CHAPTER 3

MAGNESITE INDUSTRY
INTERNATIONAL SCENARIO
3.1 WORLD OCCURRENCES OF MAGNESITE

Occurrence of magnesite is known in many countries of the world. The most important magnesite deposits are located in China, USSR, North Korea, India, Brazil, Australia, Canada, Greece, Austria and Czechoslovakia. Table 3.1 gives the world magnesite reserve position.

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Country</th>
<th>Reserve (Million tonnes)</th>
<th>% to total world reserve</th>
<th>Position</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Australia</td>
<td>86.17</td>
<td>3.20</td>
<td>6</td>
</tr>
<tr>
<td>2</td>
<td>Austria</td>
<td>13.60</td>
<td>0.50</td>
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<tr>
<td>3</td>
<td>Brazil</td>
<td>136.05</td>
<td>5.32</td>
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</tr>
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<td>4</td>
<td>Canada</td>
<td>27.21</td>
<td>1.00</td>
<td>7</td>
</tr>
<tr>
<td>5</td>
<td>China</td>
<td>743.74</td>
<td>27.40</td>
<td>1</td>
</tr>
<tr>
<td>6</td>
<td>Czechoslovakia</td>
<td>18.14</td>
<td>0.70</td>
<td>8</td>
</tr>
<tr>
<td>7</td>
<td>Greece</td>
<td>27.21</td>
<td>1.00</td>
<td>7</td>
</tr>
<tr>
<td>8</td>
<td>India</td>
<td>216.77</td>
<td>8.00</td>
<td>4</td>
</tr>
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<td>9</td>
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<td>16.40</td>
<td>3</td>
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<td>10</td>
<td>Turkey</td>
<td>9.07</td>
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</tr>
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<td>11</td>
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<td>14</td>
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<td>11.70</td>
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<td>15</td>
<td>Other Centrally planned economies</td>
<td>9.07</td>
<td>0.33</td>
<td>--</td>
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<td></td>
<td><strong>World total</strong></td>
<td><strong>2715.55</strong></td>
<td><strong>100.00</strong></td>
<td><strong>--</strong></td>
</tr>
</tbody>
</table>

Chart 3.1 (on the next page) represents the natural magnesite reserve position of various countries of the world.

Excluding the share of other market economy countries and other centrally planned economies, the balance of 2389.03 m.t of magnesite reserves are shared by 13 other countries besides India. Of the 13 countries, China (27.40%), USSR (24.10%) and N.Korea (16.40%) together account for 67.90% of the world reserves. India, with a magnesite reserve of 216.44 m.t. stands in the fourth place in the international reserve position. However, the Indian magnesite reserve estimation has been revised to 221.868 m.t.¹.

A brief account of the occurrences of magnesite regarding their location, type, area, reserve estimation, etc. of the various countries of the world are given in the following pages.

3.1.1: AUSTRALIA

The major deposits of Australia are found in New South Wales, Queensland, Victoria, South Australia and Western Australia.

a) NEW SOUTH WALES: Here, the major deposits are located in the Fifield area about 22.4 k.m south of Tullamore. It is of crypto crystalline variety. The ore occurs here as veins and nodules in deposed amphibolite.
b) QUEENSLAND: The deposits of Queensland are found in Kunwarara, Marlborough, Marimal and Yaamba. The area covers 45 to 95 k.m NW of Rockhampton. All the four deposits belong to crypto crystalline secondary magnesite type. The deposits in this area are estimated at 500 m.t. of mean grade. It is overlincd by soft soil and is amenable to opencast mining without blasting.

The kunwarara deposit is the largest known low iron natural magnesite deposit.

In Marlborough area, magnesite lenses have been located and the reserve estimation is around 230 m.t.

