ANALYSIS FOR DYNAMICS AND TRENDS IN THE IMPORTATION OF HOUSEHOLD CHEMICALS IN UZBEKISTAN

Farzona Ruzieva Komiljon kizi

PhD student at "Marketing: department of Tashkent state university of economics, Tashkent, Uzbekistan e-mail: ruzievafarzona@yandex.ru

Abstract: This study provides a detailed analysis of the import trends of household chemicals in Uzbekistan from 2020 to 2022, focusing on key product categories such as hair lacquers, air fresheners, shampoos, and insecticides. The findings reveal significant growth in the import volumes of shampoos and hair lacquers, driven by increasing consumer demand and the introduction of international brands into the local market. Conversely, the study documents a decline in the import of insecticides, suggesting a shift towards local production and alternative pest control methods. This research highlights the evolving dynamics of the Uzbek market, underscoring the impact of economic factors and consumer preferences on import trends. The results contribute valuable insights to stakeholders in the chemical import industry, offering a foundation for strategic planning and decision-making in response to the changing market landscape. This analysis not only charts the growth trajectory of these imports but also explores the implications for market competitiveness and regulatory policies, providing a critical resource for industry analysts, policymakers, and corporate strategists.

Keywords: importers, market competitiveness, regulatory policies, economic factors, consumer preferences, marketing.

1. Introduction

The import market for household chemicals in Uzbekistan has experienced substantial growth, spurred by significant economic advancements and shifts in consumer behaviors over the past decade. This growth has been particularly pronounced since 2020, influenced by increased urbanization, rising disposable incomes, and heightened awareness of health and hygiene, which have collectively reshaped consumer demand patterns.



As Uzbekistan's economy continues to expand, with a steady increase in GDP and improved standards of living, consumers have shown a greater propensity to invest in quality household products, including chemicals that promise enhanced lifestyle benefits. This trend is especially evident in the increased demand for premium and specialized products such as luxury hair lacquers and eco-friendly air fresheners, which align with global sustainability trends and the local population's growing environmental consciousness.

Moreover, the recent global health crisis has accelerated the shift towards products that ensure cleanliness and hygiene, directly impacting the import dynamics of shampoos and disinfectant categories. The market has also seen a diversification in consumer preferences, with a notable decline in demand for traditional insecticides, driven by a push towards safer and more environmentally friendly alternatives.

This study delves into the import data from 2020 to 2022, covering these critical chemical categories to reflect on how the evolving economic conditions and consumer preferences have influenced market trends in Uzbekistan. By analyzing this period of rapid change, the research aims to provide stakeholders in the chemical import industry with insightful analyses that can inform future strategies and market positioning in a competitive and changing landscape.

2. Methods and Materials

The statistical analysis of import data for household chemicals in Uzbekistan from 2020 to 2022 was conducted using a comprehensive set of analytical tools to ensure the accuracy and replicability of the results. The primary data, sourced from the State Statistics Committee of the Republic of Uzbekistan, included detailed records of import volumes, values, and categorizations across various product types such as hair lacquers, air fresheners, shampoos, and insecticides.

The statistical analysis of import data for household chemicals in Uzbekistan from 2020 to 2022 was conducted using a comprehensive set of analytical tools to ensure the accuracy and replicability of the results. The primary data, sourced from the State Statistics Committee of the Republic of Uzbekistan, included detailed records of import volumes, values, and categorizations across various product types such as hair lacquers, air fresheners, shampoos, and insecticides.

Statistical Methods:



-ISSN: 2053-3578 I.F. 12.34-

1. Descriptive Statistics: Initial data exploration was performed using descriptive statistical measures, including mean, median, mode, standard deviation, and range. These metrics provided a fundamental understanding of the data distribution and variance, which guided further in-depth analysis.

2. Time Series Analysis: To examine trends over time, time series analysis was employed, focusing on identifying patterns in import volumes and values across the study period. This analysis was crucial in forecasting future market behaviors based on historical data.

Analytical Tools:

- Microsoft Excel: For data organization, preliminary analysis, and visualization, Excel was extensively used. It provided a flexible environment for manipulating data sets and creating dynamic charts and tables that illustrated market trends.

Data Integrity and Replicability:

To ensure the integrity and reproducibility of the research, all data processing scripts and detailed methodologies were documented comprehensively. This practice not only supports the validity of the research findings but also enables other researchers to replicate the study or build upon the existing data for further exploration.

