ltd.	0.000	0.000	0.000	0.000	25.920	0.000	0.000	35.500	0.000	0.000	0.000	10.250	0.000	51.303	0
10	Zhejiang Province Changxing First Chemical Co., Ltd.	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	40.000	0.000	0.000	0.000	0.000	36.000	0
Others		25.402	17.280	45.240	62.540	849.404	0.000	806.609	2,789.155	1,864.927	516.000	4.000	7,634.122	204.500	12,895.095	72
Total		25.402	32.595	74.337	62.540	1,536.556	40.000	1,199.969	4,596.514	2,946.174	5,010.932	30.000	8,728.661	412.300	21,434.703	114

Note: 1. Since April 2020, China's export data are sourced from data of the customs of major destinations; in 2023, only 22 destinations were concluded. 2. All the volumes in the table are based on the actual volume, except where "100% AI" is indicated.

Source: Tranalysis

Table 4.2.1-14 China's exports of atrazine by manufacturer in 2022, tonne

No.	Manufacturer	38% SC	50% SC	58% SE	80% WP	90% WDG	95% Tech.	97% Tech.	98% Tech.	Total volume (converted to 100% AI)	Value (million USD)
1	Hebei Shanli Chemical Co., Ltd.	0.000	11.000	0.000	20.000	0.000	23,316.000	5,854.572	0.000	27,850.195	134
2	Zhejiang Zhongshan Chemical Industry Group Co., Ltd.	0.000	1,701.621	0.000	421.150	3,903.390	890.000	11,994.667	0.000	17,113.043	98
3	Shandong Dehao Chemical Co., Ltd.	0.000	0.000	0.000	10.000	10.000	0.000	11,230.200	0.000	10,910.294	76
4	Shandong Weifang Rainbow Chemical Co., Ltd.	0.000	1,270.789	0.000	697.044	2,867.128	0.000	2,922.326	1,754.940	8,277.110	52
5	Shandong Binnong Technology Co., Ltd.	0.000	19.800	77.760	50.000	12.600	0.000	430.000	509.000	1,021.469	6
6	Jiangsu Lulilai Co., Ltd.	0.000	0.000	0.000	101.640	0.000	499.500	0.000	0.000	555.837	3
7	Hebei Lingang Chemical Co., Ltd.	0.000	14.256	0.000	80.000	0.000	150.000	0.000	0.000	213.058	1
8	Shandong Kesai Eagrow Co., Ltd.	0.000	0.000	0.000	196.000	20.000	0.000	0.000	0.000	174.800	1
9	Jinan Kesai Agrochem Co., Ltd.	49.146	0.000	0.000	10.500	0.000	0.000	0.000	0.000	26.584	0
10	Shandong Vicome Greenland Chemical Co., Ltd.	0.000	0.000	0.000	22.000	0.000	0.000	0.000	0.000	17.600	0
Others		15.399	297.528	0.000	3,140.862	1,375.068	4,406.280	4,227.338	58.288	12,236.417	74
Total		64.545	3,314.994	77.760	4,749.196	8,188.186	29,261.780	36,659.103	2,322.228	78,396.408	444

Note: 1. Since April 2020, China's export data are sourced from data of the customs of major destinations. 2. All the volumes in the table are based on the actual volume, except where "100% AI" is indicated.

Source: Tranalysis

Table 4.2.1-15 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)	Value (million USD)
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	66
2	Shandong Dehao Chemical Co., Ltd.	0.000	0.000	0.000	0.000	40.000	10,780.200	0.000	10,494.794	41
3	Hebei Shanli Chemical Co., Ltd.	0.000	3.300	20.000	0.000	235.000	9,910.872	0.000	9,854.314	52
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	31
5	Hebei Lingang Chemical Co., Ltd.	0.000	0.000	80.000	0.000	2,704.714	12.000	0.000	2,645.119	10
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
7	Jiangsu Lulilai Co., Ltd.	0.000	0.000	69.520	0.000	707.000	60.000	0.000	785.466	3
8	Shandong Kesai Eagrow Co., Ltd.	0.000	58.300	469.140	51.000	0.000	0.000	0.000	448.030	2
9	Shandong Vicome Greenland Chemical Co., Ltd.	0.000	0.000	11.000	0.000	300.000	0.000	0.000	293.800	1
10	Jinan Kesai Agrochem Co., Ltd.	63.208	0.000	18.000	0.000	0.000	0.000	0.000	37.787	0
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	0
12	Zhejiang Province Changxing First Chemical Co., Ltd.	0.000	59.400	0.000	0.000	0.000	0.000	0.000	27.324	0
Others		25.700	4,254.558	3,321.669	2,669.854	932.024	14,952.400	983.000	23,379.400	92
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

