



Export potential of organic chemicals from India to China and Taiwan with reference to Phenol and Antibiotics

Dr. Kalpana Agrawal, Assistant Professor, Prestige Institute of Management and Research
Mustafa Saifee, Student of Prestige Institute of Management and Research &
Piyush Soni, Student of Prestige Institute of Management and Research

ABSTRACT

India as nation has gigantic potential for growth of exports in various sectors. Today, The chemical industry is one of the fastest growing sectors of the country's economy. It has revenue of 28 billion USD and has contributed around 6.7% of Indian GDP and 10% of total exports. It has a growth rate of around 8.6% over the last few years and was expected to grow to 60 billion USD by the end of Tenth Plan (2010). The chemical industry's output placed at around Rs. 80,000 crores represents approximately 12 per cent of the total output of the country's manufacturing sector and it is constantly on the increase. The intention of this research is to determine the export potential of various Chemicals such as Phenol and Antibiotic from India on the basis of their precedent export performances. It is assumed that this study will enable to fabricate efficient and practical results for the entrepreneurs, govt. and whosoever it may concern to. In this study, the secondary data was used and it was collected from official websites, and trend-Analysis method was implemented on the available statistical data to derive the export potential from India. This study includes the information regarding the export potential from India. It will persuade stake-holders to initiate the exports of concerning sectors along with the sustainable growth and that will definitely lead to promotion of exports of Indian Chemical diligence.

INTRODUCTION

The organized efforts to encourage exports of products of the chemical industry from India could be traced back to 1958, when the Government of India, with active co-operation from the industry, took the first step to establish the Chemicals and Allied Products Export Promotion Council. The Council covered the entire gamut of products manufactured by the chemical industry and it played a pioneering role in the overall exports of the chemical industry.

With the rapid progress in setting up an escalating number of units manufacturing basic organic and inorganic chemicals, pharmaceuticals, dyes, pesticides etc., in the western division of India, together with the urgent need for making concerted efforts to promote exports of these industries to earn the much needed foreign exchange, the need for a separate council, to specifically cater to the requirements of these emerging sectors, was increasingly

realized. The result was the establishment of the Basic Chemicals, Pharmaceuticals and Soaps Export Promotion Council (CHEMEXCIL) on the 11th July 1963, with its headquarters at Bombay.

The Indian chemical industry has made a stupendous progress in the post independence era. Today, it is one of the fastest growing sectors of the India's economy. It has played a prominent role in the industrial development of the country. It has played a vital role in country's transformation from an agricultural to an industrial economy. It has revenue of 28 billion USD and has contributed around 6.7% of Indian GDP and 10% of total exports. It has an escalation pace of around 8.6% over the last few years and was expected to grow to 60 billion USD by the end of Tenth Plan (2010). The chemical industry's output placed at around Rs. 80,000 crores represents approximately 12 per cent of the total output of the country's manufacturing sector and it is constantly on the increase.

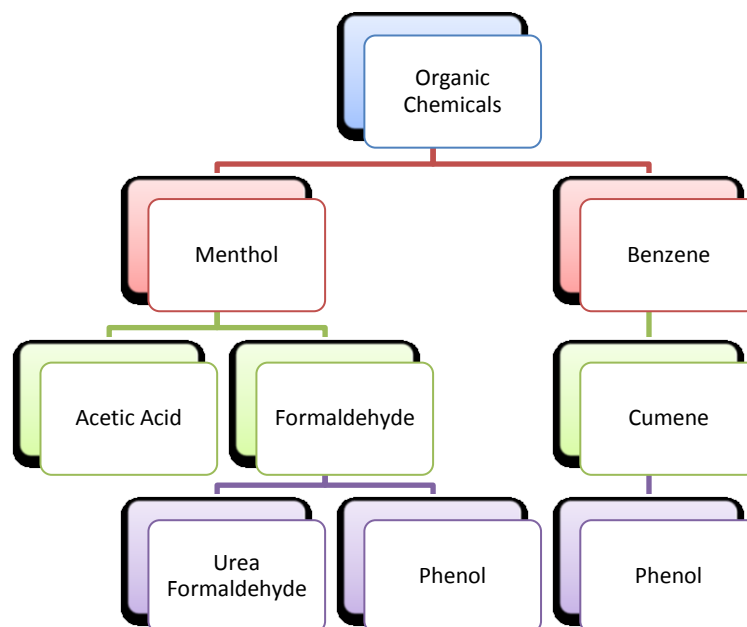
Indian chemical industry which includes sub sectors like Basic Chemicals, Inorganic and Organic Chemicals, Pesticides, Dyes, Pharmaceuticals, Paints, Fertilizers, Specialty Chemicals, Petrochemicals, Soap & Detergents etc. is the twelfth largest in the world and third largest in Asia. Basic chemicals segment comprises of 57% while specialty chemicals and knowledge segment are 25% and 18% respectively. It manufactures a wide spectrum of products. India produces large quantities of intermediate chemicals used in applications such as cosmetics, detergents, drugs, dyes, paints, and toiletries, and makes a range of specialty chemicals such as antioxidants, food additives, and pigments. More than 70% of the fine chemicals produced in India are used by the pharmaceutical and AgChem industries.