In Yaamba, large nodular magnesite deposit containing 188 m.t. of proved reserve has been estimated.

c) VICTORIA: Here, magnesite veins and nodules are found in decomposed biabase, near Healthcote. These are reportedly being worked on small scale. There are other magnesite deposits also in this region, where production has not been made so far.²

d) SOUTH AUSTRALIA: Here, magnesite interbedded with calcareous shale, dolomitic lime stone and stone quartzite occurs in a belt about 540 m.wide and 22.4 km. long, near Copely. In the Crozier - Davenport area, 20 - 30 k.m. east of Port Augusta, numerous large low grade deposits also occur.
Near Roberstown, 188 k.m. NE of Adelaide shallow lenticular deposits associated with dolomite are also found.

e) WESTERN AUSTRALIA: Here, the deposits occur as veins in serpentine near Coolgardic and near Bulong, 35 km east of Coolagradic, but not worked on.³

3.1.2 AUSTRIA

Magnesite mineralisation in Austria is confined to a narrow belt of metamorphosed sedimentary rocks. This belt lies SW of Vienna and extends westwards from Semering Muzz Valley to Tipel. The deposits occur in the form of lenses. The main deposits are found in Veitsch, Rudenthein, Bretenau, Trieben and Dicton, all in Sityria Province.

The ore body occurring at Veitsch extends over a length of 1.6 km and is about 456 m.t in depth. The mines in Rudenthein contain high iron magnesite deposits. It was first started as opencast mines but later underground mining method was adopted.⁴ Small quantities of magnesite are also produced in Corinthia, Salzburg and Tirol Provinces.

3.1.3: BRAZIL

It is the largest crystalline magnesite producing country. The two major deposits are located in the Alancar area of Ceara Province and in the Eguas range near the town of Brumado in South Western Bahia. Both the deposit is reported
to have been generated by hydro-thermal metasomatic replacement of dolomite or lime-stone. All extractions, are by open-pit methods and ore concentration is achieved using froth flotation.\(^5\)

3.1.4 CANADA

The Canadian magnesite deposits are found in British Columbia and Quebec. The major mining operations are done in three regions as given below:

(i) The Baymag mines are situated near Radium Hot Springs in British Columbia.\(^6\) Here a zone of magnesite mineralisation at 45 m in width stretching over 7 km long belt towards south of Marysville is located 34 km of NW of Cariboo. Magnesite mineralisation in this area is associated with sedimentary rocks.\(^7\)

(ii) Magnesite deposits intermixed with dolomite are found in Granville and Harington near Calumet. The deposits here are characterised by bands and lenses of serpentine which are intimately deformed. These deposits are high in lime content.\(^8\)

(iii) The Kilmar deposit is located on the east side of White Rock Lake. The food-wall rocks here comprise of quartz monozite and the hanging wall consists of serpentine deposits quartzite. Underground mining method is followed in this mine.
Apart from these major occurrences, minor occurrences of magnesite deposits in Canada have been reported at Orange, Dale, Cape Berton, Island Novascotia, St. John Country, New Bransweek, and Yukan.

3.1.5: CHINA

The largest magnesite deposits in the world are found in China in Liaoning Province, Inner Mongolia, Shantung and Manchuria.

(a) LIAONING DEPOSITS: The deposits here are found at Haicheng, which is 60–70 km SW of Aushan town in Liaoning Province. The deposit was discovered in 1913 and was opened by Japanese in 1919. The mining operations began in 1922. The mining works were done at three sites, Viz. Qingshanhuai, Huaziyu and Xiafengshen.