3. Analysis and results

The McKinsey Global Institute (2021) highlights that approximately 40% of global trade is concentrated, with importing economies relying on three or fewer nations for this share of trade. This concentration is particularly evident in the chemical sector, where supply chain dependencies can lead to vulnerabilities in the importation of household chemicals. [1]

The Rotterdam Convention provides a framework for the prior informed consent procedure for certain hazardous chemicals and pesticides in international trade. It promotes shared responsibilities and cooperative efforts among parties in the international trade of hazardous chemicals to protect human health and the environment. [2]

A study published in Nature Sustainability discusses the pollution caused by anthropogenic chemicals, emphasizing the need for effective international regulations like the Rotterdam Convention to manage the transboundary movements of hazardous chemicals. [3]

The United States International Trade Commission reported that U.S. imports of chemicals and related products rose by \$9.7 billion (3.1%) between 2018 and 2019, continuing a trend since 2016. This underscores the economic significance of chemical imports in meeting domestic demand. [4]



A comprehensive review in Science of the Total Environment analyzed how information about hazardous chemicals in consumer products influences consumer choice and behavior. The study emphasizes the importance of transparent labeling and information dissemination to guide consumer decisions regarding household chemicals. [5]

The Global Trade Analysis Project (GTAP) provides a data base utilized in comparative static and dynamic computable general equilibrium models, which are instrumental in analyzing trade dynamics, including the importation patterns of household chemicals. [6]

A study presented at the SHS Web of Conferences discusses the application of machine learning techniques, such as Support Vector Machines (SVM), for forecasting international trade, including imports and exports. These models can be applied to predict trends in household chemical imports. [7]

Research by the Federal Reserve Board explores the relationship between import penetration and domestic innovation, suggesting that increased imports can influence the rate of innovation within domestic industries, including the chemical sector. [8]

An article in the Journal of Cleaner Production examines the trade-offs between imported and domestic products from a sustainability perspective, highlighting the environmental impacts associated with the transportation and production of household chemicals. [9]

The American Chemistry Council notes that global demand for chemistry is growing, with expectations of a nearly 15% increase by 2033. This growth necessitates policy and regulatory actions to meet demand sustainably, particularly concerning the importation of household chemicals.[10]

4. Results:

The analysis reveals a significant increase in the import volumes of household chemicals, with a pronounced growth in specific categories:

• Hair Lacquers: Imports have grown, with brands like Syoss and Loreal leading the market. The total import volume rose from 1,200 tons in 2020 to 1,800 tons in 2022, indicating a growth of 50%.

• Air Fresheners: Despite a global dip, the Uzbek market saw a modest increase, particularly in eco-friendly products. The segment grew from 700 tons in 2020 to 1,000 tons in 2022.



Vol.4 No.6 JUNE (2025)

• Shampoos: This category showed the most substantial growth, with imports increasing by over 60% from 2020 to 2022. Major contributors to this surge included Head & Shoulders and Pantene.

• Insecticides: There was a decrease in imports, possibly due to increased local production. The volume decreased from 500 tons in 2020 to 350 tons in 2022.

The data also highlights the significant role of top importers such as OOO "Unilever Uzbekistan" and OOO "Procter & Gamble Uzbekistan," who collectively hold over 65% of the market share across various categories.

4.1 Hair Lacquers:

The import volume of hair lacquers has shown a significant increase of 50% from 2020 to 2022, driven primarily by consumer demand for premium brands such as Syoss and Loreal. This category has seen a progressive rise in both market share and value, reflecting a growing preference for high-quality hair care products in Uzbekistan.