Organic chemical is one of the important sectors of the Indian chemical industry. It has played a vital development role by providing chemicals and intermediates as inputs to other industrial sectors like paints, adhesives, pharmaceuticals, dye stuffs and intermediates, leather chemicals and pesticides. Global production of organic chemicals is around 400 million metric tons per annum (MMTPA). Production was just 15 million metric tons fifty years back. Major producers of organic chemicals are USA, Germany, UK, Japan, China and India. Few Latin American countries such as Brazil and Chile are increasing their charisma in global organic chemicals market.



There are important numerous varieties of organic chemicals. The chart below shows select organic chemicals manufactured and exported from India. Availability of natural gas for use as feedstock is a critical part of the entire production process. Formaldehyde and acetic acid are important methanol derivatives and are used in numerous industrial applications. Phenol is an aromatic compound and derived from Cumene, a benzene and propylene derivative.

Major organic chemicals in India are methanol, acetic acid, formaldehyde and phenol. These four chemicals constitute more than 60% of domestic capacity for organic chemicals. Methanol has the maximum share accounting for 20% of the total domestic capacity followed by acetic acid and formaldehyde with 19% and 16% share respectively. This year India has exported mainly to USA, China P. Rep., UAE, Netherlands and Germany.



Antibiotics are medicine that kills bacteria or slows the growth of bacteria. They are used to cure diseases. Antibiotics do not harm people. Penicillin is a popular antibiotic. Antibiotics started to be produced in 1939. Antibiotics cannot stop a virus. Antibiotics are not the same thing as antibodies. Antibiotics must be used under supervision of a certified medical practitioner, because the dose and frequency is different for treating various microbes.

Phenol, also known as carbolic acid is an organic compound with the chemical formula C_6H_5OH . It was first extracted from coal tar. It is a white crystalline solid at room temperature. The molecule consists of a phenyl ($-C_6H_5$), bonded to a hydroxyl ($-OH$) group. It is produced on a large scale (about 7 billion kg/year) as a precursor to many materials and useful compounds. It is only mildly acidic but requires careful handling due to its tendency to cause burns. Its major uses involve its conversion to plastics or related materials. Phenols are key for building polycarbonates, epoxies, Bakelite, nylon, detergents and a large collection of drugs, herbicides and pharmaceuticals.

The Indian Chemical Industry is competitive in terms of: A diversified manufacturing base having a capacity to produce quality chemicals, vibrant downstream industries in different segments, competitive core industries, essential for the development of chemical industries, strong presence in export market in sub segments such as dyes, pharma and agrochemicals, large domestic market, major raw material component sources within the country, good R& D base and quality human resources, low research costs, compared to

that in the developed countries, amendments in the Indian Patent Act leading to reduction of foreign investors apprehensions, one of the largest resources of scientific and technical manpower in the world, largest coastline and abundant availability of salt, tropical region, sunlight for nine months in most parts facilitating open storage for bulk chemicals, a developed financial market, regulated stock exchanges, all types of money instruments.

A noteworthy achievement of the industry is that, from a position of a net importer, it had turned into a significant exporter over the years, exporting to almost all parts of the world. Indian chemical industry is one of the most competitive in the world and exports its products across the globe. The prospects for the Chemical Industry in 2012 certainly look good and it is now the industry that has to gear up to changes in the upgradation of technology to catch up with the international markets and players.

OBJECTIVES OF THE STUDY

- ✚ To study the export potential of phenol from India to Taiwan.
- ✚ To study the export potential of antibiotics from India to China.
- ✚ To study the challenges faced by the exporters of organic chemicals.
- ✚ To study the dumping scenario of chemicals by China to India.
- ✚ To suggest the concrete measures for raising the economic status of chemical industry.



RATIONALE OF THE STUDY

Review of literature discovered that researchers have been carrying out to study various scope of Organic chemicals and factors influencing its export potential. A lot of work was done independently by the researchers about the export potential of chemical sector in Indian economy.

In the light of relevant literature, personal interactions and the preliminary work done by the researcher, it is proposed that a study on the export potential of organic chemical from India to China and Taiwan should be undertaken. It is also felt that there is a need to find out how the factors such as Global Recession affect the exports in last decade in country. Therefore this study is aimed to study the export potential of organic chemicals from India to China and Taiwan with reference to study and the trend of exports of chemicals like Phenol and Antibiotics and to study the adverse effect of dumping of chemicals by China to India.

