

STYRENE

This article is tagged for development.

Overview

Styrene is a liquid chemical used in producing polystyrene plastics and resins including rubber, plastic, insulation, fiberglass, pipes, automobile parts, food containers, and carpet backing (#EPA Air Toxics). Billions of pounds are used each year and trace amounts can be naturally observed in a variety of foods as well (#ATSDR).

Just the facts

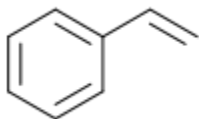
Physical Information
Name: Styrene
Chemical Formula: $C_6H_5CH=CH_2$
Synonyms/Trade Names: Vinyl benzene, Phenethylene, Cinnamene, Diarex HF 77, Styrolene, Styrol, Styropol
Chemical Formula: C_8H_8
Use: chemical synthesis
Source: naturally occurring and synthetically produced
Recommended daily intake: none
Absorption: dermal, inhalation, ingestion

Physical Information

Sensitive individuals: workers

Regulatory facts: highly regulated

Chemical Structure



Chemical Description

Styrene is an oil organic colorless liquid that has a sweet floral smell ([#ATSDR](#) and [#EPA Consumer Factsheet](#)). It is often used in combination with other [Chemicals List](#).

Uses

Styrene is used, often in combination, to produce numerous products including rubber, plastic, insulation, fiberglass, pipes, automobile parts, food containers, and carpet backing ([#ATSDR](#) and [#EPA Consumer Factsheet](#)).

Specific goods that may contain Styrene ([#Scorecard](#)):

- ♣ Building and construction plastic foam insulation, incl pipe and block
- ♣ Epoxy adhesives
- ♣ Loose mineral wool fiber (blowing and pouring)
- ♣ Miscellaneous paint-related products
- ♣ Nonstructural caulking compounds and sealants
- ♣ Other automotive chemicals
- ♣ Other rubber floor and wall coverings incl cove base, wainscoting, etc.
- ♣ Scatter rugs, bathmats, and sets (rugs 6 x 9 ft and smaller)
- ♣ Sheet vinyl flooring
- ♣ Synthetic resin and rubber adhesives

Health Effects

Acute Effects

Styrene has found to adversely affect the nervous and respiratory system which primarily occurs in workers who breathe the chemical due to inadequate protection or ventilation. Symptoms include (#EPA Air Toxics and #ATSDR):

- * mucous membrane irritation
- * depression
- * concentration problems
- * muscle weakness
- * tiredness
- * nausea
- * eye, nose, and throat irritation.

There is little information regarding the acute effects of ingesting styrene but animal studies showed that long-term ingestion of styrene can damage the liver, kidneys, brain, and lungs (#ATSDR).

Chronic Effects

Chronic exposure to styrene can lead to central nervous system defects including (#EPA Air Toxics):

- * headache
- * fatigue
- * weakness
- * depression
- * problems with reaction time, memory, visuomotor speed and accuracy, and intellectual function
- * hearing loss
- * peripheral neuropathy
- * minor effects on some kidney enzyme functions and on the blood

Styrene is on numerous lists for its toxic effects (#Scorecard):

Hazard

Group

Carcinogen

EPA, HEN, HAZMAP, IARC NTP-BR P65-CAND

Cardiovascular or Blood Toxicant

RTECS

Developmental Toxicant

EPA-SARA, JANK

Endocrine Toxicant

BKH, IL-EPA, JNHS, KEIT, WWF

Gastrointestinal or Liver Toxicant

ATSDR, DIPA, EPA-HEN, RTECS

Immunotoxicant

HAZMAP

Kidney Toxicant

STAC

Neurotoxicant

ATSDR, DAN, EPA-HEN, HAZMAP, OEHHA-CREL, RTECS, STAC

Reproductive Toxicant

FRAZIER

Respiratory Toxicant

EPA-HEN, HAZMAP, OEHHA-AREL, RTECS

Skin or Sense Organ Toxicant

EPA-HEN, HAZMAP, OEHHA-AREL, RTECS

Environmental Effects

Styrene can enter the environment in many ways: during the manufacturing process, disposal process, or general breaking down of styrene-laden products (#ATSDR). It breaks down in soil and evaporates in water very quickly and does not bind well to soil. It is not bioaccumulative .

Regulation

Styrene is a highly regulated chemical. See [#EPA Air Toxics](#) for complete list. Some major regulations include ([#EPA Air Toxics](#) and [ATSDR](#)):

OSHA PEL (permissible exposure limit): expressed as a time-weighted average; the concentration of a substance to which most workers can be exposed without adverse effect averaged over a normal 8-h workday or a 40-h workweek.

Source : <http://www.toxipedia.org/display/toxipedia/Styrene>