

# ICL INQUIRY REPORT SUMMARY

## KEY MESSAGES:

- This was an avoidable disaster. There can be no debate as to its cause:
  - the underground ageing metallic LPG pipe was out of sight and out of mind;
  - it was inadequately protected when buried, it was subject to corrosion and ultimately it failed;
  - the management of the ICL companies lacked knowledge and understanding that LPG is heavier than air and when escaping will track to accumulate at the lowest point in drains, ducts and voids, presenting the danger of an explosion;
  - when the yard was raised in 1973 and later, when the chequer plate floor was laid over the open pit area, the LPG safety implications were overlooked;
  - no consideration was given to the presence of LPG on the premises and the existence of the void within the building;
  - the risks posed were not identified and not understood;
  - opportunities to consider the continuing integrity of the buried pipe were missed;
  - the Inquiry has identified serious weaknesses in the existing health & safety regime arising from the complexity of the legislation and a lack of effective communication between HSE, UKLPG, suppliers and users on safety issues
  - deficiencies in HSE's oversight of ICL in failing to appreciate the significance of buried pipework, failing to pursue follow up visits promptly and lacking caution in the acceptance of a compromise put forward in respect of a recommendation it made that the buried pipework be excavated to ascertain its condition.
  
- The factors involved are not a-typical of users of bulk storage LPG more widely.
  
- The bereaved families are content that the Inquiry addressed the relevant issues.
  
- The recommendations in the report seek to establish a modern LPG safety regime to minimise the risk that such an event will recur.
  
- The recommendations are aimed at a streamlined simple regime for LPG not involving need for primary legislation and not involving any increased burden on HSE. The primary responsibility for LPG safety continues to lie with the person who creates the risk, the site user.
  
- The action plan proposed relates only to buried metallic pipework carrying LPG in vapour-phase. Although much of what is said would apply to such pipework carrying LPG in liquid form this is covered by a separate safety regime outwith the scope of the terms of reference.

# ICL INQUIRY REPORT SUMMARY

## BACKGROUND

### Terms of Reference

- To inquire into the circumstances leading up to the incident on 11 May 2004 at the premises occupied by the ICL group of companies, Grovepark Mills, Maryhill, Glasgow
- To consider the safety and related issues arising from such an inquiry, including the regulation of the activities at Grovepark Mills
- To make recommendations in the light of the lessons identified from the causation and circumstances leading up to the incident
- To report as soon as practicable.

This was the first inquiry in Scotland, and the first joint inquiry involving two administrations, to be held since inception under the Inquiries Act 2005, and the second to be held since it came into force. It was the first inquiry to be conducted under the Inquiries (Scotland) Rules 2007. The new statutory framework enabled the Inquiry to be concluded much sooner and more cost-effectively than would have been possible under the previous arrangements.

The bereaved families are satisfied that the Inquiry addressed the relevant issues. In his closing statement to the Inquiry on behalf of the bereaved families and some of the injured survivors Mr Colin MacAulay QC said:

“The Inquiry will note that a number of the core participants who we represent were in attendance at the Inquiry on a regular basis. Although the evidence was frequently upsetting to them, they were able to gain a clear insight into the cause of the disaster. We have been instructed to advise the Inquiry that they do feel that the truth of what happened has come out.”

The expectations of a number of interested groups ranged far wider than the scope of my terms of reference. I kept the representations made to me under review throughout the course of my Inquiry.

### The explosion

The explosion at Grovepark Mills claimed the lives of nine people. 45 people were seriously injured or exposed to the risk of death or injury. This was an avoidable tragedy.

The explosion was caused by the ignition of an explosive atmosphere that had formed in the basement of the building. A quantity of LPG had leaked from a crack in a corroded unprotected underground pipeline that had been laid 35 years earlier. The LPG then migrated into the building.

How long the LPG had been leaking, how it found its way into the building and how it was ignited cannot be determined with certainty.

## ICL INQUIRY REPORT SUMMARY

The explosion caused the building to collapse. The collapse was not disproportionate to the magnitude of the explosion. There is no evidence to suggest that the building was unfit for the purpose for which it was being used at the time of the explosion. Alterations to the building in the course of its history had no significant effect in relation to its collapse.

All but one of the fatalities occurred as a result of the collapse of the building rather than as a direct result of the explosion.

### **Weaknesses in the safety regime**

The Inquiry has highlighted the basic principle that, whatever the duties and responsibilities of regulatory bodies and of suppliers may be, the primary responsibility for LPG safety lies, from first to last, with the party who creates the risk. This, in effect, means the site user. No amount of responsibility for safety on the part of any third party can ever be said to absolve the user from that responsibility.

The findings of the Inquiry identified that there were failures to have due regard to the dangers posed by LPG and condition of the LPG supply at the site over many years. A number of critical factors played a part in creating the circumstances that led to the explosion. These include:

- The unsatisfactory installation in 1969 of the underground pipe conveying LPG from the surface bulk storage tank to the building;
- The raising of the yard in 1973 which buried the LPG pipe where it entered the building;
- The lack of corrosion protection throughout the length of the underground LPG pipe;
- The laying of the chequer plate floor over the open pit area at the west end of the building in 1982 which effectively put the pipe entry to the building out of sight.
- Lack of clarity of legal responsibility as between user and supplier for service pipework conveying LPG between the bulk storage tank and the premises;
- Failure of the risk assessment process to consider the existence and condition of the underground LPG pipe;
- Weaknesses in the regulatory regimes that existed at the time.