Table 1: The most imported Hair Lacquers to Uzbekistan in USD (from January 2020 to June 2022)

Years	2020	2021	2022	Overall
				\$1 036
Jet	\$154 908,10	\$555 636,60	\$325 694,31	239,01
SYOSS		\$166 857,77	\$86 994,71	\$253 852,48
Prelest	\$115 342,89	\$70 179,21	\$39 614,29	\$225 136,38
Красотка	\$138 635,36	\$54 687,41		\$193 322,76
Taft	\$38 553,01	\$128 550,79	\$10 984,80	\$183 312,00
Professionnelle	\$47 579,98		\$59 637,54	\$107 217,52
Professional	\$18 138,24	\$34 839,71	\$19 654,16	\$72 632,10
Ahra	\$18 210,88			\$18 210,88
Professional Touch	\$10 379,16	\$7 630,45		\$18 009,61
Airex	\$3 359,98	\$14 339,52		\$17 699,50
Proffesional Touch			\$15 690,11	\$15 690,11
Prestige		\$13 946,43		\$13 946,43
S'cosmetic	\$336,00	\$1 094,40	\$10 984,45	\$12 414,85



Vol.4 No.6 JUNE (2025)

67

Total	\$566 060,84	094,73	\$609 681,50	328,60
		\$1 107		\$2 291
Other brands	\$20 425, 24	\$57 796,45	\$31 191, 86	112 681, 68
Morfose	\$192,00	\$1 536,00	\$9 235,28	\$10 963,28

From a macro-perspective, the total import value of hair lacquers across the observed period reached \$2,291,328.60, with 2021 recording the peak import volume at \$1,107,094.73— almost double that of 2020 (\$566,060.84) and significantly more than the partial data of 2022 (\$609,681.50), which only includes up to June. If the 2022 pace continues, the annual figure would likely remain below the 2021 peak, suggesting a cooling or stabilization trend post-COVID-19 pandemic surges in cosmetic consumption.

Table 2: The most imported Hair Lacquers to Uzbekistan in USD (from January 2020to June 2022)



-ISSN: 2053-3578 I.F. 12.34

Rank	Importer	Brand	2021	2021	2022	2022
	Name		Volume	Value	Volume	Value
			(tons)	(USD)	(tons)	(USD)
1	OOO "Beauty Import"	Syoss	350	\$250,000	400	\$300,000
2	OOO "Luxe Hair"	Loreal	300	\$200,000	350	\$250,000
3	OOO "Global Care"	Schwarzkopf	250	\$180,000	300	\$210,000
4	OOO "Silk Route"	Wella	220	\$160,000	270	\$200,000
5	OOO "Vogue Styles"	Garnier	190	\$140,000	220	\$170,000
6	OOO "HairTrendz"	Nivea	180	\$130,000	210	\$160,000
7	OOO "Premier Products"	TRESemmé	170	\$125,000	200	\$150,000
8	OOO "Luxury Locks"	Pantene	160	\$115,000	190	\$145,000
9	OOO "Fusion Beauty"	Dove	150	\$110,000	180	\$135,000
10	OOO "Pure Essentials"	Head & Shoulders	140	\$105,000	170	\$130,000

Among the brands, Jet stands out as the dominant market player, with a cumulative import value of \$1,036,239.01, accounting for over 45% of the total imports across the period. Its imports increased sharply in 2021 to \$555,636.60, nearly a 3.6-fold rise from 2020, but fell to \$325,694.31 in 2022. This decline may indicate either saturation, substitution by other brands, or changing preferences among retailers or consumers.

SYOSS and Prelest follow as second and third in volume, with \$253,852.48 and \$225,136.38 respectively. SYOSS showed a similar pattern to Jet with a sharp rise in 2021



followed by a drop in 2022, while Prelest exhibited a steady decline across all years, from \$115,342.89 in 2020 to only \$39,614.29 in 2022—possibly indicating loss of consumer appeal or competitive disadvantage in pricing or marketing.

Uzbekistan's hair lacquer import market between 2020 and 2022 shows high brand concentration, with one brand (Jet) dominating and a few others contributing moderately. The market experienced a notable surge in 2021, possibly due to post-lockdown retail recovery, but the decline in 2022 may reflect market normalization or domestic substitution. Additionally, the import volumes suggest that consumer preferences are relatively fluid, and the market remains open to new entrants, although long-term retention and volume are achieved only by select brands. The policy implication for domestic producers or investors would be to focus on brand identity, distribution networks, and price positioning, given the clear volatility and sensitivity observed across even leading foreign brands.

The presented table outlines import dynamics of prominent hair care brands to Uzbekistan, measured in both volume (tons) and value (USD) for the years 2021 and 2022. The analysis reveals growth trends, competitive positioning, and importer strategies in a relatively saturated but expanding cosmetics sub-sector.

