

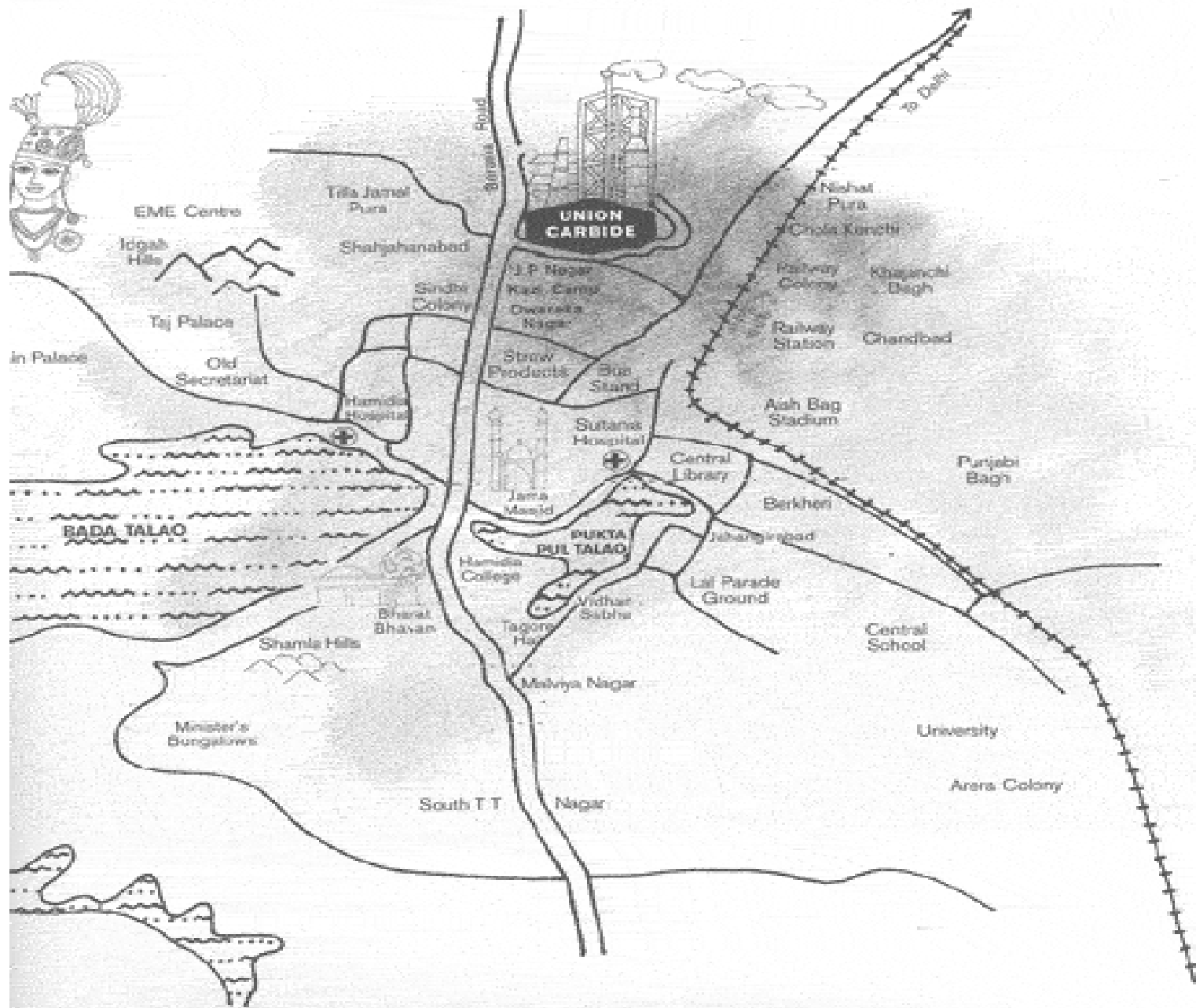
Bhopal Case Study

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Context

Union Carbide (USA)
chemical plant,
located in Bhopal, India



Rationale for plant

- built the pesticide factory there in the 1970s,
- thought India was a huge untapped market for its pest control products

- But sales never met expectations;
- Indian farmers, coping with droughts and floods
- had no money to buy Union Carbide's pesticides.

EICTEE !!!!!

Everything is connected to everything else

- plant never reached its full capacity,
- was a losing venture
- so ceased active production in the early 1980s.

- Many dangerous chemicals remained;
- three tanks holding over 60 tons of methyl isocyanate (MIC)

MIC is a particularly reactive and deadly gas,

But the plant's elaborate safety system *was allowed* to fall into disrepair

Management's reasoning:

