It is a very great pleasure for me to have been invited to New Zealand to share with you not only my own thoughts on safety but also the many years of experience we have built up in the UK as a regulator. That means I can talk about what makes for effective regulation and also what we have observed across a variety of industry sectors.

Yesterday I spoke at a conference about what is important in delivering effective health and safety. I spoke about how we need to regard everyone who is involved as being part of the system and part of the solution. In the UK we are very strongly of the view that regulation works most effectively when it is non-prescriptive. We do not make detailed rules which lead to a tendency for people to do what the regulations require - and regard compliance with the law as being the purpose of health and safety. It isn’t.

By having goals based regulation we are making a clear statement about where responsibility really lies. The duty to manage risk lies with those who create the risk. In almost all circumstances this will of course mean the owner of the business or the employer.

But our legislation also makes clear that employees have a duty to behave responsibly and not put others at risk as a result of their actions.

The role of the regulator is to lead and monitor the system as a whole. We do that by a variety of means. Inspection and enforcement are an important part of what we do. It is part of our role to hold companies to account and to provide an effective deterrent to others who may be tempted to take similar risks. But our primary role is to prevent death, injury and ill health to those at work and those affected by work activities. Regulation and indeed the regulator cannot achieve this in isolation and so our approach involves many other aspects:

- provision of advice and guidance on how to manage risks
- research into new and emerging risks and sharing findings
- working with industry bodies and influential employers to stimulate and support improvement across sectors and through supply chains.

However, I have long been a believer that although good performance in health and safety can be aided by regulation, true excellence only occurs when there is a belief among duty-holders in business that it is both a moral and a statutory duty to manage risks. In any industry there is a moral imperative to ensure that people go home from work every day safe and unharmed. Every business should “do” health and safety because it is the right way to run a business not because the regulator tells you to.

Leadership from the top in health and safety is fundamental. Unless the leaders of the business say – and do - the right things and create a culture in their organisation where health and safety is an integral part of doing business well it simply won’t happen. Acting out of fear that you might get caught by the regulator or because the rules say you have to is not sustainable – no-one will buy into it and health and safety will be perceived as a burden on the organisation rather than what it really is – an aid to good business practice and improved productivity and reliability.
Worker engagement and engagement has also always been an important part of the UK’s approach to health and safety. That remains the case today in spite of the changed landscape with many more smaller businesses and much less collective union membership. Research clearly shows that an engaged workforce leads to:

- lower accident rates
- a more positive health and safety climate
- joint problem solving and addressing of workplace risks

Employees provide valuable feedback on the effectiveness of health and safety management systems. If they tell you it is too complicated and bureaucratic – it probably is. The workforce are the real eyes and ears on the ground and need to be encouraged to speak up about what is not going well and to offer suggestions as to how it might be made better. Finding ways to engage the workforce is very important.

I have spoken to many audiences around the world on this subject since I have been chair of HSE and I am very conscious that there is a need to take account of different cultural issues. Getting people to speak up may be more difficult in some places than others, encouraging joint problem solving with management may also be more challenging, levels of collective representation and unionisation vary enormously. But what I do know is that the principles are right and when they work they work well. Since the launch of HSE’s new strategy in 2009 one of the most successful programmes which we have initiated has been the piloting of joint training in health and safety for safety reps and supervisors – breaking down the “us and them” barriers and getting people to recognise their shared purpose.

Whilst I am speaking about the general principles which apply to health and safety, I want to underline that at no point so far have I talked about needing to eliminate risk. There is a very good reason for that – it cannot be done. We have to recognise that health and safety is about doing what is reasonable and practicable to manage risk, so that we can do whatever it is we are in business to do. Driving risk elimination will undoubtedly be a barrier to growth and economic activity, being too risk averse will also have a similar effect. This is a difficult balancing act but it remains a key principle which we must keep in mind.

Everything that I have said so far applies to managing all aspects of health and safety. However, I now want to move on to talk about the particular subject of process safety – also referred to as operational integrity. We have observed for some time that all too often people focus all of their attention in relation to safety on personnel safety. That is certainly the predominant means by which people measure and report on their safety performance. There are very few companies today who do not report lost time accident frequencies and often also first aid/minor injuries. Many companies also measure near misses but almost invariably these are near misses relate to when conditions existed when someone could have been injured in the workplace. I do not want to suggest for a minute that this isn’t important – of course it is.