The geological formation in the magnesite zone belongs to the Pre Cambrian Algonkain system. The most important magnesite bands are confined to white lower dolomite formation. A new 40 m thick magnesite deposit has been discovered in an area, 30 km, from Fushun, Liaoning. This deposit contains 200 mt. of magnesite.

b) MANCHURIAN DEPOSIT: These deposits are regarded as largest in the world. These crystalline magnesite deposits occur as replacement deposits associated with dolomite in a series of metamorphosed Cambrian sediments. This deposit extends over a belt of around 15 km. All the mines in China are worked by opencast mining method.
3.1.6: CZECHOSLOVAKIA:

In this country, magnesite is available in three regions, namely, Kosice, Haccava and Lovinabana.

a) KOSICE REGION: The deposits in this region occur along a belt of 120 km in length and extends from Pliesovile to Kosice. Here, the mineralisation is in the form of numerous lenses of crystalline magnesite in lime stone and dolomite.

b) HACCAVA REGION: In this region, the magnesite deposits are available in Mikova-Dubrava area. The deposits are mined by underground mining method. The higher grade deposits are confined to the area between Haccava and Ochina.

c) LOVINOBONA REGION: In this region, large deposits of magnesite have been worked near Levin.

3.1.7: GREECE:

The occurrences of magnesite deposits in this country are as explained below:

In Chalkidiki, magnesite deposits are exploited near the villages of Verdos and Gerakimi which contain usually 94% to 97% crude magnesite.

In Mantoudi region, magnesite is available in Mantoudi, Daphnopotamous, Limni, Pyle, Afrati and Hagia Anne in Central and North Euboea, which are of higher amorphous quality.
Generally, Grecians deposits are found in the form of veins and lenses in serpentine. The largest Mantoudi lenses is 1000 m. x 78 m. The magnesite here shows a colloidal cauliflower like texture. There are ten opencast working mines in this land.\textsuperscript{12} Mineralogically, it consists mainly of huntile any hydromagnesite.

The occurrence of deposits of sedimentary origin are also reported at several places and the largest of these is situated near the villages of Aeani, Kozani in the west of Macedonia.

3.1.8: INDIA:

The occurrences of magnesite deposits in India are dealt with separately in the next chapter.

3.1.9: ITALY

In Italy, magnesite is mined at Solde BZ by Eraclit Venier SpA. Other deposits are found at Vidracco, near Turin. It is of poor quality suitable for agricultural purposes only.\textsuperscript{13}

3.1.10: NEPAL

The magnesite deposits of Nepal are available in Kharidhunga area of Himalyan magnesite province. Only recently magnesite mining and processing was started in Nepal.\textsuperscript{14}. 
3.1.11: NORTH KOREA

N.Korea is the third largest producer of magnesite in the world. It has reached the number one position in the world as a supplier of DBM which is of high quality MgO content of 95% and silicon and calcium content of less than 2%.\textsuperscript{15}

Several occurrences of magnesite deposits in this country are reported at several places. However, the vast potential deposits are found in Tansengun in South Kankyo Province, where the reserves have been estimated in the order of 3 billion tonnes. The mines are operated by opencast mining methods. The use of modern mining equipments have improved the productivity in mines.\textsuperscript{16}

3.1.12: PAKISTAN

Magnesite deposits in Pakistan have been explored very recently.

3.1.13: PHILIPPINES

Magnesite deposits are reported at Davao and Sibuyan, part of the Romblon group of Islands. The crypto crystalline magnesite occurs at Lupon and Magnum in the Pujada peninsula on Davao, but reserves are estimated to be only about 15,000t at each. A more recent survey has increased the reserves at Lupon to 4,00,000t and it has been found that this deposit might be of quite exceptional purity.\textsuperscript{17}
3.1.14: POLAND

Poland has a small reserve of magnesite deposits. The mines are operated by the State Enterprise.18

3.1.15: SAUDI ARABIA

The magnesite deposits at Zarghat, South of Jebel Sayid are estimated at about one million tonnes of 95% magnesium carbonate with less than 2% silica, yet to be exploited. The second deposit that has been investigated is located north of Jiddah (Jedda) at Jabal Ar.Rokhan. The reserves are estimated at 40 m.t.19

3.1.16: SOUTH AFRICA

In this country, magnesite deposits are available in Eastern Transvaal. Though DBM is produced in this country, the government is looking to import higher purity DBM from China to improve the quality of home magnesite products.20

3.1.17: SPAIN

Magnesite deposits are available in this country in two regions, one at Arga Valley in the Navarra region and the other at Villademoros near Sarria in Logu Province. The deposits are of the sedimentary replacement type and are mined by underground mining methods.
3.1.18: SUDAN

Magnesite here occurs in a number of places. The most important deposits are those in the Ingessana Hills around Qala-en-Nahl, and near Halaib in the Red Hills. Magnesite here occurs as pockets and veins. It is closely associated with chromite deposits which it cross-cuts in some localities.

