

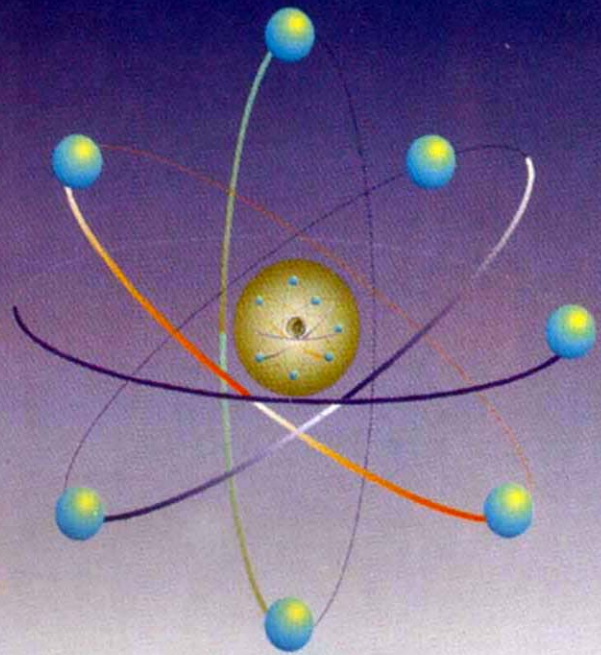


INDIAN CHLORINE COUNCIL

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CHLORINE

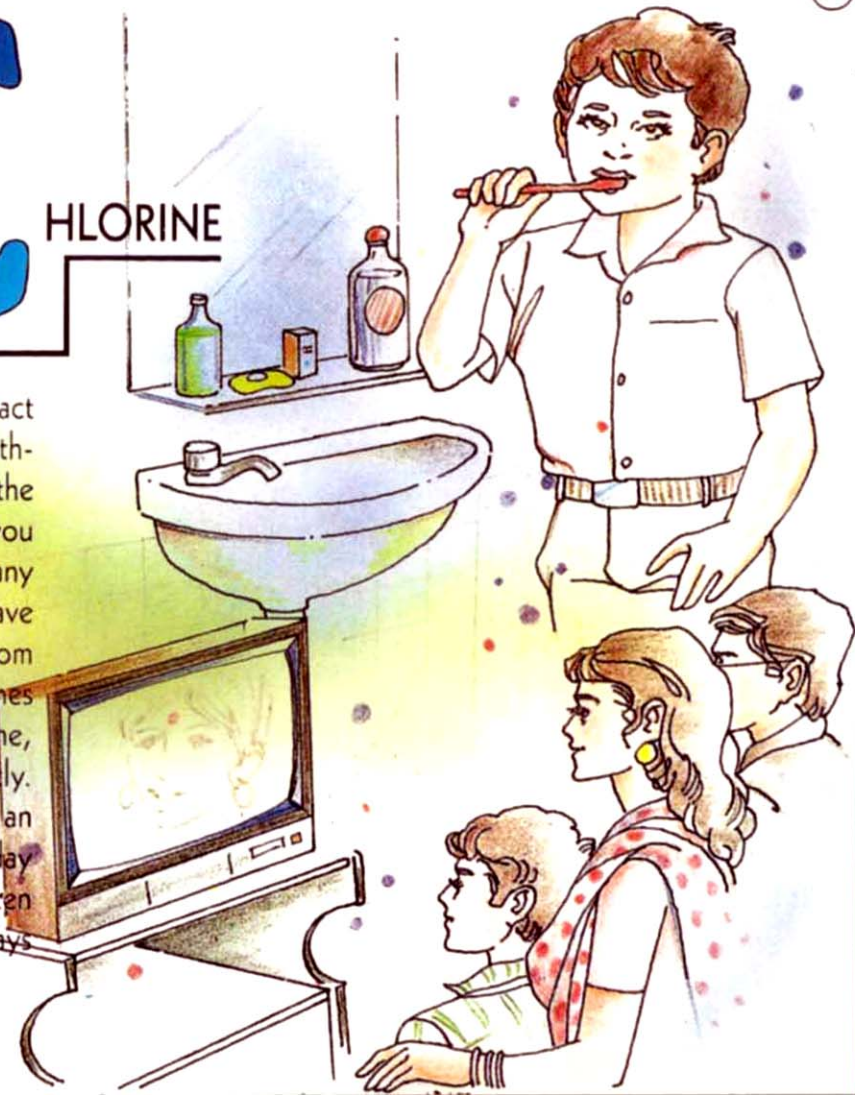
An Essential Element of
Our Daily Life



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HLORINE

Are you aware of the fact that right from the toothbrush you use first thing in the morning to the television set you switch off late at night