



Sector Level Process Safety



Executive Summary

Following the Buncefield incident in 2005, the Major Incident Investigation Board (MIIB) set a challenge to industry in two key areas:

- Operating with high integrity organisations, and
- Delivering high performance through culture and leadership

To address these challenges, UKPIA signed a 'Commitment to Process Safety' in 2008¹, which, through seven key objectives, cemented the industry's high commitment to the health and safety of its workforce and the public. The Commitment aims to recognise that a robust process safety performance is key to protecting people and the environment and that a spirit of cooperation amongst members, through UKPIA's Council, is pivotal in the pursuit of process safety excellence. The Process Safety Leadership Group (PSLG), responsible for addressing the recommendations from the MIIB Buncefield report, also published the 'Principles of Process Safety Leadership' in 2009². These principles (which align closely with those of UKPIA's Commitment) recognise that industry leaders have a critical role to play in process safety management and improvement.

UKPIA has a number of initiatives in place in order to achieve the objectives set out in its Commitment Statement and that of the Process Safety Leadership Group. Together, these form our **Assuring Safety** initiative.

Assuring Safety comprises of three key principles: Working Together, Encouraging Excellence, and Sharing and Learning. Each of these principles is delivered through a network of initiatives, committees and fora.

These forming elements are highly integrated and, together, they play an important role in collecting, analysing and sharing process safety information which, in turn, is brought together to identify and drive improvement through the development of guidance, tools and training standards.



Working Together

Using available resources to identify potential areas of concern and develop strategies to address these.



Sharing and Learning

Advancing dialogue on process safety practices by communicating with other relevant industry sectors. As appropriate, sharing lessons from relevant high level incidents and near misses.



Encouraging Excellence

Analysing industry's performance and targeting specific areas of process safety by commissioning the development of tools and technical guidance.

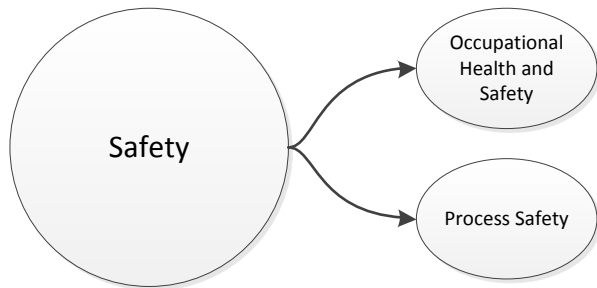
UKPIA's initiative not only cements the industry's commitment to enhance process safety but delineates the importance of effective means in place to improve performance throughout the industry by working together, sharing and learning and encouraging excellence. The following sections outline the ways in which the Assuring Safety initiative aims to promote and deliver excellence in process safety at a sector level.

¹ More information on UKPIA's Commitment to Process Safety can be found here: <http://www.ukpia.com/process-safety/process-safety-commitment.aspx>

² More information on the PSLG The Principles of Process Safety can be found here: <http://www.hse.gov.uk/comah/buncefield/response.htm>

A strategy for sector level process safety

Safety encompasses two distinct areas: 'Occupational Health and Safety'³ (e.g. ensuring that people work safely when using ladders, that they have the right gloves or eye protection for a given task and that the area they are working in is free from hazards, such as slippery floors) and Process Safety.



Process safety focuses on the concerns of major hazards impacting safety, environmental damage and business losses. Process Safety management aims at developing systems and procedures - for plant and equipment used to extract, manufacture or store product - to prevent unwanted releases that may impact people or the environment, and is commonly defined as follows:

'Process Safety is a unique blend of engineering and management skills with a clear focus on preventing catastrophic accidents – particularly toxic leaks, explosions and fires which are potential risks associated with the use of hazardous substances if these are not properly managed'.

This report focuses on the downstream oil industry's procedures and cross-industry initiatives for Process Safety.

What is sector level process safety?

Process safety is managed by individual companies in order to meet their responsibilities under COMAH regulations⁴ (in the UK), which represent a condition to operate.

Sector level process safety is a framework by which individual companies can enhance and improve what they do at site level by engaging more effectively with their peers, the Regulator and other industry sectors.

