This is the story of a disastrous accident that happened to a well-respected company with worldwide operations. It holds many lessons for all manner of industries.

It took place on Wednesday, March 23, 2005 at the Texas City Refinery of BP Products North America Inc. During the startup of the Isomerization Unit, explosions and fires occurred, killing fifteen and harming over 170 persons apart from extensively destroying property within the plant and the surrounding area.

Can you afford a "TEXAS CITY" Accident?

What can we learn from such a disaster?

BP acknowledged that it was a preventable accident. It happened because of a process failure, a cultural failure and a management failure. The question, of course, is why these deficiencies were allowed to develop over the years – and why they were not sufficiently identified and addressed before the event.

It is rather disconcerting that such a catastrophic accident can happen to a reputable and publicly listed company. Those who are familiar with BP's safety culture and safety management system can reasonably expect it to have

- A concerted, systematic approach to safety.
- Personal accountability for safe operations – from contractors to plant managers.
- Frequent audits of their major operating facilities to assess compliance with corporate standards and expectations.
- Employees who feel empowered enough to raise safety concerns and to stop work if they think conditions are unsafe.
- A comprehensive HSE management system framework defining the company's expectations for managing safety and accident prevention, and plant and equipment integrity.

In addition, BP has minimum standards across the organisation for - permits to work, energy isolation, confined space entry, working at heights, lifting operations, driving safety and management of change etc.

Obviously, on March 23rd 2005 these were not functioning as expected.

The consequences were disastrous:

- Anger in the local community.
- Intense regulatory scrutiny.
- Litigation.
- Massive unfavourable media coverage, and
- Attacks on BP's motives, competence and commitment to safe operations.

In the end, BP identified five main underlying causes:

1. The working environment had eroded to one characterized by resistance to change and lack of trust, motivation and purpose. Expectations around supervisory and management behaviour were unclear. Rules were not followed consistently. Individuals felt disempowered from suggesting or initiating improvements.
2. Process safety, operations performance and systematic risk reduction priorities had not been set nor consistently reinforced by management. Safety lessons from other parts of BP were not acted on.
3. Too many changes in a complex organization – both of structure and personnel - led to a lack of clear accountabilities and poor communication. The result was workforce confusion over roles, responsibilities and priorities.
4. Poor hazard awareness and understanding of process safety on the site - resulting in people accepting higher levels of risk.
5. Poor performance management and vertical communication meant there was no adequate early warning system of problems and no independent means of understanding the deteriorating standards in the plant.

Many WHY's were raised:

- **Why was there no active supervision present at the ISOM unit during the restart?**
- **Why did operators print the start up procedure but not follow it?**
- **Why wasn't documentation about previous incidents more complete?**
- **Why locate trailers so close to the blow down stack?**
- **Why were so many vehicles in the process areas at the refinery?**
- **Why had the site missed opportunities to replace blow down stacks?**
- **Why did the measures, taken at the refinery over the last few years to improve safety standards and work practices, not have more (positive) impact?**
- **And why hadn't BP made more progress at addressing the low morale and distrust of site management (revealed in people assurance surveys) at Texas City?**

In the aftermath of the incident, BP humbly and swiftly carried out a damage control exercise by:

1. Accepting full responsibility for what happened inside the boundaries of its site.
2. Providing timely and humane support to the victims of this tragedy and their families.
3. Allocating all the necessary resources to determine the cause of the explosion and fire and take any action necessary to prevent a recurrence.
4. Guaranteeing full cooperation with government agencies investigating the accident and promised to make public BP's own investigation.

Other remedial actions taken to prevent recurrence included:

1. Putting a new management team in place at Texas City, simplified the organization, improved communication, clarified roles and responsibilities and took steps to verify compliance with operating procedures.
2. Creating a project team to co-ordinate and track implementation of the recommendations and the corrective actions agreed with OSHA.
3. Creating a new Corporate Safety and Operations organization to improve the transfer and incorporation of relevant learnings. BP also enhanced its audit program, building in independence at the same time – with emphasis on making sure systems and procedures are in place and used effectively. It established new standards designed to foster greater rigor and consistency for control of work and integrity management across the BP Group.
4. Committing US$1 billion over the next five years to upgrade and maintain the Texas City site. Among other things, BP would be installing modern process control systems on major units, eliminating the use of blow down stacks in light service and improving workforce training.
5. Introducing a new engineering technical practice governing the use of temporary buildings inside refineries and other processing plants. Since then BP moved 400 workers to a new office building in downtown Texas City.

Picture showing the offending blowdown drum and stack that were the initiating points of the fire.

With an accident of this scale, the lessons learned are many. At the facility level several concerns stand out:

1. The need to ensure plant leadership teams have the time to focus on day-to-day operations and know what's happening in their control rooms and on the plant.
2. The need to capture the **right metrics** that indicate process safety trends; and **not just personal accident measures**.
3. The need to update procedures and ensure that they are routinely followed.
4. The importance of two-way communication. If the leadership team does not listen or seriously treat concerns that are raised, then they stop coming. Staying in touch, being aware, being responsible and listening helps build trust.
5. The importance of investigating process incidents/upsets and loss of containment incidents the same way serious injuries are investigated.
6. The value of having an effective feedback loop to capture and incorporate lessons learned from earlier incidents and process upsets into operating procedures and training programs.
7. The need to keep non-essential personnel out of process areas. The safest way is to move them outside of blast zones.

In conclusion, the factors that contributed to the explosion at Texas City were years in the making. The deficiencies that were identified would require a concerted sustained commitment and a painful tedious process to rectify.

While we can be fairly sure that BP has swallowed the bitter pill, can we say the same about us?

By Jacob Soh

Readers who want to find out more about the investigation may consult the Chemical Safety Board (CSB) website: http://www.csb.gov