

# Pollution Control and Safety

## 7.1 INTRODUCTION:

Isoamyl alcohol is an organic compound, having the formula  $C_5H_{11}OH$ . It is clear water white liquid, partly soluble in water but completely soluble in organic liquid like ether, etc. It has an alcoholic, non-residual odor which causes coughing.

All individuals and companies have a duty of care of their neighbors and to the environment, in general. Vigilance is required in both the design and operation of process plant to ensure that legal standards are met and that no harm is done to the environment considerations must be given to:

- i) All emissions to land, air, water.
- ii) Waste management.
- iii) Smells.
- iv) Noise.
- v) The visual impact.
- vi) Any other nuisances.
- vii) The environmental friendliness of the product.

Isoamyl alcohol is narcotic and it is about four times as toxic as ethanol. However, their low volatility and water solubility favours a low absorption rate in the body. The vapor may be an eye and upper respiratory irritant. Ingestion can cause headache, nausea, vomiting, delirium and methemoglobin formation. Maximum allowable concentration (MAC) for inhalation is 100 to 200 ppm by volume.

## 7.2 HEALTH HAZARDS

1. Signs/symptoms of overexposure:

Irritation of eyes in mucous membrane, nausea, vomiting, headache and dizziness. Long time exposure is fatal. The exposure of skin to Isoamyl alcohol may lead to skin cracking.

2. Emergency/first aid procedure:

Inhalation: the patient is first removed from the contaminated air and provided fresh air and then call for medical treatment. Irrigate the contaminated eyes with water.

3. Fire hazards:

It has a flash point (closed up) of 109<sup>0</sup>F. When fire or explosion takes place, the following extinguishing media may be used

- i. Water
- ii. Powder
- iii. Alcohol foam

Following materials are to be avoided during fire hazards.

- i. Oxidizers

### **7.3 Shipping, Handling and Storage:**

Isoamyl alcohol is clear water white liquid of moderate volatility. Shipping is generally in drums or tanks under coast guard classification as a dangerous fire hazards when exposed to heat or flame. Explosion hazard is only moderate because of low volatility and high vapor density. Isoamyl alcohol is not subjected to spontaneous heating in storage.

### **7.4 Precautions for safe handling and use:**

A. Steps if Spillage Takes Place:

Sweep up and dispose of the spillage by storing in approved containers for flammables.

B. Waste Disposal Methods:

- i. Spray into furnace
- ii. Incineration will become easier by mixing with more flammable solvent.

C. Precautions in Handling/Storing:

- i. Remove source of ignition

- ii. Keep the containers closed
- iii. Store the containers in prescribed

D. Other Precautions;

- i. Wear safety glass
- ii. Rubber gloves
- iii. Face shield
- iv. Coveralls
- v. Multipurpose gas mask

## 7.5 Control Measures:

Following are the control measures that must be taken in order to avoid accidents

- i. Respiratory Protection: Multipurpose gas masks are used.
- ii. Ventilation: Local ventilation is very important to avoid any mishappening.
- iii. Protective Gloves: In order to prevent the direct exposure of hands. Rubber gloves are used to protect the hand and hence avoid skin cracking.
- iv. Eye Protection: Eyes are protected from direct exposure by wearing goggles or glasses.
- v. Other Protective Equipments: Other protective equipments that are used by operator to avoid direct contacting or exposure include face shield and coveralls.

Organs that are mostly affected by direct exposure include Eye, Skin and Respiratory organs. Hence care must be taken to protect these organs from direct exposure.

Since Isoamyl alcohol is less volatile, it does not have major environmental effect. It has the major effect on the operator health who works at the site of manufacture.