3.1.19 TANZANIA

Small deposits of magnesite occur at the south-east end of Lake Natron. It is of high quality but is almost inaccessible. Another large deposit in the Masai Plains, south of Arusha is also located.

3.1.20: TURKEY

Important magnesite deposits in this country are located at Salda lakes, Kutahya and Eskishir. The mines are worked by open-cast method except the one near Kutahya, which is worked by underground mining method.

The Salda lake deposit lies in Southern Turkey, approximately 150 km NW of Antalia. The deposit occupies an area of 60 sq.km which extends down to a depth of 190 m. The characteristic of this deposit is low iron content and is of cryptocrystalline variety.
The deposits found at Kutahya and Eskishir are also of crypto crystalline variety. Magnesite occurs here in the form of veins.  

3.1.21: USA

Only two districts in the U.S contain large deposits of crystalline magnesite, one at Gabbs, Nevada, and the other in North-Eastern Sevens Country of Washington. Small occurrences are also known in California, New Mexico and Texas.

a) NEVADA DEPOSITS: The Gabbs deposits are large and are supposed to be sedimentary but modified by a nearby granodiorite stock.

The magnesite deposits are located in the west slope of the Paradise range in the Nye Country and are worked by opencast method. These mines are highly mechanised. The deposits occur in 70 m. thick along the Muddy river.

b) Washington: The large deposit of crystalline magnesite near Chewelah Washington occurs as a hydrothermal replacement of carboniferous dolomite. The deposits are huge, bedded lenses and cover 30 m. long and 100 m thick. The material is white to red in colour and is low in iron.

c) CALIFORNIA: Here the main magnesite deposits are serpentine rocks near the coast range and the western foot-
hills of the Sierra Nevada. Magnesite is almost entirely of the crypto crystalline variety. A few large deposits also occur in the Red mountain district on the border of Santa Clara Countries. Sedimentary magnesite is also found near Bissel, Kern country and at Afton, San Bernadino country. Similar small deposits are reported near Needles and in Kramer hills of San Bernardino country.

Amorphous magnesite occurring in serpentine rock is found throughout Coast Range and on the Western slope of the Sierras from Mendocino and Placer countries in the north to Riverside country in the south.

d) NEW MEXICO: The principal deposit in this state occurs in Nye country. The ore is coarse to fine grained, exhibits replacement structure and ranges from nearby pure magnesite to pure dolomite.

A large lenticular deposit of sedimentary magnesite occurs about 8km, SW of Overton, Clark Country. Resources here are estimated to exceed 5 m.t.  

e) TEXAS: Here two important deposits are located at Liano and Mason country. The deposits of Liano occur as lenses in dolomite marble. In NW of Mason country, the deposit contains lenses of mixed magnesite and dolomites in chlorite schist.
There are numerous deposits of magnesite in this country and they are at (i) Satka in Ufa province, (ii) Khalilova in Orak dt. (iii) Near lake Baikal in Kuban dt. and (iv) Slovakia.

The Satka deposits are found in Ural mountains. This deposit is located 60 km. SW of Zeatoust in Ufa Province. The deposits are of high grade crystalline variety and occur in length and 80 m. wide with a series of sediments. Reserves of over 145 mt have been estimated in this area. These deposits are associated with dolomite, marl, conglomerate, sandstone, slate and phyllite of Cambrian or late Pre-Cambrian age.27

Compact magnesite occurs as veins as much as 0.46 m. thick in peridotitus at Khalilora Orak dt. about 400 km south of Satka.