The strategy of sector level process safety was born out of significant incidents such as Texas City and Buncefield. These incidents informed the need of industry working together and sharing learnings to identify and seek out early indication of potential areas of concern.

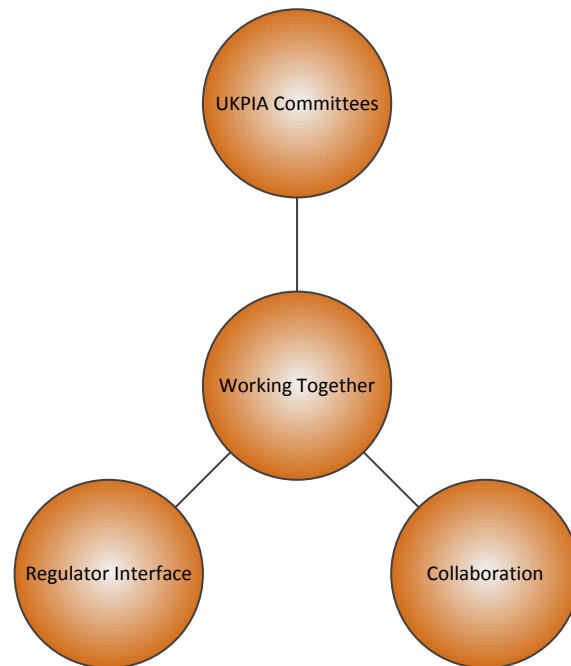
Enhancing process safety throughout the industry and achieving excellence is at the forefront of our operations.

³ Occupational health and safety is regulated in the United Kingdom under the Health and Safety at Work Act 1974 (as amended).

⁴ Process safety is regulated in the United Kingdom under the Control of Major Accident Hazards Regulations 1999 (as amended). These are known as COMAH Regulations. COMAH implements the European Seveso III Directive.



Working together is the process by which communication is encouraged at a sector level among companies, regulators and other relevant stakeholders in order to identify potential areas of concern and develop strategies to address these.

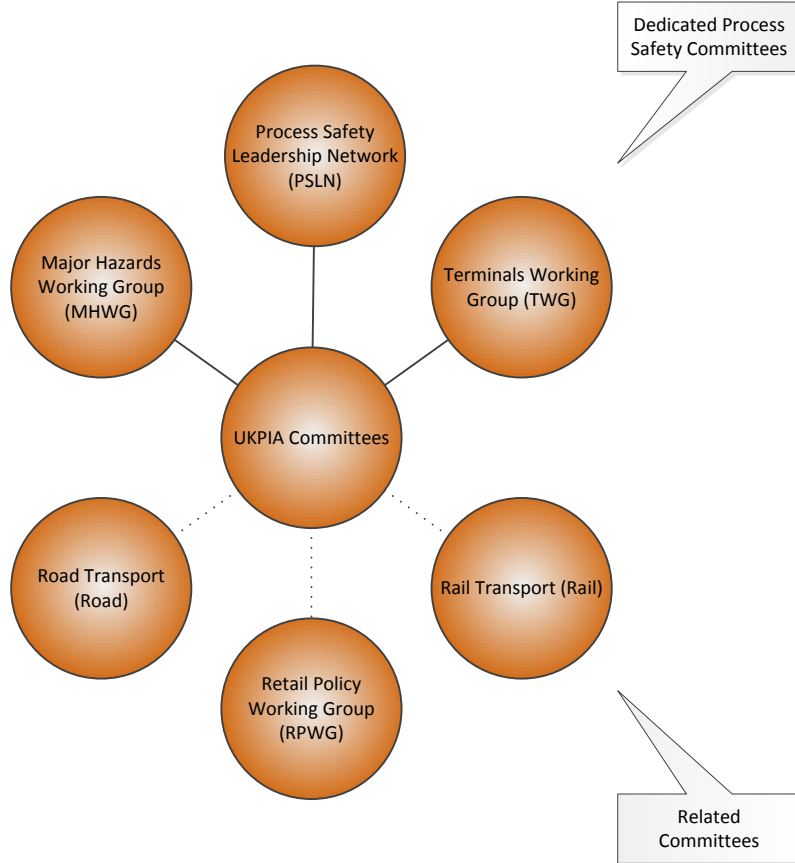


Trade associations (i.e. UKPIA for the downstream oil industry) have an important role to play in encouraging dialogue among members. At a committee level, dialogue can take place openly whilst adhering to relevant competition law guidance and terms of reference. Committees also provide consensus and direction when liaising with other relevant stakeholders such as regulators, unions and other technical bodies.