RELATED LITERATURE REVIEW:

The Global Chemical industry is valued at about US\$ 1.7 trillion. After the drop off in 2008-09, the global chemical industry has witnessed signs of recovery in 2009-10. According to Moody's Investors Service, the sector outlook for the chemical industry in both North America and Europe had changed from negative to stable. The stable industry sector outlook reflects a broad improvement in industrial demand across these regions since early 2009, and chemical buyers are appearing to be more open to price increases now than they were a year ago.

According to the American Chemical Council (ACC), stimulus packages for the industry, rolled out worldwide, has triggered a positive outlook for the Chemicals industry in 2010. Countries such as India, China and the US announced packages worth US\$ 4 billion along with duty boost economic growth driven by favorable demographics, growing urbanization and higher economic growth.

According to Chemical Business edition January'08, stated that CHEMICAL industry has played a prominent role in the industrial development of our country, it has played a vital role in country's transformation from an agricultural to an industrial economy. Including this K. Venkataramanan, President (Operations) & Member of the Board at Larsen and Toubro Ltd. Mumbai, states, It has revenue of 28 billion USD and has contributed around 6.7% of Indian GDP and 10% of total exports. It has a growth rate of around 8.6% over the last few years and expected to grow to 60 billion USD by the end of Tenth Plan (2010). The Indian Chemical Industry manufactures a wide spectrum of products. Basic chemicals segment comprises of 57% while specialty chemicals and knowledge segment are 25% and 18% respectively.

The BRIC & T (Brazil, Russia, India, China & Turkey) region is expected to be the main growth driver for the global industry propelling demand for end-used industries such as construction, automobiles and consumer durables. According to the ACC, the BRIC & T region is expected to

witness 6.9% growth in 2010 and 7.6% in 2011 and 2012, while developed regions such as US, UK and Japan will report an average growth of 3.3% between 2010 and 2012.

According to Kapoor, Ravi, (chairman-Gujarat chapter), INDIA seems to have again become a preferred destination for sourcing chemical products. With the Chinese government imposing restrictions on the production and sale of over 257 chemicals in areas within 500- km radius of Beijing due to the Olympic Games, chemicals buyers have switched to India from China to import chemical products. The shift has led to a sharp rise of around 20-25 per cent in chemical exports from India, especially from the chemical hub for the country, Gujarat. Gujarat accounts for more than 65 percent of the total chemical production in the country.

According to Saxena, Y P (secretary-Indian Chemical Council, Gujarat chapter) 2010, "India is the only major destination after China for sourcing chemical products. Restriction on production of chemicals in China due to Olympics has helped India exports. To cash in on increasing demand, chemical companies have also embarked on an expansion drive. However, industry players admit that the bullish trend in chemical industry is temporary and buyers may start switching over to China once the Olympic Games are over.

According to Patel, Babu Bhai (President-Nandesari Industrial estate), 2010, "Last year, chemical units located in Nandesari industrial estate in Vadodara district exported chemical products worth Rs 600 crore. The exports have seen a rise of nearly 30 per cent and this year & hoped to export chemical products worth Rs 800 crore."

FOSROC Chemicals India, a wholly owned subsidiary of the Dubai-based \$ 500 million Fosroc International, engaged in production and marketing of construction chemicals, plans to make India an export hub. It aims to export products to Sri Lanka, Bangladesh and Nepal. According to Managing Director Sridhar R, there is a huge demand for construction chemicals in these markets apart from India. The company manufactures a range of chemicals for the construction industry such as adhesives, admixtures, surface treatments, grouts, joint sealants, anchors, industrial flooring and also provides concrete repair and water proofing solutions. He added that the Indian operations were growing at 30 per cent year - on - year and the company will make investments to sustain that kind of a growth rate in the future as well.

In a report by Colour Publications Pvt, Ltd, the chemical industry is on a path of strong growth. The industry is aiming through a series of efforts in reaching the \$ 100 billion mark in the years to come. The contribution of this sector to the Indian manufacturing sector is almost 17.6%. Indian imports amounted to USD 7.92 billion and exports account for USD 5.95 billion. However the Indian chemical industry is yet to make its presence felt in a significant manner in international markets.

As the Chemical Industry is an interesting topic for research for many researchers, it was keenly observed through a



spectrum of getting new trends in the Industry. As a result in 2004, *Asian Chemical News* has come up through different findings through their research. They stated that an increase in chemical exports by India in the financial year ending March 31, 2004.