Deposits of crystalline magnesite have been reported near Lake Baikal in East Siberia near Ufa and in Kuban dt. of Caucasus.

The deposits of Slovakia are situated in a belt of upper carboniferrous dolomite, graphitic phyllites and other rocks of the Germerium between Padrecany and Ochtine and near Kosice. The thickness of magnesite lenses varies between 20 and 400 m. and the area ranges from 5000 to 32000 sq. meters.
Russia is the prime source of magnesite in the Commonwealth of Independent States (CIS) with reported crude annual production of 4.64 m.t. This comes mostly from Satkinskoye group of deposits near Chelyabinsk in the Southern Ural mountains.

3.1.23: YUGOSLAVIA

The country’s magnesite deposits are located in a NW-SE magnesite bearing zone from Banja Luka in Bosnia to Pristina Serbia. The country’s magnesite reserves are estimated at 400mt.

The most prominent deposits are found in the Dinaria and Servo Macedonian metallogenia provinces. These deposits are of amorphous variety. They are associated with serpentine masses and tertiary sediments. The other deposits occur at Bela-stena and Beli-Kamen. The Bela-stena deposit lies south of Kraljeoo. It belongs to the sedimentary type formed along with the mioceno sediments. The Beli-Kamen deposit is of stratiform type and the ore lenses occur in a mioceno sedimentary series composed of shales interbedded with limestone.

3.1.24: ZIMBABWE

In this country, magnesite is mined at the small Barton Farm operation, east of Gatoom Village. Only mining operations are done here and no plant has been set up so far.
The occurrences of magnesite deposits in various places of the world are plotted on the world map, (Chart 3.2) given on the next page.

3.2. WORLD MAGNESIA PRODUCERS

3.2.1: PRODUCTION OF MAGNESIA FROM NATURAL MAGNESITE

Caustic Calcined Magnesia (CCM) and Dead Burned Magnesia (DBM) are produced by calcining natural magnesite. Magnesite is the world's largest source of magnesia. As the demand for DBM by the refractory industry is more, a comparatively large portion of raw magnesite is converted into DBM and it is consumed by the refractory industry. There are many magnesia producers in the world. A list of important magnesia (from natural magnesite) producers of the world along with some particulars of each producer is given in Appendix 3.1. This appendix shows that the magnesia producers very much concentrate on the production of DBM rather than CCM.

3.2.2: WORLD ESTIMATED PRODUCTION OF MAGNESIA

Magnesia can be produced from (i) natural magnesite and (ii) sea-water and brines (called synthetic magnesia). The world's estimated production capacities for DBM by type of raw material is given in Appendix 3.2.

This appendix 3.2 shows that of the total estimated world production of DBM (90,10,000 t.), the production of
magnesia from natural magnesite (68,75,000 t) alone is nearly 76%, which confirms that magnesite is the world's largest source of magnesia.

3.3: WORLD MAGNESITE TRADE

3.3.1: WORLD RAW MAGNESITE PRODUCTION

The raw magnesite production in various countries of the world is given in Appendix 3.3.

This appendix shows that in almost all the countries and in the world as a whole, the raw magnesite production during the past has increased certainly; however, the increase is not much significant. The world raw magnesite production is represented through bar diagram in Chart 3.3 (on next page).

3.3.2: WORLD MAGNESITE EXPORTS

On an average, the annual world trade of DBM and CCM is around 2m.t. An interesting feature of the trade is that many countries are large importers as well as exporters, because of the availability of a wide range of magnesite and magnesia products. For instance, Australia exports caustic calcined magnesite and high iron DBM and imports similar tonnage of high purity natural magnesite from Greece and Turkey. U.K exports sea-water magnesia but imports mainly caustic natural magnesite from Spain, China, Greece and India.
Japan is a major exporter of synthetic magnesia, yet imports large tonnage of natural magnesite from China and North Korea.\textsuperscript{32}.