Note: 1. Since April 2020, China's export data are sourced from data of the customs of major destinations. 2. All the volumes in the table are based on the actual volume, except where "100% AI" is indicated.

Source: Tranalysis

Table 4.2.1-16 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

Note: 1. Since April 2020, China's export data are sourced from data of the customs of major destinations. 2. All the volumes in the table are based on the actual volume, except where "100% AI" is indicated.

Source: Tranalysis

5 Consumption of atrazine in China, 2020–2023E

Atrazine is mainly applied to control annual weeds in corn and sugarcane fields, and it is also widely used in sorghum fields, grapery, tea gardens, 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 2023, the utilisation of 38% atrazine SC is expected to account for 65.98% of the total consumption volume.

In 2023, the actual domestic consumption volume of atrazine formulations is expected to stand at 15,389 tonnes (converted to 100% technical) and it saw a year-on-year increase of 19.89%, due to the increasing corn-growing areas under food security policy in China. Moreover, favourable weather throughout the year in most producing regions across the country pushed corn acreage production and yield hit a new high; it might strengthen the domestic demand for atrazine in the coming future.

However, China officially issued the approved list of genetically modified (GM) corn and soybean varieties on 7 Dec., 2023, composed of 37 corn varieties and 14 soybean varieties, which could negatively impact the demand for atrazine formulations in the long run. According to the *Requirements of Registration Materials for Target Herbicides for Genetically Modified Herbicide-tolerant Crops* issued by MARA on 14 June, 2022, only single formulations such as glyphosate and glufosinate are allowed to be used in herbicide trials recorded for GM herbicide-tolerant crops (mainly corn and soybeans) in China.

It should be noticed that the long residual effect of this product has been a concern for years. It is likely to be replaced by other herbicide products for safety and environmental reasons.

Table 5-1 Apparent consumption of atrazine (converted to 100% technical) in China in 2020–2023E, tonne

Year	Output	Export	Import	Apparent consumption
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
2023	61,000	48,800	N/A	12,200

Note: 1. Apparent consumption volume = Output - Export + Import 2. The apparent consumption of atrazine in China in 2023 is estimated.

Source: CCM

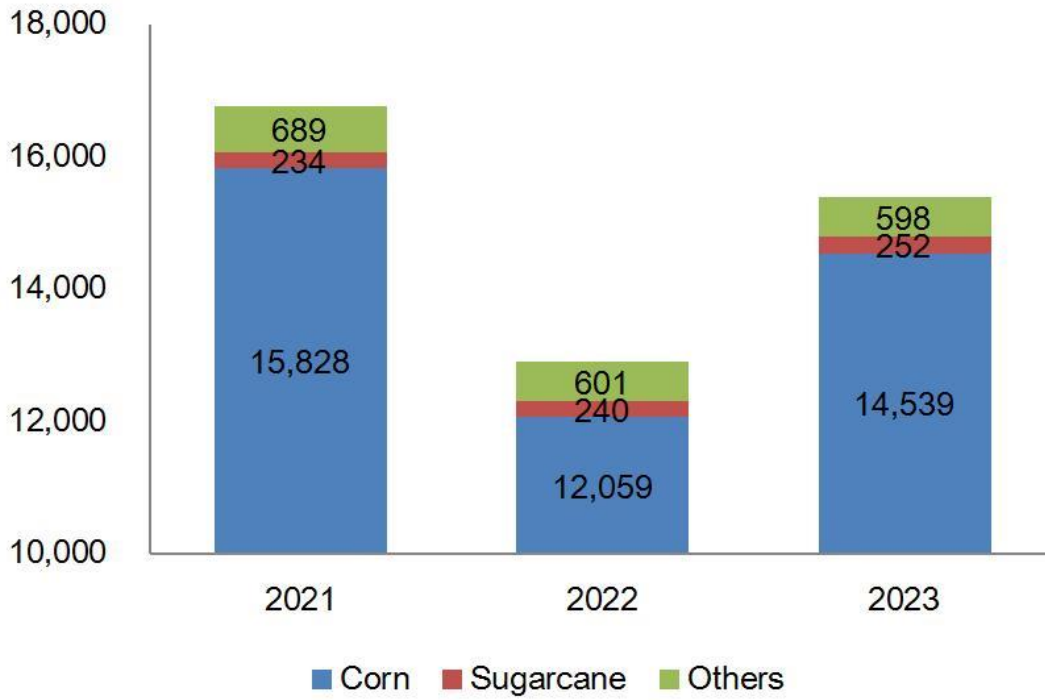
Table 5-2 Actual consumption volume of major atrazine formulations in China in 2020–2023E, tonne