According to a report by the *Confederation of Indian Industry (Mumbai) and McKinsey India (Mumbai)*, exports of fine and specialty chemicals from India have registered a significant rise in the last few years and the trend will continue, experts say. India's fine and specialty chemical industry has sales of about \$5 billion per year, and the country has the opportunity to become one of the top-two exporters of those products among low-cost countries. Exports of fine and specialty chemicals from India were valued at \$2 billion in 2002, and have been growing 15 per cent to 20 per cent per year ever since. India's entire chemical industry, with an estimated output of about \$32 billion in 2005, is the 12th largest and growing at 14% year. India produces large quantities of intermediate chemicals used in applications such as cosmetics, detergents, drugs, dyes, paints, and toiletries, and makes a range of specialty chemicals such as antioxidants, food additives, and pigments. More than 70% of the fine chemicals produced in India are used by the pharmaceutical and agrochemical industries. Performance chemicals are also being developed in India, reflecting growing demand from manufacturers of products such as sunscreens and biocides.

According to *Samudra, P.D. (Executive Director, UHDE India Ltd.)* 2008, states that they witnessed a very high growth rate in the last three years in the IT, telecommunications, infrastructural, minerals, ferrous and non-ferrous industries. The growth of the chemical industry was rather moderate. The focus for the last couple of years had been on the "oil refining" sector, caustic soda or chlorine, alumina, pharmaceutical and specialty chemicals, etc. Since the year 2006, it has been an upswing in investments in the Indian Chemical Industry mainly to seize the opportunities which would arise due to possible access to feed stocks from refineries, oil & gas sectors, in the very near future. It was a burst of activities in petrochemicals projects! The oil refining industry continues their foray with large capacity projects. The fertilizer industry, which was dormant for a long time, also seems to show some signs of revival. Concrete proposals are coming in from foreign chemical majors for direct investments in India, which will give a further boost to our industry. The new SEZ concept will also provide impetus for growth of the Indian Chemical Industry

Indian chemical industry which includes sub sectors like Basic Chemicals, Inorganic and Organic Chemicals, Pesticides, Dyes, Pharmaceuticals, Paints, Fertilizers, Specialty Chemicals, Petrochemicals, Soap & Detergents etc. is the twelfth largest in the world and third largest in Asia, accounts for 14% of India's industrial production and 14% of the exports. Its turnover is around US \$ 50 billion which is close to 7% of India's GDP. Indian chemical industry is one of the most competitive in the world and exports its products across the globe. For past several years till middle of 2008, chemical industry's performance was

excellent in all aspects. However, with the back drop of global recession, with Indian companies no exception, performance of chemical industry, got affected considerably in most sectors except Pharma and Agro Chemicals. Thus year 2009 started with little pessimistic note due to severe demand depletion because of various reasons such as, slump in the domestic construction industry, drop in automobile production, drop in demand for consumer goods, dwindling exports, surge in cheap imports from China and other countries, working capital constraints due to credit crunch.

It was forecasted that, 2009 would be a challenging year for Indian Chemical Industry. In order to brave it out this unprecedented global recession, every company has to work hard to optimize its operations, cut costs, minimize waste and at the same time keep its focus on safe and environmental friendly operations. Indian chemical council apex body' representing entire spectrum of Chemical Industry has taken up these issues with the Government of India and recommended certain relief measures for the chemical industry. Government of India has so far come out with two packages, which after full implementation will help in increase of consumer demand for various products. This in turn will enhance the demand for various chemicals which will likely to help chemical industry provided Government of India accepts relief measures suggested by ICC. In nutshell, Indian chemical industry with strong technology back up, with innovative approach on operational and management level and with the help of positive support from Government of India will be able to weather out effects of global recession during 2009 and continue to grow consistently thereafter.

According to *Ranganjan S. (Associate Editor, Chemical Business)* (2009), The global financial crisis is taking a heavy toll on India's chemical industry - exports have been hit and projects put on hold. However what is encouraging is the fundamentals are strong. Its chemicals particularly petrochemicals and plastics industry, will grow rapidly to meet demand. The specialty chemicals sector is still in the development stage. Companies are seriously eyeing India and including it in their future plans. Many of the chemicals produced by the industry are commodities. The industry faces significant competition due to increased capacity in the Middle East, rest of Asia and Latin America. India is one of the major regions contributing to the rising fertilizer demand. The fertilizer demand in India is expected to increase by 4.3 per cent from financial year 2008 to financial year 2013 higher than the global growth rate of 2.8 per cent during the same period.

However in contrast, as per the petroleum ministry, India's refining capacity is expected to increase from 149 million tons per annum (MMTPA) in financial year 2007 to 228 MMTPA by financial year 2012, translating into an exportable surplus of refined products of 78 MMTPA by financial year 2012.

RESEARCH METHODOLOGY

THE STUDY

The universe of research shall be export of chemicals (phenol and antibiotics) from India to China and Taiwan.



The study is descriptive in nature and is based upon secondary data.

THE SAMPLE

The planned period of study is from 2001 to 2011 spanning 10 years and future predictions for next 5 years.

TOOLS FOR DATA COLLECTION

The data is collected from various published sources like books, chemical journals, CHEMIXIL, internet sources etc.