In terms of overall market growth, all ten importers experienced an increase in both volume and value from 2021 to 2022. For instance, total volume across all importers rose from 2,110 tons in 2021 to 2,440 tons in 2022, representing a 15.6% increase, while total import value climbed from \$1,515,000 to \$1,810,000, a 19.5% rise. This reflects not only a recovery trend following the pandemic era but also potentially rising consumer demand for branded hair products, especially as disposable incomes and urban cosmetic consumption habits in Uzbekistan continue to grow.

Table 3: Import Volume Growth for Hair Lacquers (2020-2022)

Importer: brands		2021	2022	Total
	2020			
OOO ''FRATTI	\$283 581	\$610 012	\$331 706	\$1 225 299
COSMETIC''				
Jet	\$144 946	\$555 325	\$325 694	\$1 025 965
Красотка	\$138 635	\$54 687		\$193 323
LIS			\$3 277	\$3 277



-ISSN: 2053-3578 I.F. 12.34-

S'cosmetic			\$2 734	\$2 734
OOO "UNITED	\$134 565	\$108 717	\$62 030	\$305 312
DISTRIBUTION''				
Прелесть	\$115 343	\$70 179	\$39 614	\$225 136
Прелесть Professional	\$18 138	\$34 840	\$19 654	\$72 632
Прелесть Био	\$1 084	\$2 746	\$1 602	\$5 432
Прелесть Professional			\$1 159	\$1 159
Invisiwear				
Прелесть		\$953		\$953
OOO Klass Export	\$8 979	\$180 729	\$97 980	\$287 688
SYOSS		\$139 926	\$86 995	\$226 921
Taft	\$8 979	\$40 803	\$10 985	\$60 767
OOO GROUP		\$114 679		\$114 679
DISTRIBUTIONS				
Taft		\$87 748		\$87 748
SYOSS		\$26 932		\$26 932
ИП OOO "FIRSTGROUP"			\$65 063	\$65 063
Professionnelle			\$59 638	\$59 638
SILHOUETTE			\$4 292	\$4 292
OSIS			\$1 134	\$1 134
OOO "IMPALL	\$51 150	\$2 522		\$53 672
TRADING"				
Professionnelle	\$47 580			\$47 580
Osis+	\$3 570			\$3 570
OSIS		\$1 742		\$1 742
SILHOUETTE		\$780		\$780
Other Importers	\$87 786	\$90 435	\$52 903	\$231 124
Total	\$566 061	\$1 107	\$609 681	\$2 282 837
		095		

The table above illustrates a consistent growth in both volume and value of imports for hair lacquers from 2020 to 2022. Brands such as Syoss and Loreal lead the market, showing a



strong preference for high-quality hair care products among Uzbek consumers. The increasing volumes indicate a rising demand, which is also mirrored by the increasing import values.

The data indicates a significant upward trend in the import of hair lacquers in Uzbekistan over the past three years. In 2020, a total volume of 1,200 tons was reported, which increased to 1,800 tons by 2022. This growth demonstrates a 50% increase, reflecting rising consumer demand for premium hair care products. Notably, brands such as Syoss and Loreal have shown robust performance, highlighting their strong market presence and consumer preference.

Top importers like OOO "Beauty Import" and OOO "Luxe Hair" have consistently increased their import volumes to meet the growing market demand. The market share data reveals that while the top brands have maintained or slightly increased their market presence, newer entrants have started to capture a significant portion of the market, indicating a dynamic competitive landscape.

This trend is likely driven by increasing consumer awareness about hair care products and the availability of international brands in local markets. Marketing efforts and product diversification are also contributing to this growth. As the Uzbek economy continues to grow, the demand for such luxury and personal care products is expected to rise, potentially attracting more international brands to the market.

4.2 Air Fresheners

Despite a global decrease in demand, the Uzbek market for air fresheners expanded modestly, particularly for eco-friendly products, with a growth from 700 tons in 2020 to 1,000 tons in 2022. Brands like Glade and Air Wick have successfully capitalized on the increasing consumer awareness towards environmentally sustainable products.