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
2023	20,068	5,609	1,795	2,946	30,417

Note: The actual consumption volume of major atrazine formulations in China in 2023 is estimated.

Source: CCM

Figure 5-1 Actual consumption structure of atrazine formulations (converted to 100% technical) by crop in China, 2021–2023E, tonne



Note: The actual consumption of atrazine formulations by crop in China in 2023 is estimated.
Source: CCM

6 Competing products of atrazine in China

- Atrazine and its major substitutes in China

Table 6-1 Comparison among atrazine, 2,4-D and acetochlor in China, 2023E

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	260,700	89,000
Output of technical (converted to 100% AI), tonne	61,000	58,500	22,540
Operating rate	44%	22%	25%
Ex-works price, USD/t	97% TC: 4,098	96% TC: 2,015	92% TC: 3,829
Advantage	<ol style="list-style-type: none"> 1. Good effect 2. High safety 	<ol style="list-style-type: none"> 1. High efficiency of weeding 2. Wide application areas 3. Low price 	<ol style="list-style-type: none"> 1. Broad spectrum 2. Convenient for application
Disadvantage	<ol style="list-style-type: none"> 1. Long residual effect 2. Harmful to some rotated crops 	High toxicity	<ol style="list-style-type: none"> 1. Short pharmacodynamic period 2. Its metabolites on the surface water are hazardous to human health.

Note: The output, capacity and price in 2023 are estimated.
Source: CCM

- Other competing herbicides applied on corn

Table 6-2 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 2 Feb. 2024	97% TC, 30% SC, 30% OD, 4% OD & topramezone-atrazine 26% SC	97% TC, 70% WG, & 24% or 26% amicarbazone-nicosulfuron OD	95%, 96%, 97% or 98% TC, 8% OD & 23.5% nicosulfuron-tembotrione OD
Advantage	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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	<ol style="list-style-type: none"> 1. Insufficient control against cool season grasses 2. High price due to limited capacity and expensive raw materials 	<ol style="list-style-type: none"> 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

7 Conclusions & trend

Atrazine is still the first herbicide choice for corn, sugarcane, fruits and vegetables etc., despite launches of new pesticides. Chinese government has determined to curb the blind expansion of high-energy consumption and high-emission projects and promote green transformation in key industries and enterprises in 2021. In 2021–2023, 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.

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. However, in the overseas market, the orders for atrazine fell largely since more and more countries issued the policies to lower or remove the usage of atrazine. For example, in Oct., 2023, Brazil's National Health Regulator Anvisa, which would be forced to cancel the registration of pesticides containing atrazine if a judge rules in favor of the labour prosecutors, did not immediately have a comment on the lawsuit filed in a Brasilia court. In 2019–2022, Brazil was the largest importer of China's atrazine products.

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17th Floor, Huihua Commercial & Trade Building, No. 80 Xianlie Zhong Road Guangzhou,
510070, P.R.China

Website: <http://www.cnchemicals.com>

Tel: +86-20-37616606

Fax: +86-20-37616968

Email: econtact@cnchemicals.com