

Hazards of styrene

According to rule of “manufacture storage and import of hazardous chemical rules, 1989” styrene is classified as ‘hazardous toxic chemicals. Under normal condition the level of styrene in the air should be under 5 ppb.

We are exposing to styrene by different ways like air, water, soil, work place air, food. This gas enters the body not only through respiration but also through skin and eyes. It absorbed readily and distributed through the body tissue. Styrene inhalation may cause irritation of throat and nose, wheezing, coughing leading to fatigue weakness depression hearing loss and peripheral neuropathy.

Styrene is also determined as possible carcinogen by international agency of research on cancer. It is also component of photochemical smog and hence contributes to air pollution

Tragedy due to styrene gas leak

Vizag gas leak

On the early morning of 7 may 2020 and industrial accident occur at LG polymers chemical plant in the R R Venkatapuram village located at outskirts of Visakhapatnam, Andhra Pradesh, India. Gas leakage lead. Vapour cloud over radius of around 3 km. According to NDRF (National Disaster Response Force) total 11 deaths are recorded and nearly 1000 peoples became sick after being exposed to gas.

Reason behind tragedy malfunctioning of tank’s refrigerating unit. Styrene should be stored under 17 Degree Celsius. Increase in temperature causes styrene to evaporate.

Cargo Tank Explosion

On 20th September 2019 due to runaway polymerization cargo tank containing styrene monomer ruptured in Ulsan, Republic of Korea. Cargo expands rapidly because of runaway polymerization leading to increase in atmospheric pressure of tank. The expansion can result in cargo tank rupture if venting system can’t cope with the increasing tank pressure. So catastrophic rupture release vapour to the atmosphere in the large quantity.

Runaway polymerization is a dangerous chemical reaction in which product form with excessive speed, resulting heat may lead to explosion or other hazards.

Prevention

styrene is a component of tobacco smoke. So, avoid smoking in enclosed spaces like home or car. During the use of home copiers styrene is released. So used copiers only when needed and turn it off when finish.

This is essential that industries must provide their employees with safe environment. Companies should compliance to government laws and time to time audit of all machineries.

Conclusion

As styrene is naturally occurring liquid material it is an essential component used to make various lightweight flexible and strong product. Polystyrene is polymer converted back into its specific (styrene) monomer, allowing polystyrene plastics to be recycled over and over again

But still lots of gas leak keep on happening in the world due to such gas leak several innocent people lost their life. Such tragedies happen due to human negligence only. From such tragedies we came to know about danger of chemicals that we use every day.

From incidents like Vizag tragedy and Bhopal tragedy we need to learn lot of things to make our future safe by finding less hazardous and more eco-friendly materials.