- since the plant had ceased all production, no threat remained

**Every safety system that had
been installed to prevent a leak
of MIC**

—at least six in all—

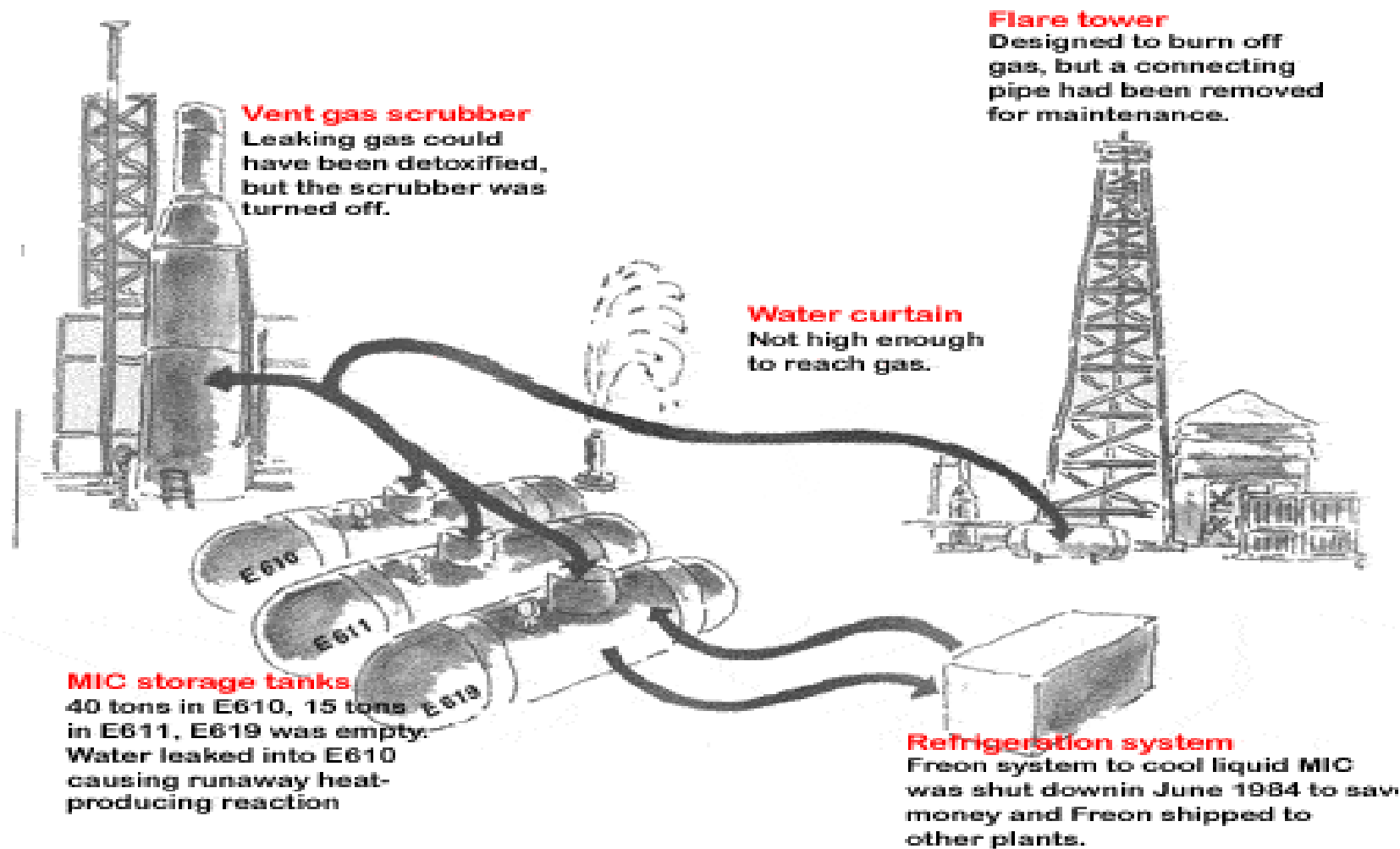
ultimately proved inoperative

- ***Regular maintenance had fallen into such disrepair*** that
- multiple stopcocks failed and allowed water to flow freely into the largest tank of MIC.
- An employee was flushing a corroded pipe,

- Exposure to this water soon led to **an uncontrolled reaction...**
- the tank was blown out of its concrete sarcophagus

spewed a deadly cloud of MIC
and

- hydrogen cyanide,
- monomethylamine and
- other chemicals
- that hugged the ground



IMPACTS

- 500 000 people exposed to the gas
- 20,000 have died to date as a result of exposure.
- More than 120,000 people still suffer from ailments caused by the accident and the subsequent pollution at the plant site

120,000 + people still suffer from ailments
and the subsequent pollution at the plant
site

ailments include

- blindness,
- extreme difficulty in breathing, and
gynaecological disorders.

- 50,000 Bhopalis can't work, due to their injuries and some can't even move.
- The site has never been properly cleaned up and it continues to poison the residents of Bhopal.

In 1999, local groundwater and wellwater testing near the site of the accident revealed mercury at levels between 20,000 and 6 million times those expected

- In 2001, Dow Chemical purchased Union Carbide, thereby acquiring its assets and liabilities.

However, Dow Chemical refused to

- clean up the site,
- provide safe drinking water,
compensate the victims,
- disclose the composition of the gas
leak,

(information that doctors could use to
properly treat the victims)

It is estimated that

- economic damage amounted to +- \$4bn
- 7-20 000 killed,
- 200 000 seriously injured
- could have been prevented

by spending about \$1m to improve
plan safety!!

LESSONS

- RATIONALE FOR THE EXISTENCE OF THE PLANT – WIDER DEVELOPMENTAL ISSUES
- SITING OF THE PLANT
- NATURE OF OPERATIONS

- RISK MANAGEMENT; PREVENTION
PREPAREDNESS, MITIGATION????
- TECHNOLOGY
SAFETY SYSTEMS
MAINTENANCE
- COST BENEFIT

- INTERSECTION OF THE TECHNOLOGICAL AND THE SOCIAL
- EVACUATION PLANS???
- CORPORATE RESPONSIBILITY

- THE LEGAL DIMENSION
- COMPENSATION
- VALUE AND VALUES –DOUBLE STANDARDS
- KEEPING RECORDS