

# Process Safety Forum

## Learning Brief #14 – Issued on 30<sup>th</sup> June 2015

### Learning from Buncefield

Following the Buncefield explosions and fires in 2005, broad improvements were introduced within the petroleum storage sector and across other major hazard industries. The role industry has adopted in leading improved process safety has changed dramatically, together with an improved working partnership between industry, regulator and trade unions which has resulted in a more collaborative approach to continuous improvement.

#### Introduction

Early on Sunday 11<sup>th</sup> December 2005 a petrol storage tank was being filled from a pipeline at a terminal in Hemel Hempstead. The safety systems in place to shut off the supply of petrol to the tank to prevent overfilling failed to operate. The tank overfilled and petrol began to spill from the vents of the tank roof. The cascading petrol formed a flammable vapour cloud which, when ignited by a spark, caused a series of large explosions and subsequent fires.

It took approximately thirty two hours to extinguish the main blaze and much longer to extinguish all other fires at the terminal site. Forty three minor injuries were reported. Extensive damage was caused to surrounding commercial and domestic properties and local environmental pollution occurred from the use of fire-fighting foam and the loss of petrol and diesel from the storage tanks. The extensive damage to the terminal also resulted in a temporary disruption of fuel supplies in the South East of England.



The Buncefield Explosion  
Picture Source: HSE

#### Key Learnings and Recommendations

Following the incident, a Major Incident Investigation Board (MIIB) was formed to investigate the incident. The MIIB subsequently issued a number of recommendations for industry, regulators and the emergency services. Through a novel and collaborative approach, industry, regulators and trade unions joined together and established the Process Safety Leadership Group (PSLG). The Group addressed all recommendations and published a comprehensive response in the report '*Safety and Environmental Standards for Fuel Storage Sites*'.

Key PSLG recommendations included:

- A Review of the risks associated with filling large petrol storage tanks
- Ensuring large storage tanks containing petrol do not lose containment
- Ensuring effective leadership and an understanding of the risks associated with the management of sites that store petrol
- A review of how emergency services and industry respond to major incidents

More information on the MIIB's recommendations and the Process Safety Leadership Group's response can be found on the HSE website: <http://www.hse.gov.uk/Comah/buncefield/response.htm>

## What has been done

Industry has led a comprehensive response to the incident, by imposing upon itself a higher standard of storage control and protection for those sites where these measures are appropriate, with the benefit of experience from the Buncefield incident. In addressing the MIIB recommendations, the first step was to share existing good practice for safe management of the risks associated with storing petrol.

Improved inspection and maintenance guidelines were published in the PSLG report. As a result automated systems have now become common-place for preventing over-filling of large petrol storage tanks. Systems to contain both product (petrol and diesel) and fire-fighting material (foam, fire water) have been reviewed as well as on-site and off-site emergency plans, and improvements implemented where necessary. Local and national mutual aid schemes have also been developed to ensure that sufficient fire-fighting equipment and foam is readily available in case of emergency.



Automated system for preventing tank over-fill  
Picture Source: UK Petroleum Industry Association

Industry, regulators and unions developed the *Principles of Process Safety Leadership* which are applicable to all major hazard businesses. These principles are crucial to successful management within the major hazards sector and have been widely adopted through a number of industry trade associations.

## How industry and regulator now work differently

Building on the successful cooperation of the PSLG industry, regulators and unions now work more collaboratively to promote continuous improvements in safety. Furthermore the agreement, following joint working between industry and regulator, of the safety standards to be achieved at large petrol storage sites has enabled better monitoring to ensure those standards are met.

In implementing the *Principles of Process Safety Leadership*, industry trade associations now play a more prominent role in leading best practice in safety both within individual sectors and across all other major hazards sectors. This includes sharing knowledge, good practice and developing guidance collaboratively.



Examples of Trade Association Process Safety Schemes

## Final thoughts

The Buncefield incident was a landmark event. It highlighted deficiencies which resulted in appropriate enforcement by the regulators. The response to the incident illustrated the need for lessons to be shared and implemented more widely and highlighted the value of greater collaboration in order to improve safety for the benefit of the public, environment and business. Working together across sectors, through trade associations, and more closely with regulators is pivotal to the successful management of risks associated with major hazards sites.

The *Principles of Process Safety Leadership* are now well established and are of equal relevance to other industries carrying out potentially hazardous operations.

*The Process Safety Forum has been set up to provide an industry association platform whereby initiatives, best practice, lessons from incidents and process safety strategy can be distilled and shared across sectors, to influence our stakeholders (including the Regulators), and to drive the process safety management agenda. The Process Safety Forum consists of representatives from UKPIA, TSA, CIA, OGUK, CBA, RSSB, ENA, ECIA, UKLPG, BAMA, EIG, UKOPA, SWA, MPA, UKLPG, BAMA, SWA and SDF. For further details contact: [peter.davidson@ukpia.com](mailto:peter.davidson@ukpia.com).*