

Chemical Logistics – Recent Advances at Mumbai JNPT

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Abstract – The chemical supply chain comprises of myriad products, many of which require special care in handling, transporting, and storing to prevent safety hazards such as combustion, contamination, and spoilage. Because it is a high-risk business, chemical logistics requires flexibility and adaptability. This paper elaborates on various popular aspects used across chemical warehousing vertical and the momentum of cross-linked segments associated with them.

Index Terms –India, Chemical Logistics, Supply chain, Mumbai, Storage and Warehousing.

❖ INTRODUCTION

The logistics industry has evolved towards higher levels of system and process integration over the last two decades. Logistics is the glue that binds the entities of a supply chain. An increasing number of businesses have now realized that its effectiveness is critical to the superior performance of the supply chain. For instance, the move toward just-in-time and agile manufacturing has tremendously increased the impact of the logistics decisions. This is especially true for the chemical industry with its globally distributed plant sites, storage terminals, suppliers, customers, and so forth. The global transport of chemicals and a variety of other materials (such as plant equipment, instrumentation, indirect materials, safety equipment, etc.) is central to its day-to-day operations. Logistics costs¹ can vary from 3.6% of the purchase price for a best-in class (BIC) site to 20% at the other extreme. The transport of chemicals by pipelines is ideal. However, this is not always possible. Chemical logistics requires a mix of means such as trucks, trains, ships, barges, tankers, and the like. Sea transport is the key to global chemical logistics. Bulk shipping of chemicals occurs in huge volumes, involving very large crude carriers (VLCCs) and a variety of multi-parcel chemical tankers. The former routinely transport crude oils. Chemical logistics has played very crucial role in development of dependent industries. Be it automobiles or toys, raw material of all the industries is almost chemical. Even hardware required for IT infrastructure is derived out of crude-based polymers. Hence, in this growing age of technology, logistics infrastructure

development for chemicals is equally important. This paper will be taking a look at evolving trends and drivers and deeper analytics of JNPT (Jawaharlal Nehru Port Trust) situated at Mumbai coast, which is one of the busiest sea port across the country.

❖ RESEARCH METHODOLOGY

Various interviews with chemical logistics suppliers are taken into consideration while collecting the primary data for this study.

Population size = ~10,000

Sample size = 2%

Sampling technique = Stratified random cluster sampling

Table1: Types of chemical logistics suppliers at JNPT, Mumbai

Types of chemical logistic suppliers	Types of chemical handling
	Hazardous chemical
	Non-hazardous chemicals
	bulk storages in tankfarms
	Bulk storage-solid substances
	Cold storage
	Gaseous storage

Source: Primary research

Even samples are chosen from various clusters located at JNPT, Mumbai based on random cluster sampling technique. Total 10 clusters are chosen within JNPT region for this study.

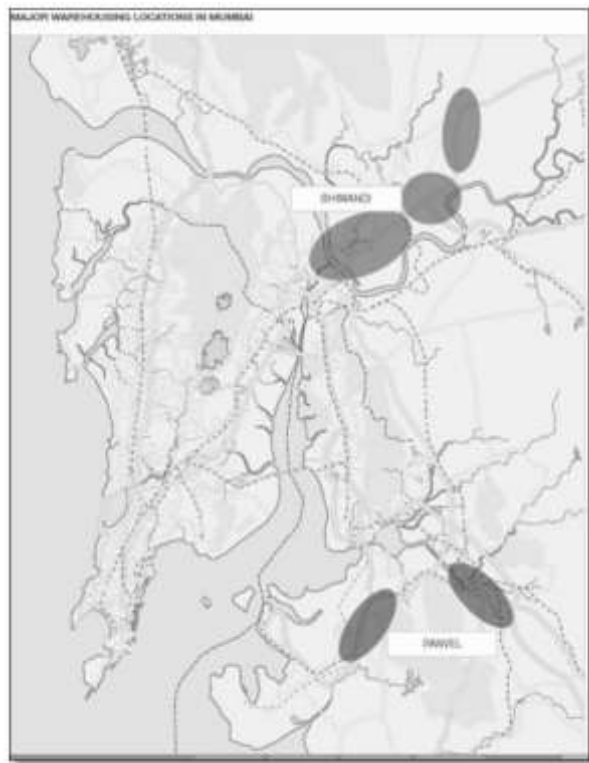
Table2: Sample size in each cluster for proportionate random cluster sampling