TOOLS FOR DATA ANALYSIS

Descriptive statistics along with trend analysis was used for forecasting. The trend was calculated using formulas listed below:

$$S=a+bt$$

$$\sum S = Na+b\sum T \quad - (1)$$

$$\sum ST=a\sum T+b\sum T^2 \quad - (2)$$

Where; N= Number of Years, S= Value of the corresponding year, t= Year, T= Total no. of years from the base year

RESULTS AND DISCUSSION

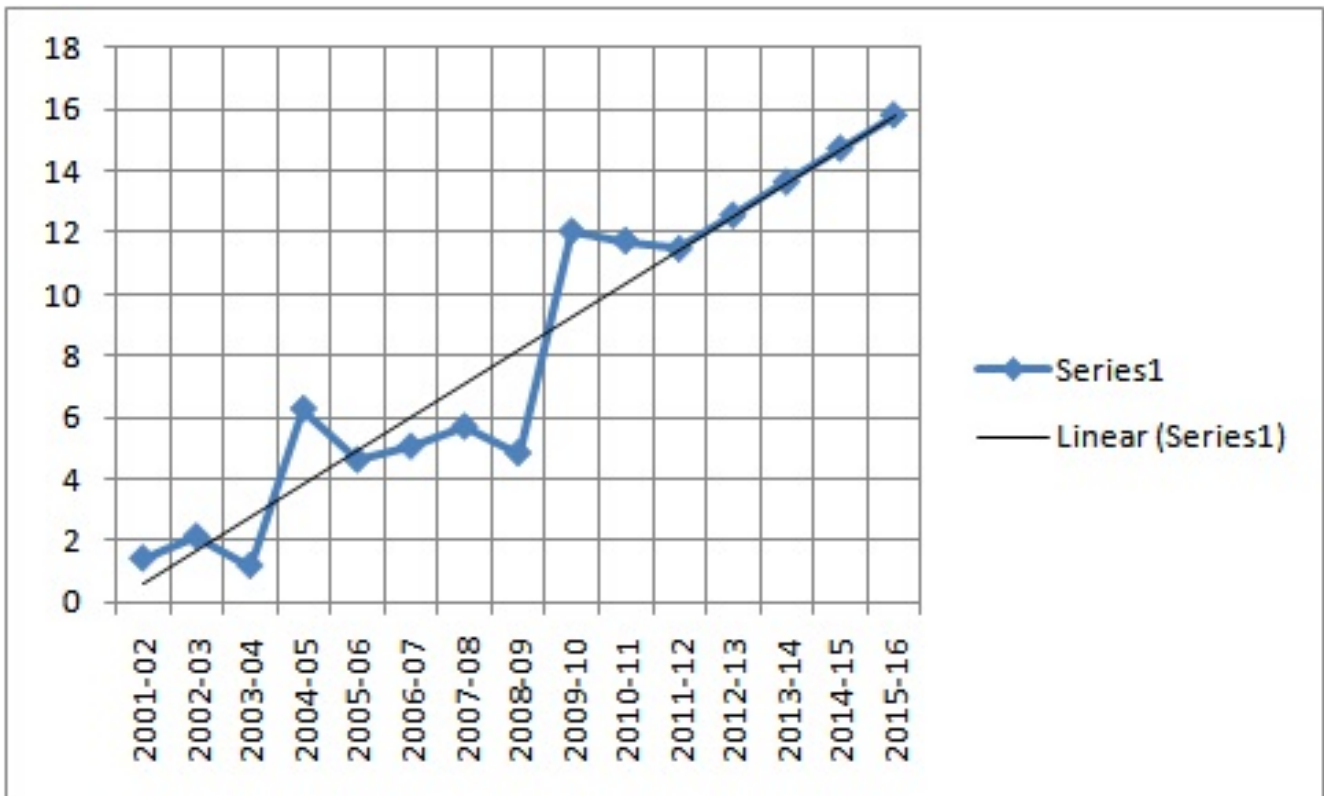
By studying the report it is found that export of chemicals to China is continuously increasing.

Different chemicals such as phenol and antibiotics are highly demanded in China and Taiwan .

From the last one decade there was a drastic change in demand of chemical. Demand has increased to a large extent in the last ten years.

The findings and future forecasting are in following table:

The trend-line shows the export of Phenol from India to China.



