

# Ammonia gas leakage in IFFCO & its impact

December 25, 2020

## In news

Recently, two persons died in a major ammonia gas leakage at the Indian Farmers Fertilizer Cooperative Limited (IFFCO) unit at Prayagraj

## About Ammonia

- Ammonia is a compound of nitrogen and hydrogen with the formula  $\text{NH}_3$ . A stable binary hydride, and the simplest pnictogen hydride, ammonia is a colourless gas with a characteristic pungent smell.
- A tri-hydride of nitrogen ( $\text{NH}_3$ ), ammonia is a building block for ammonium nitrate ( $\text{NH}_4\text{NO}_3$ ) that is used in agriculture as a high-nitrogen fertilizer.
- The experts point out that ammonia is stored for industrial use in liquid form under high pressure or in gaseous form at low temperature, as was the case in the IFFCO unit where the accident took place

## Usage of Ammonia in the fertilizer industry

- Ammonia is critical in the manufacturing of fertilizers, and is one of the largest-volume synthetic chemicals produced in the world.
- More than 80 per cent of ammonia made is consumed in the manufacturing of fertilizer, and most of the remainder goes into the production of formaldehyde.

## Other usages

Ammonia is also used as a refrigerant gas, for purification of water supplies, and in the manufacture of plastics, explosives, textiles, pesticides, dyes and other chemicals.

## Impact of Ammonia on the Human body

- According to experts, Ammonia, even in moderate concentration, can cause irritation to eyes, skin, nose and throat.
- It interacts immediately upon contact with moisture present in the skin, eyes, oral cavity, respiratory tract to form ammonium hydroxide, which is very caustic and disrupts the cell membrane lipids, ultimately leading to cellular destruction.
  - As cell proteins break down, water is extracted, resulting in an inflammatory response that causes further damage
- Ammonia, which is highly soluble in water, is found in soil, air, and water; it is naturally present in the body and secreted by the kidneys to neutralise excess acid.
- However, it is highly diluted when in the environment and does not affect the human body to a noticeable level,
- When it is inhaled in excess (leads to oxygen deficiency), the gas is toxic and affects the lungs with a possibility of causing chemical pneumonitis inflammation of the lung caused by aspirating or inhaling irritants.
- **Ammonia** is considered a severe health hazard due to its toxicity. Exposure to 300 ppm is immediately dangerous to life and health and **can** be fatal within a few breaths
- If it is excessive inhalation, the cause of death is always suffocation

### **About Indian Farmers Fertilizer Cooperative Limited (IFFCO)**

- IFFCO is one of India's biggest cooperative society which is wholly owned by Indian Cooperatives.
- IFFCO is a Multi-state cooperative society engaged in the business of manufacturing and marketing of fertilizers headquartered in New Delhi, India.
- Started in 1967 with 57 member cooperatives it is today the biggest co-op in the world by turnover on GDP per capita with around 35,000 member cooperatives reaching over 50 million Indian farmers. With around 19% market share in Urea and around 29% market share in complex fertilizers (P205 terms) IFFCO is India's largest fertilizer manufacturer.