Cluster	%Sample size	Samples taken
Cluster-1	2%	20
Cluster-2	2%	20
Cluster-3	2%	20
Cluster-4	2%	20
Cluster-5	2%	20
Cluster-6	2%	20
Cluster-7	2%	20

Cluster-8	2%	20
Cluster-9	2%	20
Cluster-10	2%	20

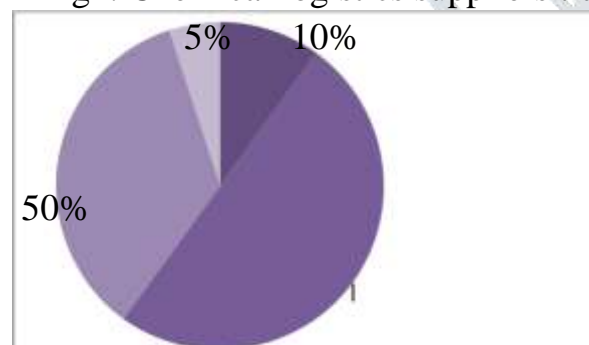
Source: Primary research

Fig1: Major chemical logistics supplier clusters at JNPT, Mumbai region



Source: Google maps (2021), www.google.co.in/maps/

Fig2: Chemical logistics suppliers transport mode

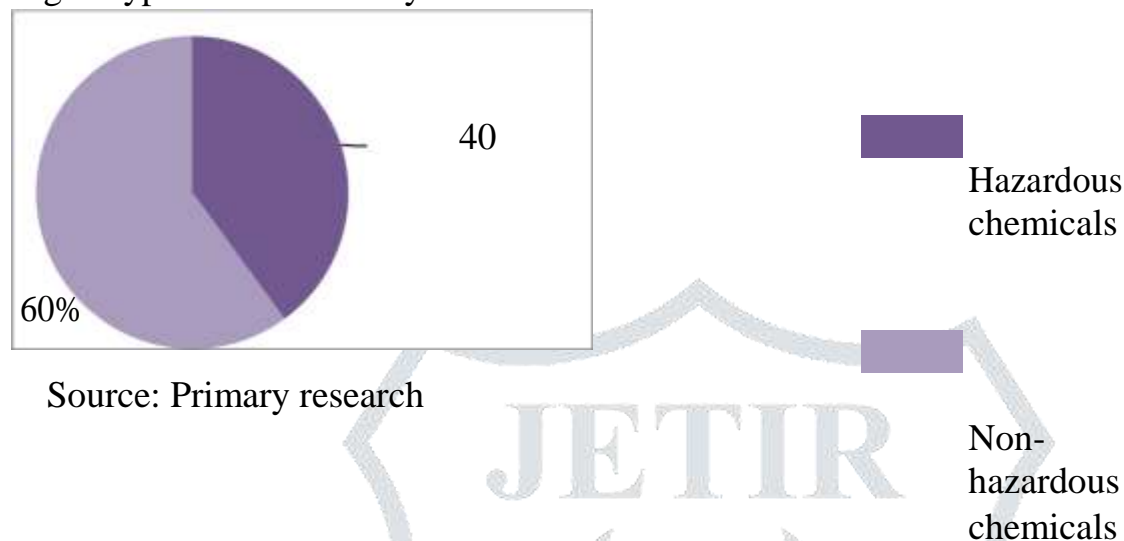


- Rail
- Road
- Sea
- Air

Source: Primary research

Respondents from all the clusters have responded in terms of volume of chemical trade under transportation mode. It is found that most of the chemical logistics is happening through road mode (50%). Rest of the modes share half of the total share combined.

Fig3: Type of chemicals by hazardous nature



Chemical logistics suppliers responded across 10 clusters, said that non-hazardous chemicals is supplied most from them compared to hazardous chemicals (40%). The licenses and other requisites/approvals are higher for the hazardous chemicals and hence attracts higher profit margin to the sellers.

❖ CONCLUSION

All industries take care with their materials and products. For chemical companies, however, the need is magnified. Choosing a chemical logistics company without all of the necessary emphasis on compliance and safety could bring disastrous results.

Volatile materials can lead to significant threats to public health and safety if not handled correctly. This is why choosing a right logistics partner for chemical transport and storage solutions is crucial. Experience and knowledge base enable of suppliers enable to stay in sync with the ever-changing requirements providing comprehensive 3PL.

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