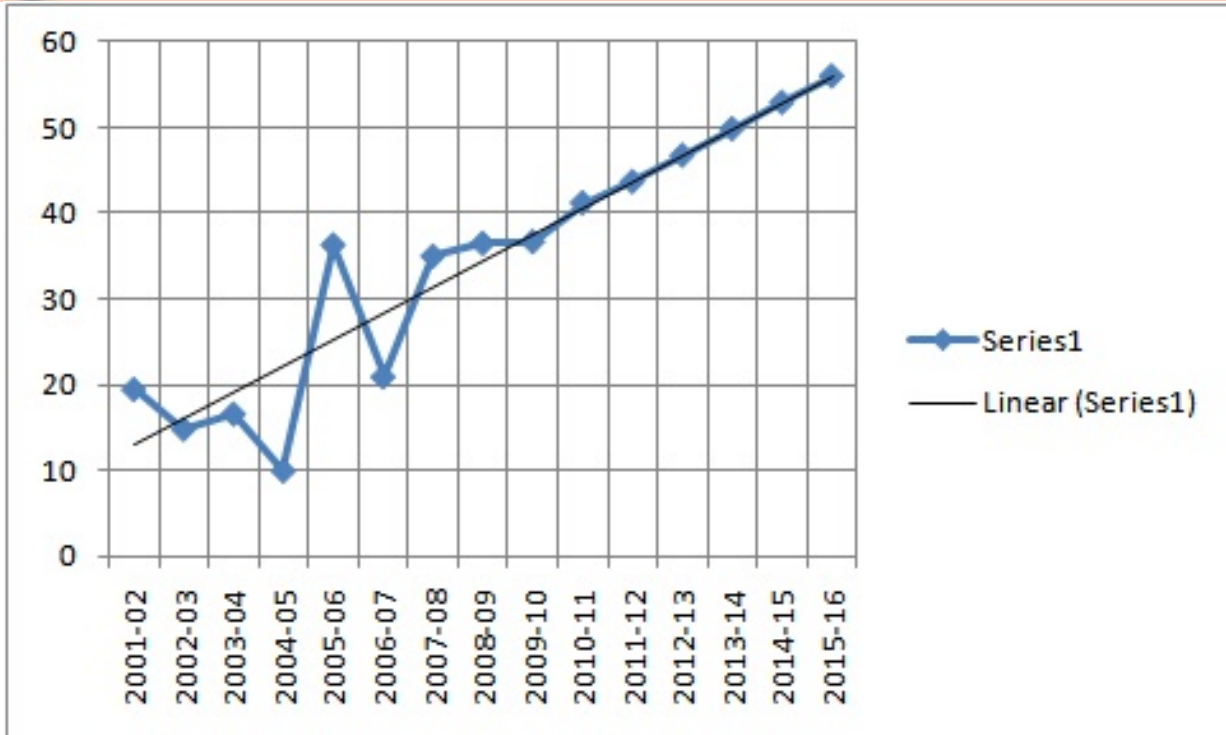
X-axis shows the years from 2001 to 2016 whereas Y-axis shows the values of export of Phenol to China from India in million US\$.

Here, it is clearly seen that exports of Phenol to China has increased from \$1.4 million in 2001 to \$11.7 million in 2010. It can also be noticed that the exports boosted in 2009 with a growth rate of 149.2%. This is due to the economic recovery after the hit of recession in the global market. In the same way a slight jump was also been observed in 2004

due to increased demand of chemical in china; according to Asian Chemical News and hence establishment of India-Asean Regional Trade and Investment Area took place.

The graph also shows that the exports of phenol to china have an inclining trend and expected to reach to \$16.0 billion by 2016.

The trend-line shows the export of Antibiotics from India to China



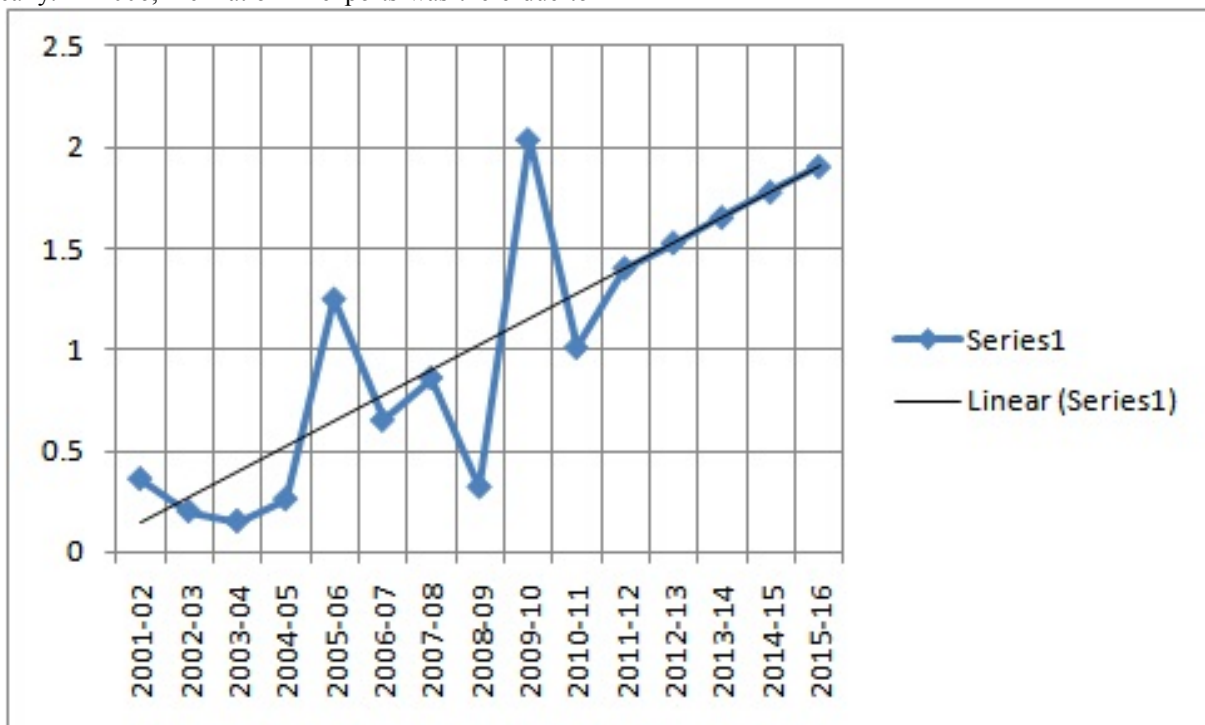
X-axis shows the years from 2001 to 2016 whereas Y-axis shows the values of export of Antibiotics to China from India in million US\$.