many items of common usage have chlorine as a component? From dawn to dusk, our daily routines involve the use of chlorine, either directly or indirectly. Chlorine has come to play an important role in modern day life. However, its role is often marginalised as it is not always evident in the end product.



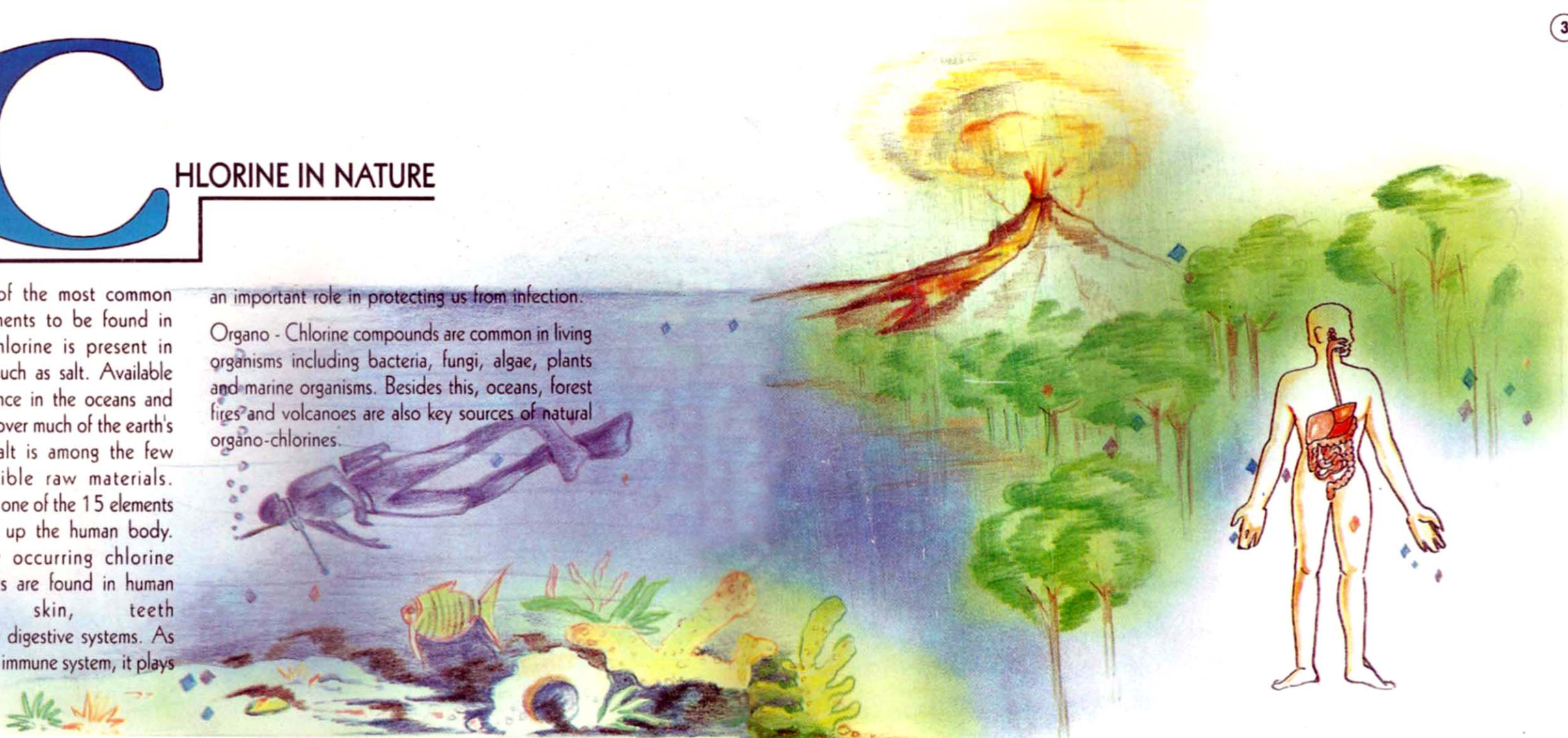
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HLORINE IN NATURE