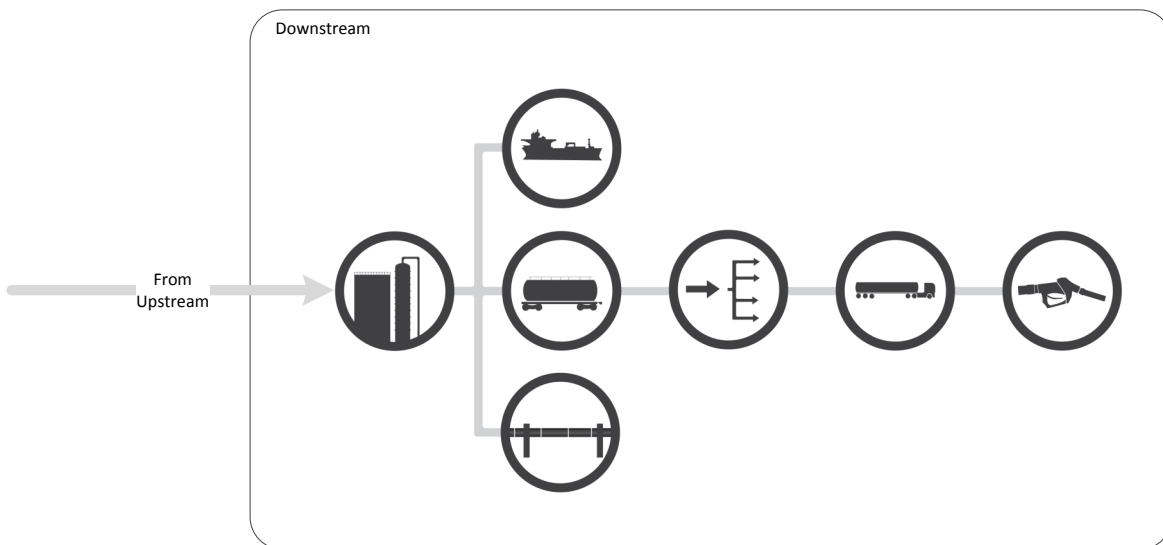
UKPIA Committees

UKPIA has several committees in place to address process safety management and the application of COMAH regulations at members' sites. These are structured around the supply chain for the sector and focus on oil refineries and distribution terminals – typically classified as 'Top-Tier' COMAH sites.

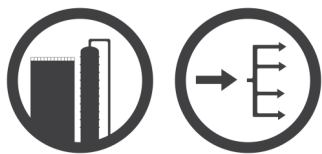
A number of UKPIA's committees oversee other aspects of the supply chain. Whilst these do not directly engage with process safety issues, they are essential in ensuring high standards of safety at COMAH sites where interfaces are required – i.e. road and rail tankers using loading gantries to transfer product for distribution.



The structure and scope of UKPIA’s committees is such that all aspects of the supply chain are considered, thus providing a consistent, coherent and consolidated approach to process safety within the sector.