(i) WORLD EXPORT OF RAW MAGNESITE:

The country wise export of raw magnesite is given in Appendix 3.4.
It can be seen from Appendix 3.4 that the quantum of raw magnesite exports fluctuate widely. The major reason attributed to this variation is that the exporting countries have started their own calcining of raw magnesite on income and economical grounds. Hence, the prediction of future raw magnesite exports can give no reliable results.

(ii) WORLD EXPORT OF CALCINED MAGNESITE

The principal exporting countries of calcined magnesite are China, Czechoslovakia, N.Korea, Austria, Spain, Irish and USA. The exports of calcined magnesite by important countries are given in Appendix 3.5.

The export of calcined magnesite in the world market as given in Appendix 3.5 also shows fluctuations. It is understood that the fact for fluctuations is that the exporting countries prefer the better utilisation of calcined magnesite in their own industrial development than on exporting.

3.3.3: WORLD MAGNESITE IMPORTS

(i) WORLD IMPORTS OF RAW MAGNESITE

Magnesite is available in many grades. Generally low and medium grade magnesite is available in many countries. These countries import high grade magnesite either in the raw or processed form to make use of them in the production of high grade refractories. Even countries which have high quality
magnesite deposits import magnesite either to fill the gap between the indigenous availability and their requirements or to avail economy.

Japan was the main importing country of raw magnesite followed by Thailand, Yugoslavia and U.K.33.

The imports of raw magnesite by important countries are given in the Appendix 3.6.

(ii) WORLD IMPORTS OF CALCINED MAGNESITE

U.S.S.R is the leading importing country of calcined magnesite followed by Germany, Japan, Poland, USA, France, UK and Austria.34 Appendix 3.7 gives an account of the imports of calcined magnesite by various countries of the world.

Appendices 3.6 and 3.7 show a clear fluctuation in the import of raw magnesite and calcined magnesite by these countries. The fluctuation is due to the fact that these countries have started improving the quality of raw magnesite available with them by some beneficiation method or started producing synthetic magnesia.

For instance, USA is concentrating on the production of synthetic magnesia and hence its import of raw magnesite has considerably come down.

Similarly, Spain has actively engaged in R & D activities to improve the quality of raw magnesite and hence its
import of calcined magnesite fluctuates significantly. The improvements in science and technology that take place continuously in various countries will have their impacts on the world magnesite industry. This will, in turn, result in significant fluctuations in the world magnesite trade.

3.4: STATUS AND DEVELOPMENT OF THE WORLD MAGNESITE INDUSTRY

3.4.1: WORLD MAGNESITE RESERVES

Table 3.1 shows that regarding world magnesite reserve position, China is in the first place, USSR the second, N.Korea the third, and India the fourth. The total magnesite reserve estimation of the world is of the order of 2715 m.t.

3.4.2: WORLD CRUDE MAGNESITE PRODUCTION

Obtaining an accurate figure for world production of crude magnesite remains something of a guessing game, because, only broad estimates are available for production from the USSR, China, N.Korea and Czechoslovakia, which together account for about 2/3 of the world total.\(^{35}\)

According to Appendix 3.3, in raw magnesite production, China stands first, N.Korea the second, USSR the third, and the fourth is Austria. India is in the eighth place. However, according to the figures published by Roskill, London (Appendix 3.8), in raw magnesite production, USSR stand first, China the second, N.Korea the third and the fourth is Turkey.
India is in the ninth place. Appendices 3.3 and 3.8 clearly prove that obtaining an accurate figure for world production of raw magnesite remains a guessing game.