One of the most common elements to be found in nature, chlorine is present in chlorides such as salt. Available in abundance in the oceans and seas that cover much of the earth's surface, salt is among the few inexhaustible raw materials. Chlorine is one of the 15 elements that make up the human body. Naturally occurring chlorine compounds are found in human blood, skin, teeth and in our digestive systems. As part of our immune system, it plays

an important role in protecting us from infection.

Organo - Chlorine compounds are common in living organisms including bacteria, fungi, algae, plants and marine organisms. Besides this, oceans, forest fires and volcanoes are also key sources of natural organo-chlorines.



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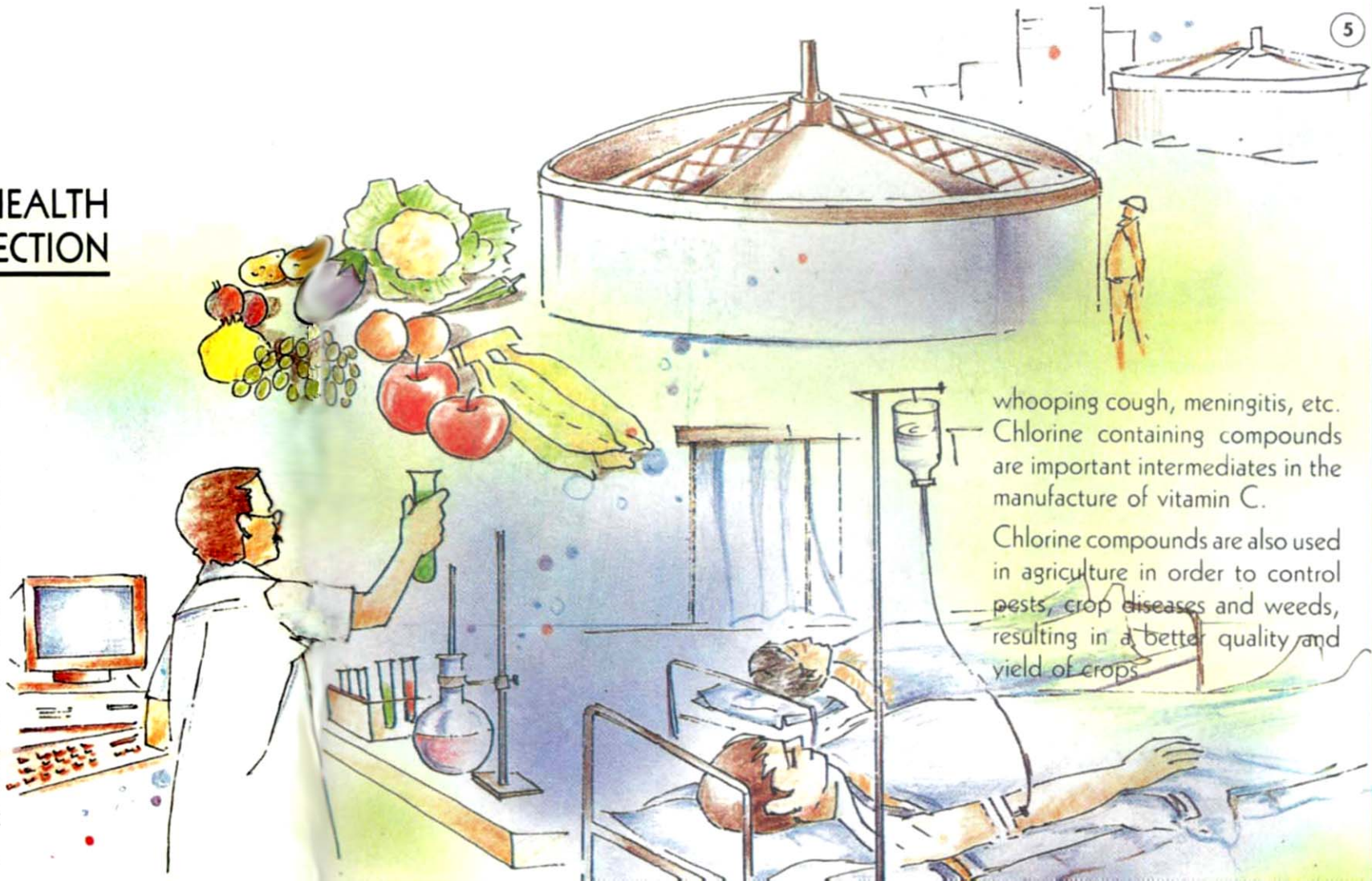
HLORINE'S ROLE IN HEALTH PROTECTION

