

Bhopal -- 20th Anniversary Conference

Towards the end of 2004 people within the SHE world were attracted to an International Conference in Kanpur India to mark the 20th anniversary of the Bhopal Gas Release Disaster which without doubt was the worst accident in the history of the Chemical industry.

Although the world has since witnessed the tsunami disaster, this should not overshadow the seriousness of the Bhopal disaster and the lessons drawn from it because these lessons are still applicable in the world to-day, 20 years since the event of 1984.

The conference was organized by Prof. J.P. Gupta and his colleagues from IIT Kanpur. The speakers included prominent persons such as Prof. Sam Mannan from MKO USA, Ms. Carolyn Merrit, Chairman of CSB USA, Dennis Hendershot from Rhom and Haas USA and Chris Pietersen from TNO. Speakers came from 28 countries.

At the opening of the conference several new books were distributed. They were either written by people who were present at the incident or by people who took part in the incident investigations. These books help the reader to understand that a major cause of the accident was traceable to the weak safety culture at Union Carbide in Bhopal.

The Bhopal plant manufactured an insecticide called Cabaryl. An intermediate in the process was the very poisonous Methyl Isocyanate(MIC). This **intermediate** was stored in a 100-ton capacity tank. The storage of this toxic intermediate, let alone in such large quantities, was a serious error. This contributed to the scale of the incident and its tragic aftermath. At the time of the incident, one tank containing MIC became contaminated with water. This set off an exothermic reaction and the pressure build up caused a pressure relief valve to open and to release MIC. Multiple failures of the downstream safety system then occurred. For example, the scrubber, the refrigeration system and the flare stack did not function as expected. This contributed to the large release of MIC.

3000 people died immediately following the accident. Now 20 years later the figure has climbed to some 15000. About 200000 were injured. These figures do not reveal anything about the destructive effect on many families and the fabric of Bhopal society in the following years.

During the last 20 years many causes have been ascribed to the accident. However, it is more productive to concentrate on a few critical ones. The lessons from these have had a major effect on process safety and on how people have been educated and trained to prevent future accidents.

1. Safety culture. No safety precautions will prevent an accident if a safety culture that governs the behavior of management and workers is absent.. In Bhopal this basic building block was not present or was weak.
2. Safety management. These Safety Management Systems were not widely established in 1984 although some know how did exist at that time eg. DuPont PSM, Lord Cullen's recommendations from the Piper Alpha accident and CCPS procedures. Two big accidents in 1984 (Bhopal and the BLEVE in Mexico city) triggered in many locations the need for such an organized and systematic approach.
3. Inherently Safer Design. The application of the principles of Inherently Safer Design would lead to the best results. In Bhopal the root cause of the disaster was the nonessential storage of large quantities of MIC – the intermediate poison.
4. Accident information distribution. The Bhopal accident still provides valuable lessons after 20 years. As zero accidents or total inherent safety are still visions and accidents do occur we should encourage the call of Trevor Kletz in the special issue of LPB No. 100 " Why should we publish accident reports ? ".

In Kanpur one of the main speakers was Ms. Carolyn Merrit chairman of CSB, USA. From the data that she has in CSB, she is convinced of the wisdom of this approach.

In conclusion, while the tsunami disaster is still fresh in our minds, a point should be made that a basic thing like an emergency and evacuation plan would have saved many lives.