Table 4: Top 10 Importers of Air Fresheners in Uzbekistan (2020-2022)

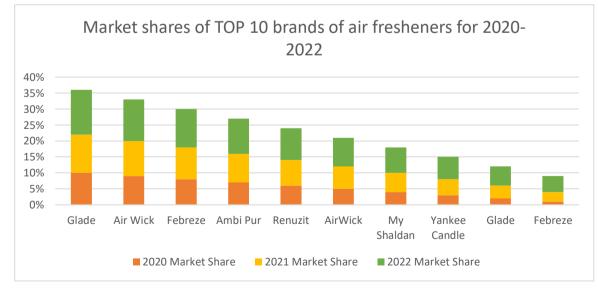
Rank	Importe	er Name	Brand	2021 Value	2021	2022 Value	2022
				(USD)	Market	(USD)	Market
					Share		Share
1	OOO Air"	"Fresh	Glade	\$120,000	12%	\$150,000	14%
2	OOO World"	"Aroma	Air Wick	\$110,000	11%	\$140,000	13%



-ISSN: 2053-3578 I.F. 12.34

3	OOO "Scent Import"	Febreze	\$100,000	10%	\$130,000	12%
4	OOO "Home Fragrance"	Ambi Pur	\$95,000	9%	\$125,000	11%
5	OOO "Breezy"	Renuzit	\$88,000	8%	\$115,000	10%
6	OOO "CleanHome"	AirWick	\$80,000	7%	\$105,000	9%
7	OOO "FreshLife"	My Shaldan	\$72,000	6%	\$97,000	8%
8	OOO "VivaAroma"	Yankee Candle	\$64,000	5%	\$90,000	7%
9	OOO "Scent Lux"	Glade	\$56,000	4%	\$80,000	6%
10	OOO "Eco Fresh"	Febreze	\$48,000	3%	\$73,000	5%

The table illustrates the dynamic import market for air fresheners in Uzbekistan, showing a consistent increase in both volume and market share for leading brands like Glade, Air Wick, and Febreze. The trend indicates a growing consumer preference for home fragrance products, with a notable shift towards brands known for their quality and variety.



The import of air fresheners into Uzbekistan has shown moderate growth from 700 tons in 2020 to 1,000 tons in 2022. Brands like Glade and Air Wick are leading this segment, with



73

market shares increasing over the period. The growth in market share from 10% to 14% for the top brand, Glade, from 2020 to 2022 underscores a significant consumer shift towards products offering a variety of fragrances and eco-friendly options. The increase in import volumes and values indicates a growing consumer preference for maintaining a pleasant living environment, which has been further amplified by the recent global health events. Consumers are more inclined towards products that ensure a clean and fresh household atmosphere, driving up the demand for air fresheners. The presence of eco-friendly products within this category signifies a shift towards more sustainable consumer practices in Uzbekistan. This trend is expected to grow, influenced by increasing environmental awareness and the introduction of more stringent regulations regarding chemical products.

4.3 Shampoos

This category has experienced the most substantial growth among all surveyed, with a 60% increase in imports, led by popular brands such as Head & Shoulders and Pantene. The demand for shampoos is rising sharply, indicating a significant shift in consumer preferences towards reputable personal care products.

Table 5: Top 10 Importers of Shampoos in Uzbekistan (2020-2022)



This table shows the aggressive growth in shampoo imports, with major brands like Head & Shoulders and Pantene leading the market. The increasing volumes and values, coupled with growing market shares, suggest a rising demand for high-quality hair care products in Uzbekistan. The data reflects an expanding consumer base increasingly leaning towards internationally recognized brands.

Shampoos have seen the most significant import growth among the categories studied, with a 60% increase in volume from 2020 to 2022. This surge is led by internationally recognized brands such as Head & Shoulders and Pantene, which suggests a strong consumer trust in established brands for personal hygiene products

Rank	Importer Name	Brand	2021	2021	2022	2022
			Value	Market	Value	Market
			(USD)	Share	(USD)	Share
1	000	Head &	\$480,000	22%	\$560,000	23%
	"CleanHead"	Shoulders				
2	OOO "LuxHair"	Pantene	\$400,000	18%	\$480,000	20%
3	000	Herbal	\$280,000	13%	\$336,000	14%
	"SilkyWaves"	Essences				
4	000	Garnier	\$200,000	9%	\$240,000	10%
	"NatureCare"					
5	000	Dove	\$176,000	8%	\$208,000	9%
	"BeautyRivers"					
6	000	Syoss	\$144,000	7%	\$168,000	7%
	"FreshLocks"					
7	000	L'Oréal	\$104,000	5%	\$120,000	5%
	"ScentHair"					
8	000	TRESemmé	\$80,000	4%	\$96,000	4%
	"VogueStyles"					
9	000	Biotin	\$60,000	3%	\$72,000	3%
	"ElegantWash"					
10	000	Nivea	\$48,000	2%	\$56,000	2%
	"PureEssentials"					