Chlorine's contribution in sustaining and protecting life cannot be undermined. According to the World Health Organisation, 80% of infectious diseases are water borne, fatally affecting almost 25,000 people per day across the globe. Chlorine and its derivatives play an important role in water purification, helping to guard against cholera, typhoid fever and gastroenteritis. Chlorination is the most widely used water disinfection process in many countries including India.

In addition, Chlorine and its derivatives are widely used as bleach in homes and hospitals. It is also used during natural calamities to improve and maintain hygiene and sanitation.

In hospitals Chlorine is also used for products such as sterile packaging, disposable equipment and saline drops.

Most pharmaceutical products and medicines, including life saving drugs, contain chlorine and are widely used in the treatment of malaria, leukaemia, pneumonia,



whooping cough, meningitis, etc. Chlorine containing compounds are important intermediates in the manufacture of vitamin C.

Chlorine compounds are also used in agriculture in order to control pests, crop diseases and weeds, resulting in a better quality and yield of crops.

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HLORINE'S USE IN CONSUMER PRODUCTS

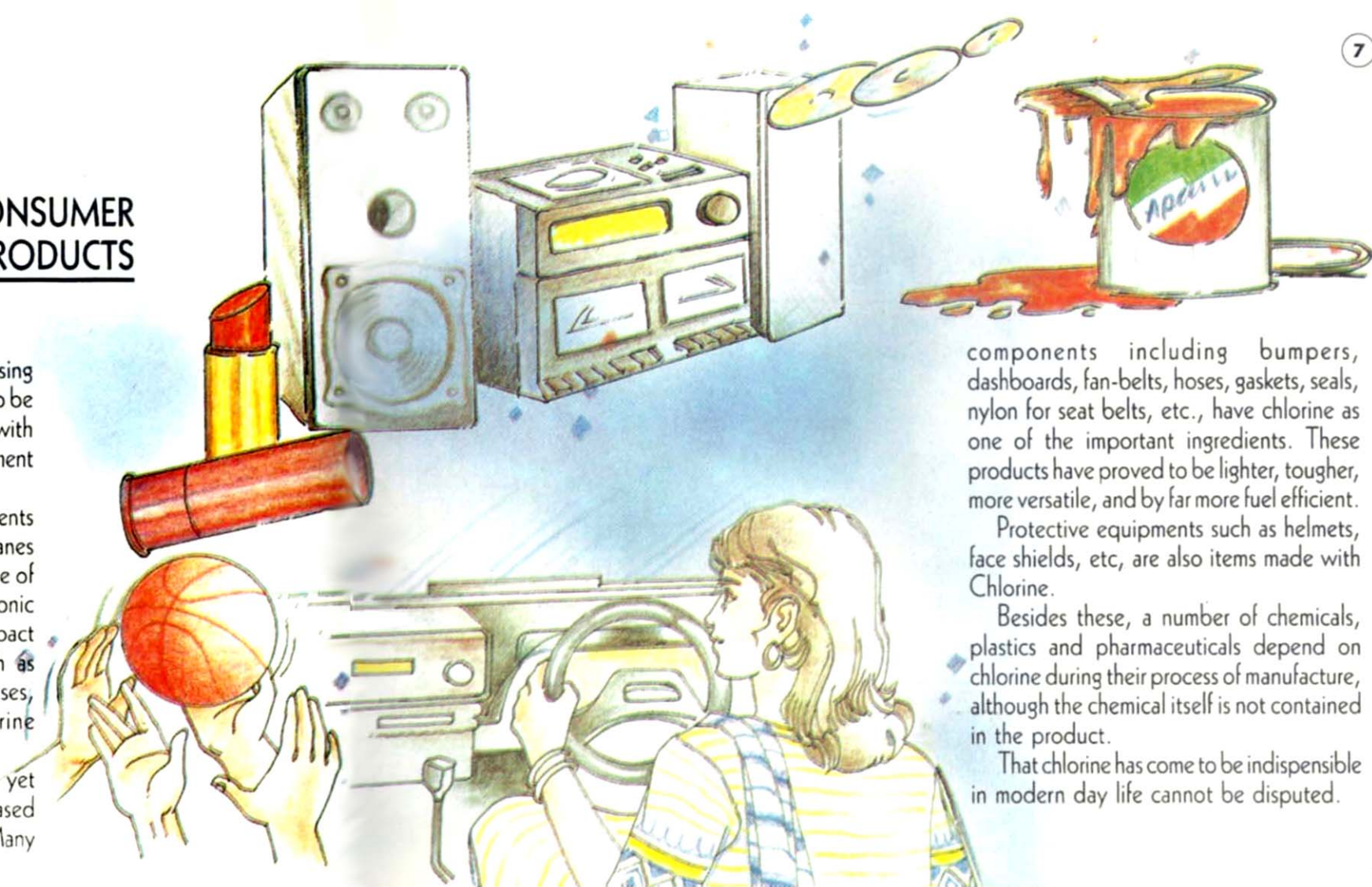