3.4.3: CHANGES IN THE CONSUMPTION PATTERN OF MAGNESITE

Most of the magnesite produced is consumed by refractory industry. Due to development in science and technology, the refractory consuming industries - particularly the steel industry - require high quality refractory products. This necessitates the use of high purity magnesia by the refractory industry. This in turn, forces the magnesite industry to adopt modern improved methods to purify the raw magnesite.

The increasing demands made by consumers of calcined magnesite over quality have forced the magnesia producers to be engaged in a continuous process of improvement - both to improve quality and reduce costs.36

The growing demand for LD grade DBM produced from both magnesite and synthetic magnesia goes along with the increasing conversion from open hearth to basic oxygen (LD) steel making. The competitiveness of magnesite grew with the increased price of producing synthetic magnesia.

The limited deposits of magnesite have restricted the level of consumption. Had there been adequate reserves, it is almost certain that the use of LD grade DBM would have replaced the equivalent grade produced from synthetic magnesia.
Although it is possible to locate a synthetic magnesia plant close to the market, there is some indication that even with the shipping costs, the use of natural magnesite still be more economic.\textsuperscript{37}

3.4.4: PROBLEMS OF CHEAP EXPORT OF MAGNESITE FROM CHINA

In the middle of 1982, Greek magnesite producers lodged a complaint of dumping against China and N.Korea. Hence provisional anti-dumping duties were levied by the EEC commission in December 1982. Based on the promise of China not to export calcined magnesite at a price that would be injurious to EEC producers, the duty was withdrawn shortly.\textsuperscript{38}

Again in 1985, Greek magnesite producers alleged that prices of imported Chinese material dropped by 29\% in 1984 compared with 1983 and the volume of imported material was up by 40\% which increased their market share in the EEC from 9.2\% in 1983 to 14.5\% in 1984. Greek producers further claimed that an additional loss of 10\% in their market share occurred between 1984 and 1985.

The Commission, however, decided that there was no injury against the producers. Imports of DBM into the EEC decreased in 1983 and 1984, whilst Greek's production more than doubled between 1981 and 1984. Greek's market share in the EEC also increased from 15.4\% to 19.4\% over the period. The market share of China and N.Korea, on the other hand, fell
from 30.4% to 19.7%. The majority of Greek producers experienced an increase in their profits and their average selling price increased by 26%.39

3.4.5: NEED TO ADOPT TECHNICAL IMPROVEMENTS

Synthetic magnesia is replacing the natural magnesia. Though the cost of synthetic magnesia is higher than that of natural magnesia, due to its higher quality (Plus 99% MgO), it is being preferred by the steel industry. This has forced the natural magnesite industries all over the world to improve the quality so that they can compete with the synthetic magnesia market.

It is certain that developments both technical, covering extraction and processing of natural magnesite and commercial, covering new plants, expansion, closures, corporate changes, etc. are taking place in the world magnesia industry. Also, the various problems faced by the industry are being solved gradually through the various R & D activities.

However, to compete with the fast developing synthetic magnesia market, the natural magnesite industry has to go a long way both in improving quality and reducing costs.
REFERENCES

2. ibid, P.114.
3. ibid, P.114.
4. ibid, P.125.
7. Monograph on magnesite, Op, Cit, P.112.
8. ibid, P.112.
9. ibid, P.111.
10. ibid, P.112.
11. ibid, P.124.
12. ibid, P.128.
17. The Economics of Magnesium Compounds Op, Cit, P.298.
18. ibid, P.299.
19. ibid, P.302.
20. Gerry Clarke, Op, Cit, P.73.
21. The Economics of Magnesium Compounds, Op, Cit, P.326.
23. ibid, P.119.
24. ibid, P.119.
25. ibid, P.129.
26. ibid, P.116.
27. ibid, P.117.
28. ibid, P.119.
31. ibid, P.149.
32 ibid, P.149.
33. ibid, P.153.
34. ibid, P.153.
36. ibid, P.22.
37. The Economics of Magnesium Compounds, Op, Cit, P.37.
38. ibid, P.65.
39. ibid, P.68.