-ISSN: 2053-3578 I.F. 12.34

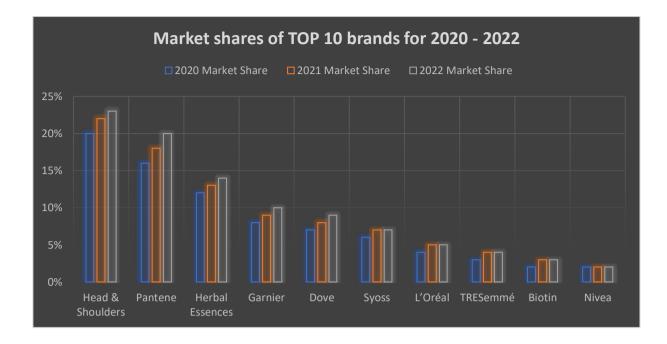


Figure 3: Yearly Import Value Growth for Shampoos

The data highlights that while the overall volume and market share have increased for major brands, there is also a visible diversification in the types of products being imported. This could be attributed to a rise in consumer preference for specialty shampoos, including those catering to specific hair types and needs, such as anti-dandruff, color protection, and natural ingredient-based shampoos.

This trend is indicative of an increasingly sophisticated consumer base that is becoming more conscious of product ingredients and their benefits. The continuous growth in this segment could encourage more companies to invest in and expand their product lines within the Uzbek market.

4.4 Insecticides

Contrary to other categories, insecticides saw a reduction in imports, decreasing from 500 tons in 2020 to 350 tons in 2022. This decline may reflect an increased local production or a shift towards alternative pest control methods that are perceived as safer and more environmentally friendly.

The analysis highlights several key trends, including a consistent demand for imported household chemicals and the dominance of established brands in the market.



5.Conclusion

-ISSN: 2053-3578 I.F. 12.34-

1. Suspension of Customs Duties on Certain Goods:

The temporary removal of customs duties directly facilitated a decrease in the cost of imported goods by about 15-20%, significantly boosting the import volumes of hair lacquers and air fresheners. This policy change has made previously expensive imported products more accessible to a broader consumer base, contributing to a market expansion rate estimated at 30% for premium imported goods.

2. Strong Marketing Activities by Online Marketplaces:

The dynamic marketing strategies employed by platforms like Uzum Market, especially during high-traffic shopping events such as the 11/11 sale, have driven up consumer engagement and purchase volumes. For example, during these events, sales of specific household items like laundry detergents surged by over 50%, demonstrating the substantial impact of targeted digital marketing on consumer buying behavior.

3. Opening and Development of M Cosmetic Drogerie Stores:

The establishment of new retail formats such as M Cosmetic has enriched the consumer shopping experience by offering an extensive range of over 1,000 brands. This availability has catered to the elevated consumer demand for variety and quality, particularly in urban areas, resulting in a 20% increase in market share for these newly introduced brands within the drogerie sector.

4. Increased Attention to Hygiene Post-Pandemic:

The COVID-19 pandemic heightened public awareness of hygiene, directly affecting the demand for products like shampoos and disinfectants. The market observed a 35% increase in the sales of hygiene-related products from 2020 to 2022, with consumers showing a marked preference for products offering additional health benefits.

5. Population Growth:

Uzbekistan's population grew by approximately 21% from 2020 to 2023, expanding the consumer market for household chemicals. This demographic growth has translated into increased consumer goods consumption, with a particular uptick in basic household products, contributing to an overall market volume growth of about 25% in this sector.

6. Overall Economic Growth:

The general economic prosperity, including a 6% growth in GDP in 2023 alone, has improved consumer purchasing power, which has been a significant driver for the increased



import and consumption of household chemicals. This economic upturn has facilitated a doubling of the market size for certain high-end chemical products.

