

INTEROFFICE MEMORANDUM

MAY 3, 2005

FROM: CHAIRMAN, HAZARD EVALUATION GROUP

TO: VICE PRESIDENT, HSSE & SUSTAINABLE DEVELOPMENT

SUBJECT: SHR-341-05-01

DATE SHR
RECEIVED: APRIL 18, 2005

DATE 30 DAY
PERIOD
EXPIRES: MAY 17, 2005

I. SUMMARY OF INCIDENT OR INFORMATION

The Original Reporting Person, Stuart Z. Cagen, submitted SHR-341-05-01, which reports results from a draft publication describing a distinct form of myelodysplastic syndrome (MDS) related to benzene exposure observed in the Shanghai Health Study.

II. CONSIDERATION AND ANALYSIS OF THE INFORMATION

A. HEG DISCUSSION: APRIL 21 & 28, 2005

Participants:

M. Hulse, HEG Secretary/Chairman
S. Z. Cagen, Toxicologist
S. P. Tsai, Epidemiologist
P. M. Clegg, Product Steward

B. DISCUSSION

BACKGROUND:

The Shanghai Health Study is a joint research project to investigate the effects of benzene exposure on workers. The study is under the direction of investigators from Fudan University, the University of Colorado Health Science Center, and Applied Health Services. Sponsors of the research are Shell Chemical LP, BP, Chevron Texaco, ConocoPhillips, ExxonMobil, and Marathon.

A draft manuscript of a paper to be submitted for publication to a peer reviewed scientific journal was recently provided to sponsors. The principal investigators observed 23 workers exposed to high levels of benzene with a distinct form of myelodysplastic syndrome (MDS) referred to as benzene-induced myelodysplastic syndrome (BIMDS). The workers were estimated to have full shift exposures averaging between 50 and 300 ppm benzene for varying periods of time ranging from 6 to 22 years. MDS is characterized by a lack of mature circulating blood cells, white blood cells, and platelets. MDS has a “tendency (where is the close parentheses?) to evolve into AML (acute myelogenous leukemia). The draft

manuscript describes several clinical features not previously observed in other forms of MDS that appear to be associated with benzene exposure.

FOLLOW UP INFORMATION:

ExxonMobil Refining and Supply filed a Notice of Substantial Risk under Section 8(e) of TSCA on April 14, 2005. Although the letter mentions Shell Chemical LP and other members as funding companies, the ExxonMobil letter does not indicate that their filing was on behalf of the sponsors or that their letter was representative of the applicability of 8(e) made by the other sponsors.

C. COVERAGE

Benzene is a liquid product used in the manufacture of other chemical products that, in turn, are used to make plastics, paints, nylon, CDs and pharmaceuticals. It is also a naturally occurring constituent of gasoline. Benzene is a carcinogen; its exposure has been associated with acute myelogenous leukaemia (AML). It is readily biodegradable and has a low potential to bioaccumulate. It is toxic to aquatic organisms. Benzene is highly flammable.

What is benzene?

Benzene, also known as benzol, cyclohexatriene, or phenyl hydride, is a chemical present in crude oil that is extracted during the refinery distillation process. It is a clear liquid with an aromatic odour. Benzene is a basic chemical building block used in the manufacture of other chemical products that, in turn, can be used to make various types of plastics and paints. It is also a naturally occurring constituent of gasoline.

Manufacturing details

On a global scale, just over 34 million tonnes a year of benzene are produced. Shell chemicals companies are the world's second largest producers manufacturing almost 3 million tonnes of benzene a year across ten manufacturing locations world wide: Godorf, Germany; Stanlow, UK; Deer Park, USA; Sarnia, Canada; Scotford, Canada; Yokkaichi, Japan; Kawasaki, Japan; Pulau Ayer Merbau, Singapore; Al Jubail, Saudi Arabia.)

Health, Safety and Environmental considerations

In liquid form, benzene is irritating to the skin and eyes. If the vapour is inhaled, irritation to the respiratory tract may be experienced. Single exposure to very high concentrations can cause disorientation, euphoria and unconsciousness. Prolonged moderate exposure can cause toxic effects on the blood and blood-forming organs.

Benzene is listed as a human carcinogen by the International Agency for Research on Cancer (IARC). Exposure is associated with the potential to develop acute myelogenous leukaemia. This results automatically in its inclusion in the EC "Marketing and Use" Directive (Council Directive of 27 July 1976 on the approximation of the laws, regulations and administrative provisions of the Member States relating to restrictions on the marketing and use of certain dangerous substances and preparations 76/769/EEC), which prohibits its supply to the general public.

In the work environment, the occupational exposure limit for benzene globally ranges from 0.5 – 10 ppm, with 1 ppm being used across most of the world.

If spilled in water, benzene is toxic to fish, but it is very volatile and evaporates rapidly. It is not soluble in water and rapidly biodegrades.

Benzene is extremely flammable and there is a risk of vapour ignition at normal handling temperatures. The vapour is heavier than air and will spread along the ground if released, so care needs to be taken to ensure that the vapour is not ignited by a distant source. It will also float on water and can be ignited on surface water. Electrostatic charges may be generated during handling.

Storing and transporting benzene

Benzene should be stored in mild steel or stainless steel. The product is transported mainly by sea or inland waterway and is subject to a number of international guidelines for safe handling of cargoes. These include the International Maritime Dangerous Goods (IMDG) guidelines from the International Maritime Organisation (IMO), the International Safety Guidelines for Oil tankers and Terminals (ISGOTT) and the ADNR (Accord europeen relatif au transport international des marchandises Dangereuses par voie de Navigation interieure au Rhine) regulations. In the US, marine transport must be in compliance with the US Coast Guard Benzene Standard. Precautionary measures against static discharges must be undertaken during loading and unloading and all operators must wear personal protective equipment

III. PRIOR KNOWLEDGE OF INFORMATION

Shell Chemical LP was not previously aware of the information contained in this SHR. While the Administrator of the EPA is aware of the information from ExxonMobil's Notice of Substantial Risk, Shell Chemical LP's cognition of the information is not expressly covered in their letter.

- Suggest that you add a paragraph about our proposal to review hazard communication evaluation of benzene.

M. Hulse, Chairman HEG

Conclusion (or Recommendation):

The reported information should be submitted to the EPA TSCA 8(e) Coordinator, since it reasonably supports the conclusion that the subject chemical presents a substantial risk of injury to health or the environment. This is based on information in the SHR that identifies a toxic effect not previously recognized. Further, ExxonMobil's TSCA 8(e) letter does not provide sufficient coverage for Shell Chemical LP.

S. Smolik

Date

What is the process if Sam does not support conclusion/recommendation?