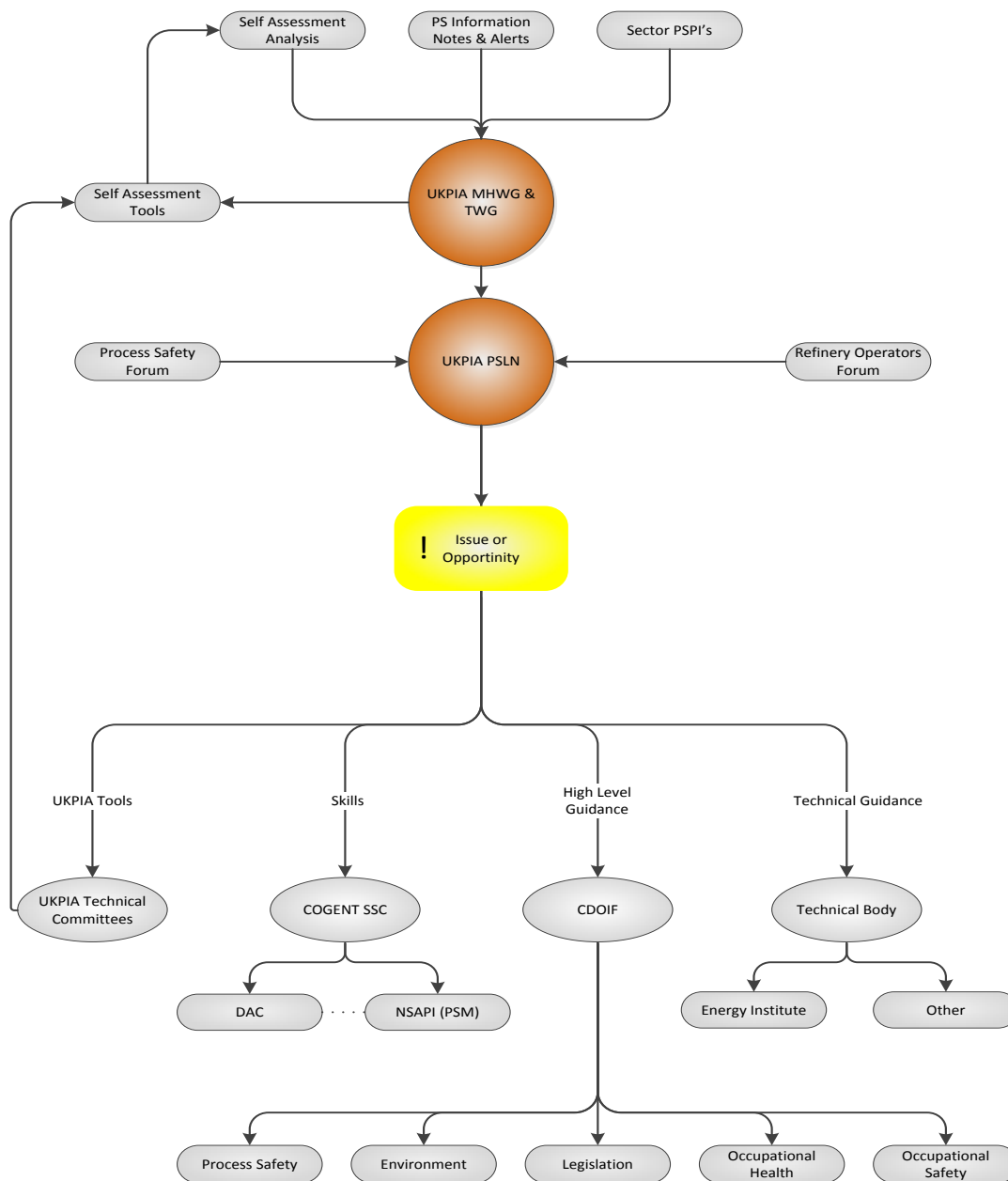
Note: UKPIA is not directly engaged in issues relating to pipelines or shipping. These interests are represented by other trade bodies, such as the UK Onshore Pipeline Operators Association (UKPOA) and the International Association of Independent Tanker Operators (INTERTANKO).



Process Safety Leadership Network

The Process Safety Leadership Network (PSLN) is UKPIA's leading process safety committee, with representation from refineries and terminals' process safety managers. Its key role is to promote process safety leadership in the downstream oil sector, reviewing input from internal and external sources (such as process safety performance indicators and the Process Safety Forum), determining where action is required and identifying appropriate resources to address action and concerns.

PSLN has come to represent an effective, all-encompassing information hub: information is gathered and analysed with further work being commissioned if areas of concern are detected.



In addition to promoting process safety leadership in the downstream oil sector, PSLN liaises with relevant Government Departments and the Competent Authority in key areas of safety. This is typically executed via the Refinery Operators Forum (see Regulator Interface) and through response to relevant consultations, briefings and other ad-hoc studies.

