



OCCUPIED BUILDING RISK ASSESSMENTS

Datasheet

Operators of chemical process plant have a legal obligation under regulations such as COMAH to demonstrate that people occupying buildings on their sites are adequately protected from process hazards such as explosions, fires, chemical reaction hazards and toxic releases. The recent publication of updated Chemical Industries Association (CIA) guidance in 2004 will see a renewed regulatory focus on this important process safety area.

Risk

There have been a number of major incidents on chemical plants (e.g. Flixborough '74, Hickson & Welch '92 and Texaco '94), that have highlighted the risk to people occupying buildings on process sites.

In 1998, the CIA published a guidance document on assessing risks to people located in buildings on chemical plants, which has subsequently become an essential industry benchmark within this area of safety management. This document provided a hazard and risk based methodology to help operating companies assess the danger to people in all occupied buildings on site, including control rooms, workshops, offices, etc.

This guidance has become a key area of focus for the HSE when reviewing upper tier COMAH sites. Lower tier COMAH sites, which include many speciality chemical and pharmaceutical plants are now also being targeted. Based upon the experience of our consultants in working with clients and the HSE, occupied building risk assessment is an area often given inadequate consideration.

Key areas of concern have typically been:-

- The inadequate assessment of toxic hazards present within the business and the number of corresponding personnel refuges required to afford the correct level of protection.
- Insufficient detail provided on risk assessment methodologies to allow the reviewing regulatory authority to determine the adequacy of the report.
- Insufficient justification to discount hazards or reduce the consequence of potential harm to building occupants.

NEW GUIDANCE

In 2004, the CIA released updated guidance that provides further practical instruction on assessing the risk to building occupants from toxic hazards and the specification of safe havens.



Chemical reaction fire, courtesy of The Cork Examiner

The updated guidance will re-focus regulatory pressure on those operating companies who either don't have a documented risk assessment or who have been asked to re-submit existing risk assessments. The publication will also result in the need to review the number and location of safe havens.

KEY CONSIDERATIONS

An occupied building risk assessment would typically include the following steps:-

- I. Identify which buildings need to be defined as occupied and their occupancy levels.
- II. Identification of major hazards e.g. fire, explosion and toxic release.
- III. Quantification of the hazard levels and their likely frequency using appropriate modelling techniques.
- IV. Assessment of personnel vulnerability inside each building as a result of the hazard levels .
- V. Estimation of individual risk to personnel.
- VI. Specification of reasonably practicable risk reduction measures and a demonstration that risks have been reduced to ALARP (As Low As Reasonably Practicable).

- VII. Assessment of toxic refuge requirements.
- VIII. Preparation of appropriate documentation to satisfy the regulatory authority.

HOW CHILWORTH CAN HELP

Chilworth Technology has a wealth of knowledge from working with the process industries handling potentially dangerous, toxic and flammable materials. Our consultants have considerable experience and proven track record in carrying out fire and explosion risk assessments for a range of clients across broad industry sectors. With respect to occupied buildings risk assessment the following phased approach is often recommended:

Initial Review: A detailed site visit to review the number, type, construction and occupancy of buildings used by people working within the business and identification of all process hazards that might affect them. Typically hazard screening would be undertaken at this stage as an efficient and cost effective way of highlighting which occupied buildings require a more detailed assessment and which place occupants at negligible risk.

More detailed assessments: The remaining buildings would be subject to a more rigorous assessment. This

might include application of more detailed consequence modelling in conjunction with quantified or semi-quantified risk assessment where appropriate. The objective is to provide realistic hazard levels against which the building would need to afford protection to occupants.

Demonstration of ALARP: The impact of the hazard levels would then be assessed and appropriate remedial measures specified. Where the cost of remedial measures is very high, Chilworth can undertake cost benefit analysis to ensure that ALARP principles can be demonstrated.

Documentation: Finally, the results of the assessment will be documented in a form which can demonstrate (provided that recommended remedial measures have been carried out) to the regulatory authority that risks to building occupants have been reduced to tolerable levels and are being managed on an on-going basis.

Chilworth would be happy to assist at any stage in this process or to review existing submissions to identify shortfalls and answer specific questions set by the regulatory authorities.

faxback

Please faxback to Marketing on +44 (0)23 8076 7866

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My particular interests are:-

- | | |
|---|---|
| Occupied Buildings Assessment..... <input type="checkbox"/> | COMAH/Seveso II..... <input type="checkbox"/> |
| IEC 61508/11 Functional Safety..... <input type="checkbox"/> | Chemical Reaction Hazards..... <input type="checkbox"/> |
| DSEAR / ATEX (CAD) Audits..... <input type="checkbox"/> | Hazardous Area Classification..... <input type="checkbox"/> |
| Mechanical Equipment Risk Assessment..... <input type="checkbox"/> | Dust/Gas/Vapour Explosion..... <input type="checkbox"/> |
| Electrostatic Hazards / Problems..... <input type="checkbox"/> | Process reaction evaluation & vent assessment..... <input type="checkbox"/> |
| Regulatory Testing..... <input type="checkbox"/> | HAZOP..... <input type="checkbox"/> |
| Incident Investigation / Expert Witness..... <input type="checkbox"/> | Training..... <input type="checkbox"/> |
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