As seen that the exports of antibiotics from India to China have increased dynamically since \$19.5 million in 2001 to \$41.8 million in 2010. It has also been seen that a slight diffraction has appeared in 2005-07 period, where a fluctuation in exports can be seen. It is suggested as after a review in May 2005, the EU had imposed ad valorem duties ranging from 17.3% to 32% on these products from India. Exports of these products from India to EU had fallen drastically. In 2006, inclination in exports was there due to

increase of antibiotics exports to Ethiopia, the exports was US\$16.4 million in 2004 increased to US\$37 million in 2007 showing an increase of 56%. In the year 2007, India ranked at 1st place in countries exporting pharmaceutical products to Ethiopia.

The trend line shows that the antibiotics exports to China from India would rise by \$55.5 million by 2016.

✚ The trend-line shows the export of Phenol from India to Taiwan.



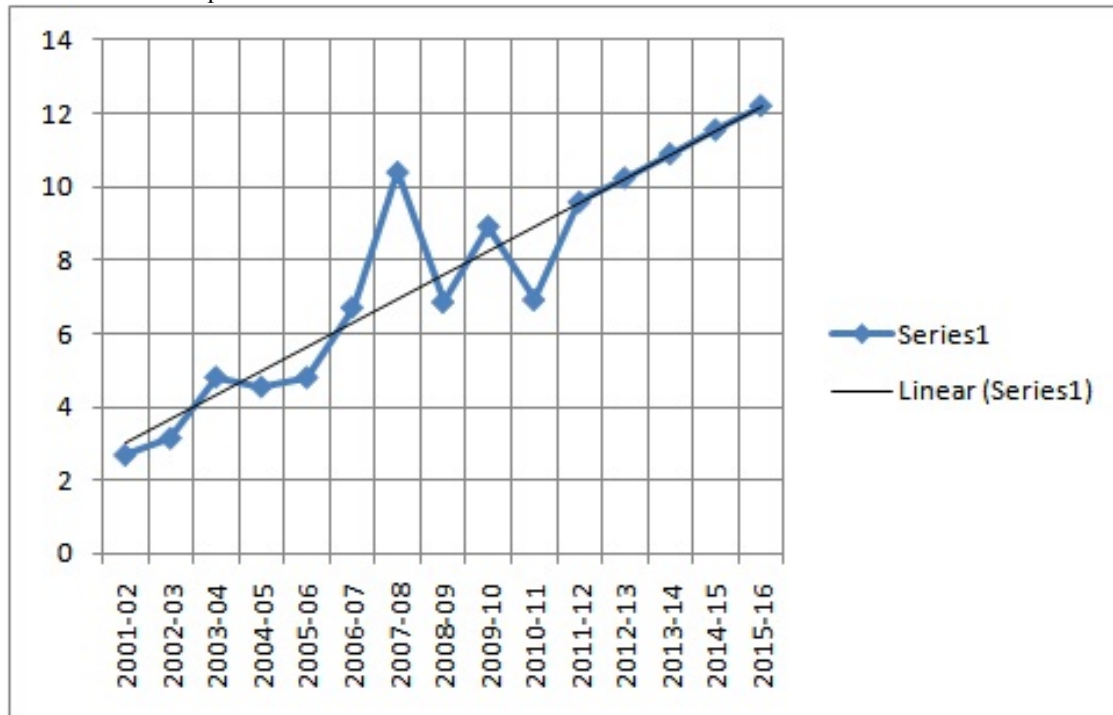


X-axis shows the years from 2001 to 2016 whereas Y-axis shows the values of export of Phenol to Taiwan from India in million US\$.