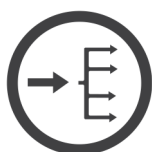


Major Hazards Working Group

The Major Hazards Working Group (MHWG) is a technical refinery-focussed process safety committee, comprising of member companies' process safety specialists.

Its role is to review specific technical issues relating to incidents, learnings and legislation affecting refineries in the UK. Where further action is required, the MHWG reports to PSLN which, in turn, determines the most appropriate course of action.

The MHWG provides an invaluable forum for discussion of incidents and near-misses at members' sites, ensuring a prompt response to concerns, and actively promotes the principle of sharing and learning.



Terminals Working Group

The Terminals Working Group (TWG) is a technical terminal-focussed process safety committee, comprising of terminals' process safety specialists.

The TWG's key role is to review specific technical issues relating to incidents, learnings and legislation. The group reports to PSLN. The TWG also provides a sharing and learning function in the area of terminals' safety.

Along with its key role of ensuring safety at terminals, the group liaises with UKPIA's Road and Rail transport committees. Indeed, it is paramount that communication is in place to ensure that vehicles (either road or rail) entering terminals are adhering to safety measures and that competency of those involved in the loading and unloading of vehicles is upheld. As well as interfacing with UKPIA's Road and Rail transport committees, TWG is also active within two key external groups:

- The Downstream Oil Distribution Forum (DODF): ensures that tanker drivers have the appropriate level of competency in order to carry out duties relating to the loading and unloading of fuel.
- The Safe Loading Pass Scheme (SLPS): oversees road tankers, ensuring that they are periodically checked and safe to load fuel at terminals. Checks relate to elements such as electrical earthing and the operation of high level probes.



Road Transport and Rail Transport Committees

The Road and Rail Transport Committees are involved in all aspects of road and rail tanker operations including: legislation, safety, carriage of goods, technical and operational issues. Whilst road and rail transport may not contribute directly to major accident hazards, there are cross-overs with other committees on issues such as the Safe Loading Pass Scheme for road vehicle inspection.



Retail Policy Working Group

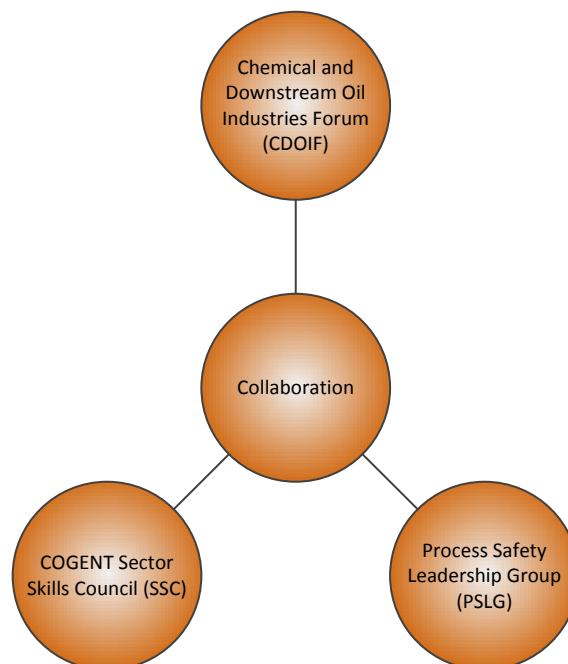
The Retail Policy Working Group (RPWG) is involved in all aspects of service stations' operation, from legislation and training to safety. It also inspects the contractor safety passport scheme (which ensures that contractors have the necessary skills and knowledge to work on retail forecourt sites). The RPWG liaises with the Road Transport Committee, ensuring the safe off-loading of fuel.

Other related UKPIA Committees

There are a number of other UKPIA committees, such as the Refinery Emissions Working Group (REWG) and the Environment Health and Safety Committee (EHS), which work collaboratively with regulators through the Environment and Occupational Health and Safety work-streams of the Chemical and Downstream Oil Industry Forum (see Collaboration).

