

POLLUTION CONTROL AND SAFETY

The effluent from naphthalene plant consists of mainly blowdowns of condensers, cooler and condensates from distillation column. These may contain negligible amount of naphthalene.

Storage and Handling:

Naphthalene generally is transported in molten form in tank trucks or tank cars that are equipped with steam coils. Depending upon the transportation distance and the insulation on the car or truck, the naphthalene may solidify and require re-heating before unloading. Without inert gas blanketing and at the temperature normally used for the storage for molten naphthalene, i.e., 90°C, the vapor above the liquid are within the flammability limits. Thus storage tanks containing molten naphthalene have a combustible mixture in the vapor space and care must be taken to eliminate all sources of ignition around such systems. Naphthalene dust also can form explosive mixture with air, which necessitates care in the design and operation of solid handling systems. Perhaps the greatest hazard to the worker is the potential for operating or maintenance personnel to be accidentally splashed with hot molten naphthalene while taking samples or disassembling process lines. Molten naphthalene tank vents must be adequately heated and solidified naphthalene. A collapsed tank can result easily from pumping from a tank with a plugged vent.

Healthy and Safety:

Toxicology: the acute toxicity of naphthalene is low with LD₅₀ values for rats from 1780 to 2500 mg/kg. The inhalation of naphthalene vapors may cause headache, nausea, confusion and profuse perspiration and, if exposure is severe, vomiting, optic neuritis, and hematuria may occur. Rabbits that received 1 to 2 gm/day of naphthalene either orally hypodermically developed change in lens after a few days followed by definite opacity of the lens after several days. Rare cases of such corneal epithelium damage in human have been reported. Naphthalene can be irritating to the skin and hypersensitivity does occur.

There are a few reports with respect to animal experiment of the chronic toxicity of naphthalene and no chronic toxic effects have been reported as a result of

industrial exposure to naphthalene. In the *salmonella* microsome mutagenicity (Ames) tests, naphthalene is nonmutagenic. Naphthalene shows no biological activity in chemical-carcinogen tests, indicating little carcinogen risk. Since naphthalene vapors can cause eye irritation at concentrations of 15ppm in air and since continued exposure may result in eye effects, a threshold limit is 10ppm (50 mg/m³). The amount is about 10% of the air-saturation value at 27⁰C.