The Inquiry's findings demonstrate that each of the events that contributed to the causation of the explosion resulted from a wholly inadequate understanding of the nature of LPG risks, together with a general safety culture amongst users and suppliers in which the risk posed by buried metallic LPG pipework was not given any proper attention or degree of priority.

The findings also suggest that the complex state of the current legislative framework is a matter of particular concern.

The present safety regime is inadequate. The following aspects of the present LPG regime give rise to significant risks.

- *The problem of metallic pipework.* HSE and the suppliers have only the most uncertain estimates of the scale and problem of metallic underground pipework. None of this pipework is subject to any systematic regime of inspection and

## ICL INQUIRY REPORT SUMMARY

maintenance; or to systematic data recording. As matters now stand, there is every possibility that a similar disaster could occur again.

- ***Responsibility of user and supplier.*** There is no uniformity of practice in the demarcation of responsibility for LPG installations between the user and the supplier. There is no safeguard to prevent a user whose installation is dangerous from accessing supplies of LPG.
- ***Lack of systematic record keeping of all installations.*** No user is obliged to keep comprehensive records of all matters relevant to the safety of its installation; for example, design drawings, plans and maintenance records.
- ***The problem of awareness of risk.*** There are weaknesses in the awareness and mitigation of risks. The safety of buried pipework may be overlooked. Pipework may be laid by those with no particular expertise in LPG safety or little appreciation of the risks. The physical surroundings may be changed without any consideration being given to the implications for LPG safety.
- ***Inadequacies of the risk assessment system.*** Compliance with statutory risk assessment provisions gives only a limited assurance of the safety of an installation. It is possible for what may look like a full risk assessment to miss a significant risk, as happened at Grovepark Mills.
- ***Unregulated entry into the LPG market place.*** Anyone who can find a source of LPG can enter the market as an LPG supplier and is under no obligation to join UKLPG or to abide by its codes of practice. In an industry which deals with such a hazardous product, such possibilities are not conducive to safety.
- ***Demarcation of responsibilities of HSE and local authorities.*** There is a lack of clarity as to the respective provinces of HSE and local authorities in relation to safety standards in industrial and commercial premises in which there is an LPG supply.
- ***Regulatory weaknesses.*** It appears that there has been a failure by HSE to institute a prioritised system of inspection of older LPG installations having buried pipework; an insufficient training of inspectors in LPG hazards and risks, and a failure to ensure the effective follow-up of inspections that have shown up risks on an LPG site.
- ***Lack of communication.*** There is a lack of effective communication to users of the risks inherent in LPG installations, and particularly in buried pipework and in LPG escapes; a lack of effective sharing of knowledge of risks between users and suppliers; and a lack of prompt and effective notification of LPG incidents, and of the lessons to be learned from them, to users and suppliers.

Nearly five years after the explosion HSE has not produced a coherent action plan to deal with underground metallic pipework and the risk of a recurrence. While the probability of another explosion may be low, the consequences of a similar event, should it occur, may be

## ICL INQUIRY REPORT SUMMARY

catastrophic. A sense of urgency would be an appropriate response to the serious issue of public confidence that this disaster has raised.

I have tried throughout my recommendations to make proposals that are practical and readily capable of implementation without unreasonable cost. Nevertheless, I recognise that in relation to my proposed metallic pipework replacement programme, the cost implications may be significant. Having regard to the potential risks that now exist, I do not consider that on this aspect of my recommendations cost can constitute a reasonable ground of objection.

### **Recommendations**

I recommend that there should be an Action Plan for all bulk LPG installations in commercial and industrial premises in the United Kingdom.

The plan should be carried out in four phases.

The first and most urgent priority is to identify those sites where there is underground metallic pipework between tank and appliance and thereafter to replace all such pipework, on a systematic and prioritised basis, with polyethylene.

Along with this, there should be an early inspection of all buildings that have an LPG supply in order to identify any hazardous features that arise from the design and layout of the building or are inherent in the layout or the condition of the service and installation pipework.

The next phase, which should run concurrently with the pipework replacement programme, is to establish a permanent and uniform safety regime governing the installation, maintenance, monitoring and replacement of all LPG systems, including the establishment of a uniform rule for the demarcation of the responsibility for any installation between supplier and user. This should proceed on the principle of life-cycle integrity, that is to say a principle that the integrity of the system for safe operation should be understood and safeguarded at every stage in the life of the system from initial design to ultimate decommissioning.

Next, there should be continuing and planned development of the safety regime, particularly in relation to the use of polyethylene pipes.

Lastly, there should be a permanent system by which safety questions will be reviewed and dealt with on an industry-wide basis, by which advances in the knowledge and understanding of safety questions will be communicated effectively within HSE and from HSE and UKLPG to suppliers and users alike and by which the areas of regulatory responsibility between HSE and local authorities will be clarified.

Lord Gill  
Chairman  
16.07.09.