Collaboration: External Groups and Fora

Collaboration refers to the process by which the downstream oil industry can work together with other key stakeholders to enhance process safety. This collaborative process chiefly refers to the production of guidance and training standards through collaboration among industry, regulator and unions. Cross-collaboration ensures that deliverables are representative of all parties.



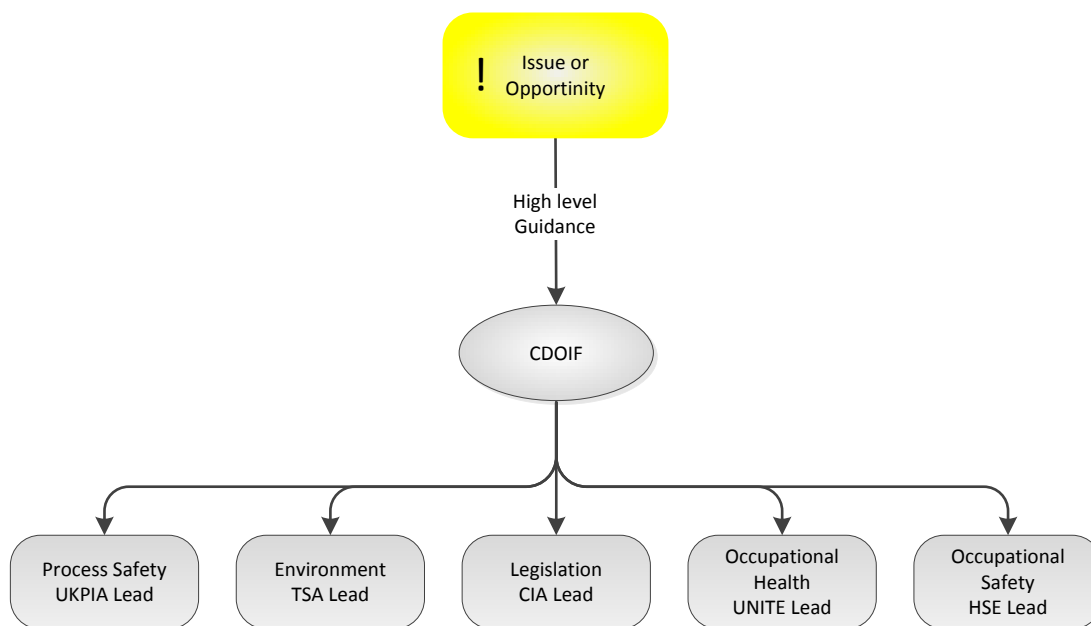
Chemical and Downstream Oil Industries Forum

Prior to the Chemical and Downstream Oil Industries Forum (CDOIF), the Process Safety Leadership Group (PSLG) was established to respond to the Major Incident Investigation Board's (MIIB) recommendations following the Buncefield incident in December 2005. The group pioneered cross-collaboration and established a number of task groups to develop guidance to address each of the MIIB's recommendations. Final guidance was published in 2009⁵ and has since been employed by industry and regulators to ensure that improvements are in place to minimise major hazards' risks. The work of the PSLG is now complete, with monitoring of implementation activities handed over to site-based regulators from the Competent Authority⁶.

However, the recognition of the crucial importance of a collaborative approach resulted in the formation of a permanent Chemical and Downstream Oil Industries Forum (CDOIF).

Its key role is to encourage and promote health, safety and environmental improvements across the chemical and downstream oil sectors. To achieve this, start and finish task groups are established on an ad-hoc basis to analyse issues raised and develop joint-industry guidance to tackle specific areas of concern. Due to its wide remit, CDOIF is divided into five work-streams, with a number of agencies and bodies responsible for each of these.

CDOIF is chaired by the UK Health and Safety Executive (HSE), with membership comprising of trade associations, trade bodies and institutes, and regulators involved within the chemical and downstream oil industry sectors.



The Process Safety Leadership Network (PSLN) is responsible for submitting projects to CDOIF on behalf of UKPIA.

CDOIF has the distinctive advantage of being able to respond promptly to participating members' highlighted opportunities for development. CDOIF working groups are resourced from members of participating trade associations, Competent Authority and union representatives, thus giving direct access to experts in the field to develop high-level guidance. Cross-collaboration in producing guidance also favours the promotion of a common approach to how it is applied and verified across all sites, thus preventing issues relating to misaligned expectations.