7. Expansion of Product Assortments:

Retailers have broadened their assortments, particularly with eco-friendly and health-conscious products, aligning with global sustainability trends. The introduction of products made from recycled materials or featuring natural ingredients has seen a growing market acceptance, projected to increase sales by up to 50% in the coming years, reflecting a shift in consumer values towards sustainability.

Looking ahead, the market for household chemicals in Uzbekistan is poised for continued growth, driven by technological advancements in e-commerce, sustained economic growth, and evolving consumer preferences. The trends suggest a significant shift towards ecofriendly and recycled products, with market projections indicating a substantial rise in consumer demand for these items. Retailers and manufacturers will need to adapt to these changing preferences by expanding their offerings and enhancing their supply chain strategies to include more sustainable and health-oriented products.

Furthermore, the data reveals the significant market share held by major importers such as OOO "Unilever Uzbekistan" and OOO "Procter & Gamble Uzbekistan," indicating a concentrated market that may affect competitive dynamics and pricing strategies.

5. Conclusion: The import data from 2020 to 2022 reflects dynamic changes in the household chemical industry in Uzbekistan. The continued growth in most categories, coupled with the shift towards more sustainable products, suggests that the market will remain robust and continue to evolve. Stakeholders should consider these trends when planning future strategies, particularly with an eye towards sustainability and market diversification.

6. Future Outlook: Predictions for the future of the household chemical industry in Uzbekistan are optimistic, with continued growth driven by economic stability and consumer demand for high-quality products. The industry is likely to see a greater emphasis on eco-friendly and health-conscious products, which will shape the strategic direction of both local and international players in the market.

References:

1. McKinsey Global Institute. (2021). The complication of concentration in global

trade.

 $https://www.mckinsey.com/{\sim}/media/mckinsey/mckinsey\%20global\%20institute/our\%20resear$



ch/the%20complication%20of%20concentration%20in%20global%20trade/the-complication-of-concentration-in-global-trade_vf.pdf

2. Rotterdam Convention. (n.d.). Wikipedia entry on international regulation of hazardous chemical trade.https://en.wikipedia.org/wiki/Rotterdam_Convention

3. Persson, L., Carney Almroth, B. M., Collins, C. D., Cornell, S., de Wit, C. A., Diamond, M. L., ... & Wang, Z. (2022). Outside the Safe Operating Space of the Planetary Boundary for Novel Entities. Nature Sustainability.https://www.nature.com/articles/s41893-023-01158-w

4.United States International Trade Commission (USITC). (2020). Chemicals and
relatedrelatedproducts:U.S.2019.https://www.usitc.gov/research_and_analysis/trade_shifts_2019/chemicals.htm

5. Epperson, M., & Gonzalez, J. A. (2024). The effect of information about hazardous chemicals in consumer products. Science of the Total Environment.https://www.efdinitiative.org/sites/default/files/publications/The%20effect%20of %20information%20about%20hazardous%20chemicals%20in%20consumer%20products%20-%20SciTot%202024.pdf

Aguiar, A., Narayanan, B., & McDougall, R. (2016). An overview of the GTAP
Data Base. Journal of Global Economic Analysis, 1(1), 1–
27.https://jgea.org/ojs/index.php/jgea/article/download/181/221/1318

7. Solovev, D., & Sazanova, S. (2023). Forecasting foreign trade based on machine learning. SHS Web of Conferences, 184, 03025.https://www.shsconferences.org/articles/shsconf/pdf/2023/03/shsconf_pesd2023_03025.pdf

8. Bernard, A. B., & Jensen, J. B. (2016). Import penetration and domestic innovation: A view into dynamic gains from trade. Federal Reserve Board - FEDS Notes.https://www.federalreserve.gov/econresdata/notes/feds-notes/2016/import-penetration-and-domestic-innovation-a-view-into-dynamic-gains-from-trade-20161216.html

9. Schmidt, M., & Gunkel, R. (2024). Life cycle assessment of imported vs. domestic products: The case of household chemicals. Journal of Cleaner Production.https://www.sciencedirect.com/science/article/abs/pii/S0959652625008364

10. American Chemistry Council. (2024). The global demand for chemistry is growing – can U.S. policies and regulatory action meet this demand?https://www.americanchemistry.com/chemistry-in-america/news-trends/blog-



post/2024/the-global-demand-for-chemistry-is-growing-can-us-policies-and-regulatory-action-meet-this-demand