As seen in the graph that the exports of Phenol from India to Taiwan was increased from \$0.4 million to \$2.04 million in 2010. It was observed that in the last phase of economic slowdown a decrement in exports were there but it has also

been noticed that the exports were boosted as the economic crises ended in 2009-10. As stated by ACC, the Brazil, Russia, India, China & Turkey region is expected to witness 6.9% growth in 2010 and 7.6% in 2011 and 2012.

- ✚ The trend-line shows the export of Antibiotics from India to Taiwan.



X-axis shows the years from 2001 to 2016 whereas Y-axis shows the values of export of Antibiotics to Taiwan from India in million US\$.

As seen that the exports of antibiotics from India to Taiwan have increased drastically since \$2.7 million in 2001 to \$6.92 million in 2010. It has also been seen that a slight growth has appeared in 2005-08 period, whereas since a downstream flow was also observed with fluctuation in exports. The exports drastically increased with a rate of 127 per cent in 2005-08.

CONCLUSION

From the report we wrap up that the mounting economy of India will improve the trade terms with China and Taiwan. Increase in export of chemicals to China and Taiwan will lend a hand to improve the economic conditions. To ensure a credible Indian position in China and Taiwan the Indian chemical industry needs to look up and maintain the quality of chemicals.

SUGGESTIONS

The suggestions to the government of India for the benefit of exporters are as follows.

- ✚ Procedural hassles should be minimized to enable exporters to apply their entire mind, time and energy on business.

- ✚ Once shipping bill is passed and cargo exported, exporters must get their legitimate dues promptly.
- ✚ Similarly once bill of entry is passed no query should be raised by customs.
- ✚ Interest on export finance should be reduced to 7%.
- ✚ A sea change in the mindset of the officials attached to various government departments is called for to realize the fact that the government and the exporters are working together for achieving the common goal of earning precious foreign exchange for the country.
- ✚ The government should also set up large industrial estates exclusively for chemical manufacturing units and encourage even existing units to gradually move to such industrial estates by offering suitable inducements.
- ✚ There must be certain amount of compulsion on the part of each state government to certain amount of foreign exchange required for their states so that there will be greater involvement of state government in export promotional activity of the country.
- ✚ All the available resources at the disposal of center and state government for providing financial assistance to the exporter should be pooled together and used for making available global market intelligence / information like product wise import of other countries, name of suppliers, information on regulatory matters etc. rather giving paltry sum to a small number of individual exporters by way of subsidizing overseas tours/exhibitions participating expenses etc.
- ✚ Government should change their policies according to the convenience of the exporters.



- ✦ Efforts should be made by the government to help exporters to get export orders from overseas client.
- ✦ The government should provide help to the exporters in improving their skills of manufacturing inorganic chemicals, which is already having a good position in the world market.
- ✦ Government should initiate those exporters who export in the countries where our export is less or comes under the level of nil, thus the opportunities market can be increased.
- ✦ Dumping is a trade distorting practice and major threat to international trade. After going through many researches and after studying and analyzing the scenario of dumping, China proved as the top most dumping country and the world should exercise control over dumping into India as well as other countries as it affects the domestic industry indirectly.
- ✦ As it is a threat to this sector, Indian government should implement rigid anti-dumping measures so that trade in this sector should not get dampened.

APPENDIX

Exports of Antibiotics to China and Taiwan

| YEAR | VALUE IN US\$ MILLION | |
|---------|-----------------------|--------|
| | China | Taiwan |
| 2001-02 | 1.41 | 0.36 |
| 2002-03 | 2.12 | 0.2 |
| 2003-04 | 1.17 | 0.15 |
| 2004-05 | 6.27 | 0.26 |
| 2005-06 | 4.61 | 1.25 |
| 2006-07 | 5.05 | 0.65 |
| 2007-08 | 5.69 | 0.86 |
| 2008-09 | 4.83 | 0.32 |
| 2009-10 | 12.04 | 2.04 |
| 2010-11 | 11.73 | 1.01 |

Exports of Phenol to China and Taiwan

| YEAR | VALUE IN US\$ MILLION | |
|---------|-----------------------|--------|
| | China | Taiwan |
| 2001-02 | 19.52 | 2.7 |
| 2002-03 | 14.92 | 3.16 |
| 2003-04 | 16.68 | 4.82 |
| 2004-05 | 10.07 | 4.56 |
| 2005-06 | 36.28 | 4.81 |
| 2006-07 | 20.97 | 6.71 |
| 2007-08 | 34.98 | 10.39 |
| 2008-09 | 36.47 | 6.86 |
| 2009-10 | 36.68 | 8.92 |
| 2010-11 | 41.18 | 6.92 |

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