⁵ The PSLG final report, 'Safety and Environmental Standards for Fuel Storage Sites' is available from the HSE website: <http://www.hse.gov.uk/comah/buncefield/fuel-storage-sites.pdf>

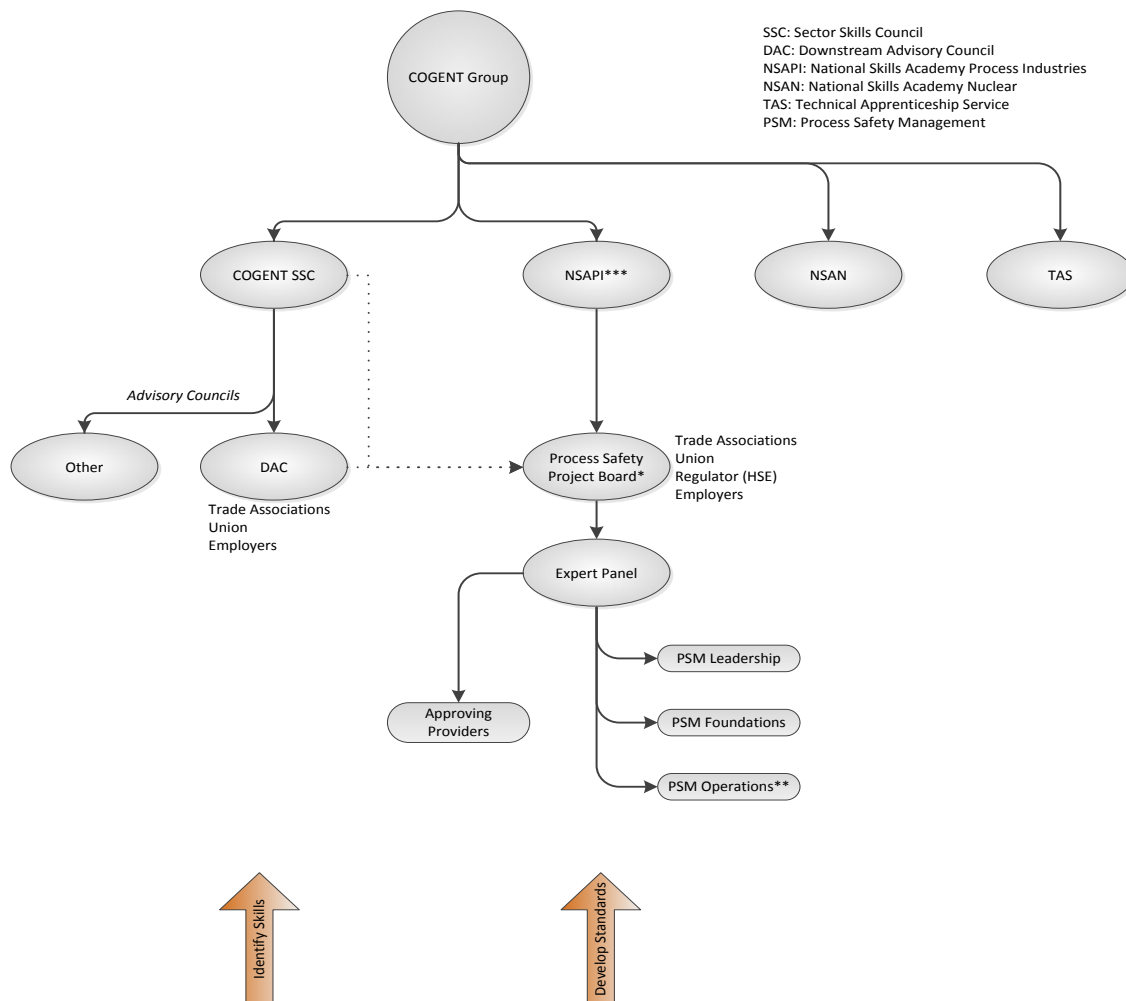
⁶ The Competent Authority in the UK comprises of the Health and Safety Executive (HSE), Environment Agency (EA), the Scottish Environment Protection Agency (SEPA) and the Northern Ireland Environment Agency