Chlorine is known to bond easily with other chemicals. This property lends itself useful in developing a number of consumer products. Chlorine is used in the manufacture of products as diverse as sports goods and accessories, construction material, car components, protective equipment and for dry-cleaning. Chlorine is an essential intermediate in the production of plastic and polymers. PVC products now serve as a good substitute for wood and thus help in maintaining the ecology of forests.

Paints and pigments are other important products which either

contain chlorine or are made by using chlorine. Lead, which is known to be poisonous, is now replaced with Titanium Dioxide, a non-toxic pigment manufactured using chlorine.

Chlorine is one of the components in polycarbonates and polyurethanes which are used in the manufacture of telecommunications and electronic equipment, as well as for compact discs. Consumer products such as toiletries, cosmetics, contact lenses, etc. also depend on chlorine chemistry.

The automobile industry is yet another sphere where chlorine based products are gaining popularity. Many



components including bumpers, dashboards, fan-belts, hoses, gaskets, seals, nylon for seat belts, etc., have chlorine as one of the important ingredients. These products have proved to be lighter, tougher, more versatile, and by far more fuel efficient.

Protective equipments such as helmets, face shields, etc. are also items made with Chlorine.

Besides these, a number of chemicals, plastics and pharmaceuticals depend on chlorine during their process of manufacture, although the chemical itself is not contained in the product.

That chlorine has come to be indispensable in modern day life cannot be disputed.

