

☀LIQUID MEDICAL OXYGEN (LMO)

✓ Indian Railway has transported more than 14 thousand tons of Medical Liquid Oxygen, LMO to the Hospitals and Covid care centers in the state of Punjab, Haryana, Uttar Pradesh, Uttarakhand and Delhi through its 8 hundred 58 Special freight trains run by Northern Railway.

✓ Oxygen is crucial for the treatment of patients with severe COVID-19, since the disease affects lung functioning.

✓ One of the ways in which this oxygen can be supplied is through Liquid Medical Oxygen (LMO). LMO is nothing but high purity oxygen used for medical treatment, and is developed for use in the human body.

✓ Why in liquid state: Due to its low melting and boiling points, oxygen is in a gaseous state at room temperature. Liquification enables storage in larger volume and easier transportation.

▪ How Liquid Medical Oxygen is produced?

✓ There are several methods. The most common production method is separation of oxygen in what are known as Air Separation Units or ASUs.

✓ ASUs are basically plants that separate large volumes of gases. They use a method called Fractional Distillation Method to produce pure oxygen from atmospheric air, which consists mostly of nitrogen and oxygen - 78% nitrogen, 21% oxygen and remaining 1% other gases including argon, carbon dioxide, neon, helium, and hydrogen.

✓ In this method, gases from the air are separated into various components after cooling them into a liquid state and then liquid oxygen is extracted from it.

✓ Atmospheric air is first cooled to -181°C . Oxygen liquifies at this point. Since, the boiling point of Nitrogen is -196°C , it remains in a gaseous state. But Argon has a boiling point similar to that of oxygen (-186°C) and hence a significant amount of Argon liquifies along with Oxygen.

✓ The resultant mixture of Oxygen and Argon is drained, decompressed and passed through a second low-pressure distillation vessel for further purification.

✓ We then get the output as final purified liquid oxygen, which is then transported using cryogenic containers

#science_and_technology

☀ Primitive Subsistence Farming

“Slash & burn Agriculture”

✓ Land productivity is low as farmer doesn't use fertilizers or other modern inputs.

▪ Different Names in India

1. Jhumming → North – East: Assam, Meghalaya, Mizoram, Nagaland
2. Pamlou → Manipur
3. Dipa → Bastar dist → Chhattisgarh & in Andaman & Nicobar Islands.
4. Bewar or Dahiya → Madhya Pradesh
5. Podu or Penda → Andhra Pradesh
6. Pama Dabi or Koman or Bringa → Orissa
7. Kumari → Western Ghats
8. Valre of Waltre → South East Rajasthan
9. Khil → Himalayan belt
10. Kuruva → Jharkhand

▪ Different Names in World

1. Milpa → Mexico, Central America
2. Conuco → Venezuela
3. Roca → Brazil
4. Masole → Central Africa
5. Ladang → Indonesia
6. Ray → Vietnam

#geography

#agriculture

#prelims

#mains

Source -NCERT

#ENVIRONMENT

■ Tracking animals through e-DNA-

✓✓ According to some studies, DNA floating in the air (e-DNA) can boost biodiversity conservation efforts across the world.

● About:

✓✓ Researchers have independently shown that environmental DNA (e-DNA) have the potential to identify and monitor terrestrial animals.

✓✓ Animals shed DNA through their breath, saliva, fur, or feces into the environment and these samples are called e-DNA.

✓✓ Airborne e-DNA sampling is a biomonitoring method that is rising in popularity among biologists and conservationists as it provides abundant information.

● Significance:

✓✓ It will help in understanding the composition of animal communities

✓✓ It will also detect the spread of non-native species.

✓✓ This method will be tuned with the current techniques to monitor endangered species.

✓✓ Methods currently used by biologists to observe animals in person or by picking up DNA from animals' footprints or feces, demand extensive fieldwork.

✓✓ Spotting animals can be challenging, especially if they inhabit inaccessible habitats.

✓ It can help in tracking long-distance migratory birds and other birds' flying patterns.

✓ It can also capture DNA from smaller animals including insects.

● Related Initiatives:

✓ Global EDNA Project by UNESCO

✓ It was launched to study the vulnerability of species to climate change at Marine World Heritage Sites in October 2021.

● DNA:

✓ DNA or deoxyribonucleic acid, is the hereditary material in organisms that contains the biological instructions for building and maintaining them.

✓ The chemical structure of DNA is the same for all organisms, but differences exist in the order of the DNA building blocks, known as base pairs.

✓ Unique sequences of base pairs, particularly repeating patterns, provide a means to identify species, populations, and even individuals.

● e-DNA:

✓ Environmental DNA (e-DNA) is nuclear or mitochondrial DNA that is released from an organism into the environment.

✓ Sources of e-DNA include secreted feces, mucous, and gametes; shed skin and hair; and carcasses.

✓ e-DNA can be detected in cellular or extracellular (dissolved DNA) form.

✓ In aquatic environments, eDNA is diluted and distributed by currents and other hydrological processes, but it only lasts about 7–21 days, depending on environmental conditions.

✓ Exposure to UVB radiation, acidity, heat, and endo- and exonucleases can degrade e-DNA.

SOURCE - Down To Earth