Hooch Tragedy

Why in News?

Recently, a tragic hooch incident in Bihar has claimed eight lives, drawing attention to the severe consequences of illicit liquor consumption.

Key Points

- **Hooch Formation Process:**
  - **Hooch, also known as illicit or spurious liquor, i**s typically made by fermenting and distilling cheap raw materials **like** molasses or grains.
  - Often, dangerous chemicals like methanol **are added** to speed up production or increase potency. Methanol can cause fatal poisoning even in small amounts.
- **Contributing Factors:**
  - Despite strict prohibition laws, the underground liquor trade continues to thrive in Bihar. Poor enforcement and high demand for alcohol contribute to recurring hooch incidents.
  - Public health experts point to the need for better regulation and stronger policing to prevent the sale of toxic alcohol.
- **Prohibition Laws:**
  - Bihar has enforced a total prohibition on alcohol since 2016 under the Bihar Prohibition and Excise Act, 2016. However, loopholes and weak enforcement allow the illegal trade to flourish.
  - The law includes stringent punishments for those involved in the production and sale of illicit liquor, including heavy fines and imprisonment.

Methanol

- Methanol, chemically represented as CH_3OH, is a simple alcohol molecule consisting of one carbon atom bonded to three hydrogen atoms and one hydroxyl group (OH).
- **Regulations:**
  - Methanol is classified under **Schedule I** of the **Manufacture, Storage and Import of Hazardous Chemical Rules 1989** in India.
  - **Indian Standard IS 517** specifies how the quality of methanol should be determined.
- **Industrial Production:**
  - Methanol is primarily produced industrially by combining carbon monoxide and hydrogen in the presence of **copper and zinc oxide catalysts,** typically at pressures of **50-100 atm** and temperatures around 250°C.
    - Historically, methanol was also produced through the destructive distillation of wood, a method known since ancient times, including in ancient Egypt.
- **Industrial Uses:**
  - Methanol serves as a crucial precursor in the production of acetic acid, formaldehyde, and various aromatic hydrocarbons. It is widely used as a solvent, antifreeze, and in various industrial processes due to its chemical properties.
- **Effect on Human Body:**
  - **Metabolic Acidosis:**
    - Methanol in the body is broken down into toxic byproducts, primarily formic acid. This acid disrupts the body's delicate pH balance in the blood, leading to a condition

called metabolic acidosis (production of excessive acid that cannot be flushed out by kidneys).
        - This makes the blood more acidic, hindering its ability to function properly.
    - **Cellular Oxygen Deprivation:**
        - Formic acid also interferes with an enzyme called cytochrome oxidase, which is crucial for cellular respiration. This disrupts the cells' ability to use oxygen, leading to a buildup of lactic acid and further contributing to acidosis.
    - **Vision Impairment:**
        - Methanol can damage the optic nerve and retina, causing methanol-induced optic neuropathy. This condition can lead to permanent vision problems, including blindness.
    - **Brain Damage:**
        - It can cause cerebral edema (fluid buildup in the brain) and hemorrhage (bleeding). These can lead to coma and death.