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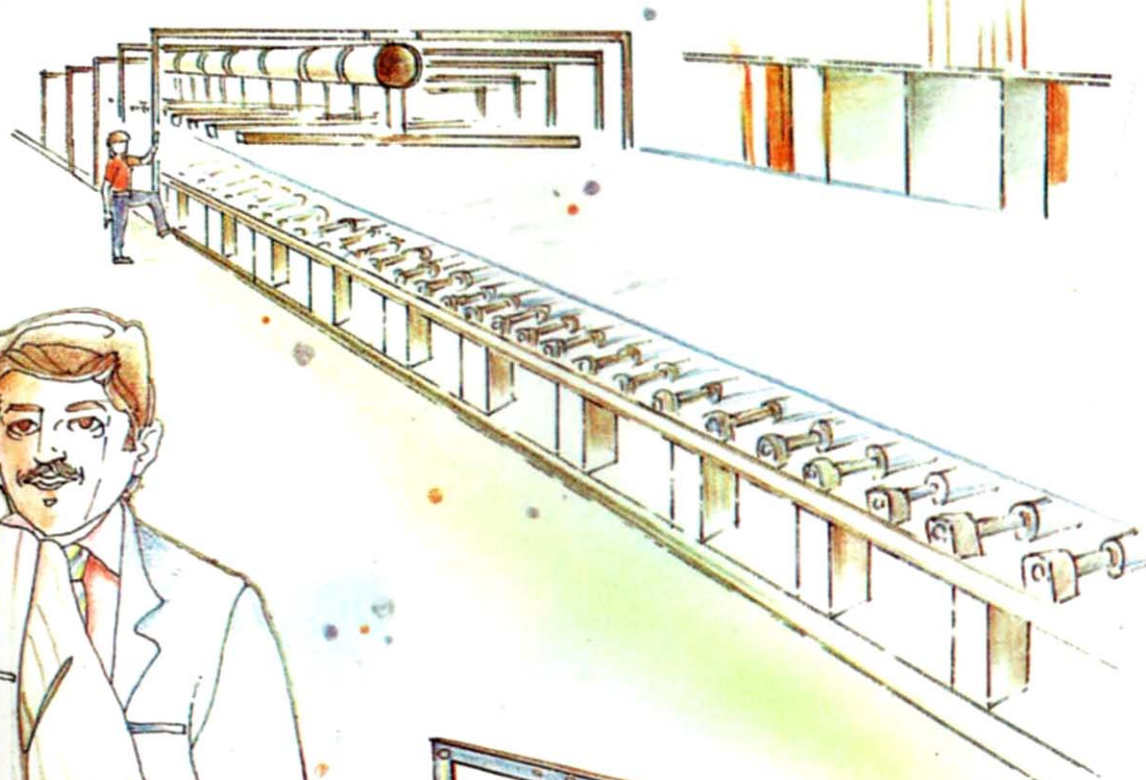
HE CHLOR-ALKALI INDUSTRY IN INDIA

There are 42 Chlor - Alkali units in India with a production of 13 lakhs tons per annum of Caustic Soda, 11.5 lakh tons per annum of Chlorine and a turnover of more than Rs. 3000 crores per annum. Caustic Soda, an important co-product, is itself used in various industries e.g. aluminium, glass, soap, detergents, textiles and pulp and paper. The industry employs approximately 3 lakh people.

Chlorine and its related products provide employment to almost 20 lakh people.

The global chlorine production is 37.0 million tons per annum. As compared to the developed countries, presently India's share of chlorine production is only an insignificant 3%. The development of any country can be well gauged by its per capita consumption of chlorine and India at present has a per capita consumption of only 1.1 kg as

compared to 47.1 kg of Germany, 42.3 kg of USA, 42.0 kg of Canada and 29 kg that of Japan. India, thus, has a long way to go in meeting the standards of the developed countries with regard to development derived by virtue of the use of Chlorine and its attendant benefits.



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HE COMMITMENT OF THE INDIAN CHLOR-ALKALI INDUSTRY TOWARDS SAFETY ...