I said earlier that we are all working to ensure that people can go home safe and unharmed at the end of every day. If you are working in a low risk environment such as offices or perhaps in retail business or service industries it is quite likely that personnel safety is by far the largest issue for your business and it is right and proper that it should be the main focus of your attention. But if you work in any sort of process industry – chemicals, petrochemicals, offshore oil and gas, power
generation, mining, water treatment, food processing or many forms of manufacturing the issue of process safety is critically important. In many of these sectors process safety incidents have the potential to be catastrophic – causing harm and even death not only to employees but to members of the public. In many cases the types of incident which can occur can result in major mechanical damage to plant which may completely disable your ability to produce goods for months if not years. Major process safety incidents are also very high profile – they make news headlines and cause serious damage to the business reputation – damage which may be so severe that it takes years to regain public confidence. BP’s recent history in the US is probably the best (or worst) example of that. Major incidents in Texas City in 2005 and then the Macondo blow out and oil spill in 2010 have severely damaged the company’s reputation and wiped billions off the company’s value.

But BP are not the only examples which we need to consider. If we look around the world we can see numerous examples of major incidents which have occurred in many of the sectors I named earlier. One alarming feature of many major incidents is the similarities which can be found with other incidents which have happened in the past. A respect for history and the hard lessons learned in the past should form a fundamental part of every engineer and manager’s training. Because when we forget the lessons of the past, history has a horrible habit of repeating itself.

In the UK in 1974 a major incident occurred at Flixborough which killed 28 people onsite and caused numerous other injuries to people onsite and in the neighbouring area. The cause of that process safety incident was a poorly engineered solution which had been put in place several months before the incident to allow a cracked reactor to be taken out of service and the plant to be kept running. In the UK’s offshore industry, the Piper Alpha disaster happened in 1988, 14 years after Flixborough but there are some stark similarities between the two events.

Piper Alpha was originally installed for the production of crude oil but was later converted to gas production. The disaster - which had a final death toll of 167 – was initially caused by a leak which was the result of maintenance work. The maintenance and safety procedures were found to be inadequate but as with Flixborough the operations integrity was compromised when inadequate thought was given to the change of service from oil to gas production. A management of change and an engineering issue - just like Flixborough.

If we look at all of the major catastrophes that have happened we will find similarities and sadly lessons which could and should have been learned from previous incidents. It is too simple to say that we forget what happened before. In one sense, we don’t actually forget about tragedies like Flixborough, Piper Alpha, Texas City, Bhopal, Chernobyl, Fukushima and many others. People who lost members of their family or workmates in these tragedies will certainly never forget them just as here in New Zealand the Pike River disaster will stay with the families of those who were lost forever.

But regrettably, in another way we do forget. We forget the key lessons we need to learn as engineers – and pass on to future generations. What we actually do is reassure ourselves - that lessons have been learned, that new control systems will prevent those sequences of events from happening again. This is when complacency starts to creep in to people's thinking. With the passage of time, a number of other factors also take effect:

- An absence of further major events reinforces the view that the problems have been addressed;
• but equipment gets older and in many cases goes well beyond its original design life;
• people get older too - but unlike the equipment they do retire and they are replaced by new
people who have different experiences and by definition less experience. Some of the
required skills become more and more difficult to acquire; and
• assets change ownership and important knowledge is lost in the process.

There is undoubted benefit in learning from others, not just your own sector or discipline. The oil
and gas industry have learnt much about managing risks in challenging environments and the
new energy sector can draw on these experiences. Very few issues are truly new and learning
from others can mean that the next risk can be anticipated and a means to address it put in place
before an incident occurs. To make this happen there needs to be strong and consistent
leadership across sectors and disciplines and a willingness to learn from each other.

Leadership in process safety requires some of the same skills as managing personal safety but it
also requires other skills. Being able to create a learning organisation and culture is perhaps the
most important lesson which leaders need to learn. Learning organisations are ones which:
• Support discussion and evaluation of differing opinions and data
• Stimulate new ideas and encourage a step change in risk understanding
• Maintain an external focus by not automatically discounting outside ideas and methods
• Treats errors and mistakes as valuable opportunities to learn.

Leaders in process safety understand that they must never become complacent about the process
that they run. They must ask the right questions and be prepared to listen to concerns and act
upon them. And above all they need to find different ways to measure and manage process
safety. Absence of incidents/injuries is no indicator of what might be about to happen. Lagging
indicators which look backward have very limited value in process safety. Leading indicators which
tell you when things start to change and alert you to imminent problems are what is required.

Organisation which are not doing well at leading process safety will have some tell tale signs.
They will:
• Blame the messenger who brings bad news
• Fail to ask questions
• Operate in silos
• Over delegation

Leadership in process safety when it is done well will not only lead to safer operation, it will lead
to greater reliability of plant, increased production and highly motivated staff. It will also protect
and enhance the reputation of your company.

This is an important issue a for many businesses around the world. We all need to raise our game.
To do this in isolation risks many hard lessons being learned over and over again around the
world. That has been the pattern of the past. We need to set a different course for the future
where learning form anyone else’s mistakes becomes the norm and operational integrity improves
for the long term everywhere.

Just as with the general principles of safety which we have already spoken about. The key to
process safety is leadership.