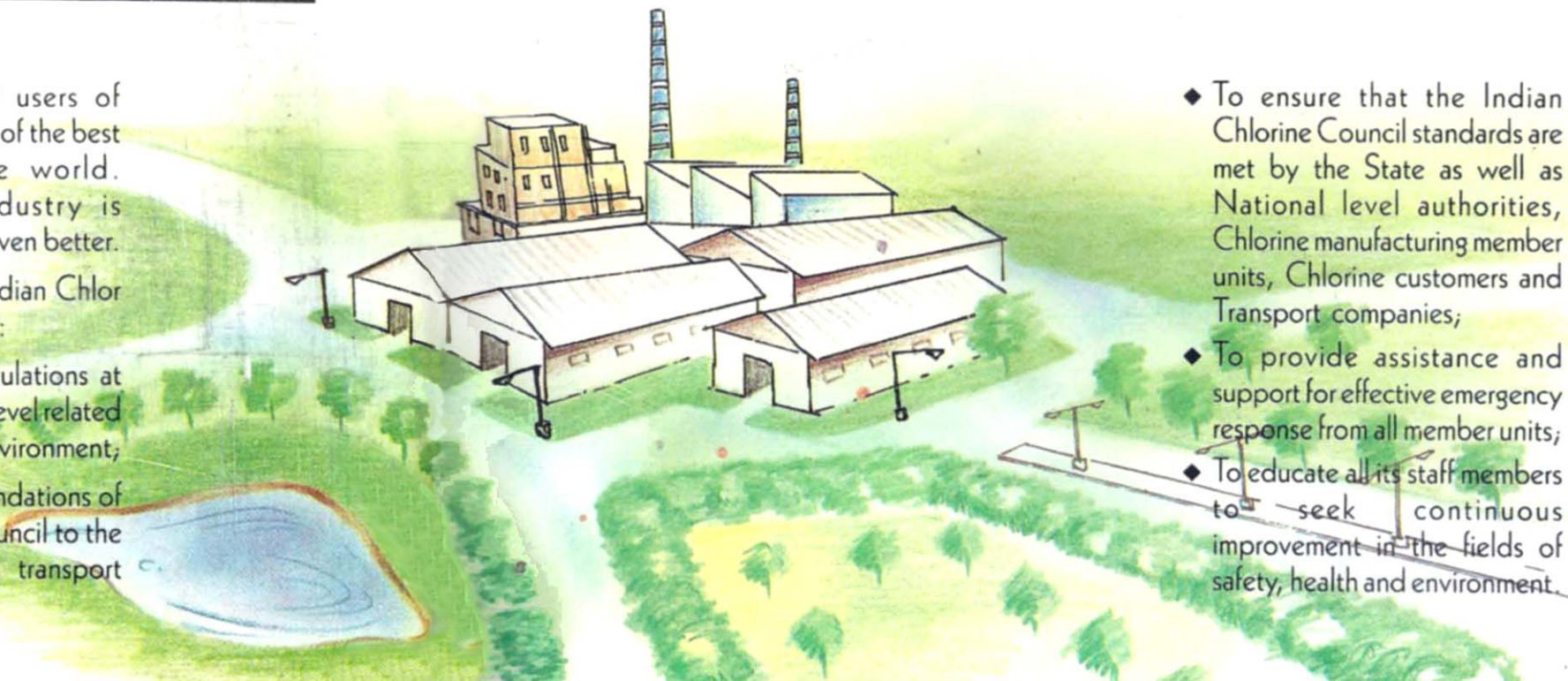
... HEALTH AND ENVIRONMENT

Even though man-made Chlorine chemistry has brought immense benefits to man-kind the Industry still has an important obligation to use Chlorine responsibly. In particular, it has been the constant endeavour of the Indian Chlor-Alkali Industry to achieve continuous improvements in the fields of Safety, Health and Environment and thus enable the human population to continuously reap benefits from Chlorine and its products.

The manufacturers and users of Chlorine in India have one of the best safety records in the world. Nevertheless, the Industry is continually striving to do even better.

The commitment of the Indian Chlor-Alkali Industry includes:

- ◆ To comply with all regulations at the State and National level related to safety, health and environment;
- ◆ To apply the recommendations of the Indian Chlorine Council to the manufacture, handling, transport and use of Chlorine;



- ◆ To ensure that the Indian Chlorine Council standards are met by the State as well as National level authorities, Chlorine manufacturing member units, Chlorine customers and Transport companies;
- ◆ To provide assistance and support for effective emergency response from all member units;
- ◆ To educate all its staff members to seek continuous improvement in the fields of safety, health and environment.

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