COGENT Sector Skills Council

COGENT Sector Skills Council (SSC) is the UK's skills body for chemical, pharmaceutical, nuclear, petroleum, polymers and life sciences businesses. COGENT SSC researches and forecasts skills' needs for industry. It also develops fit-for-purpose standards, qualifications and other solutions as appropriate. For the downstream oil industry, interface with COGENT SSC at a technical level is through the Downstream Advisory Council (DAC) and standards' development through the National Skills Academy for Process Industries (NSAPI).

- Downstream Advisory Committee (DAC): DAC is a collaborative forum comprising of representatives from trade associations, unions and employers. The Competent Authority does not have direct involvement but collaborates in projects commissioned by DAC.
- The National Skills Academy for Process Industries (NSAPI): develops training standards to help promote awareness of process safety within organisations. These are:
 - * Process Safety Leadership for Senior Executives
 - * Process Safety Management Foundations
 - * Process Safety Management for Operations

As well as developing standards, NSAPI approves training providers against those standards – ensuring a consistent delivery against the expectations of the training standard as developed collaboratively by industry, Competent Authority and union representatives. Through COGENT SSC, UKPIA members are able to commission skills-related guidance and training standards targeting specific areas for improvement. The Process Safety Leadership Network (PSLN) is responsible for submitting potential projects to COGENT SSC via the DAC.



Notes:
 *Typically referred to as 'PSM', relates to skills and training standards for process safety
 **Currently under development
 ***NSAPI manages the training provision (standards/accreditation, but does not deliver training)

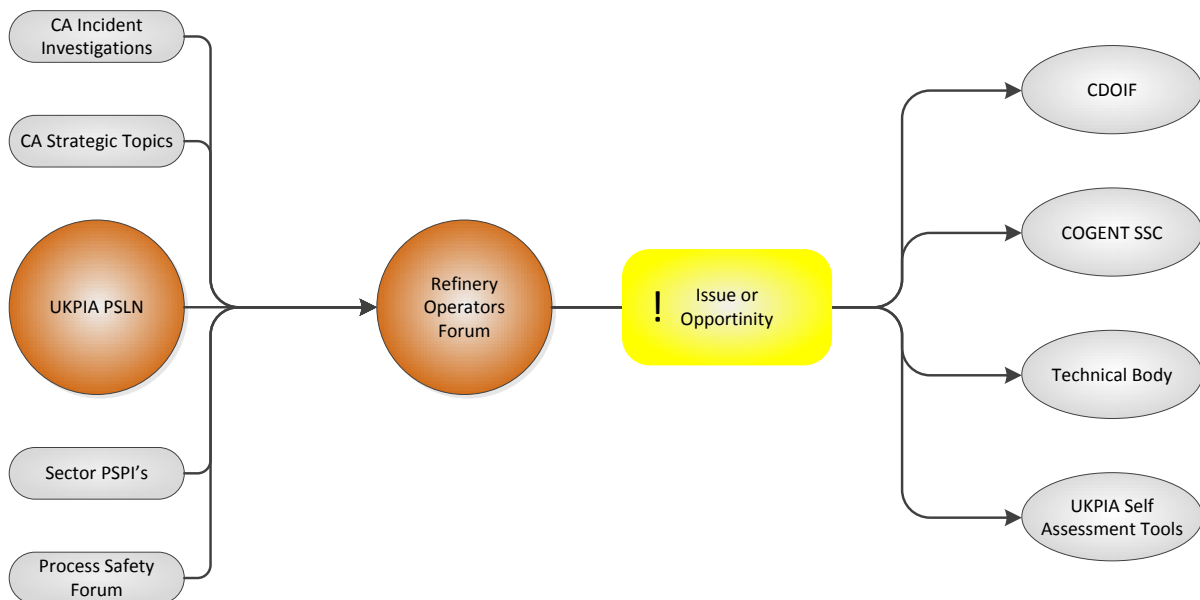
Regulator Interface

Refinery Operators Forum

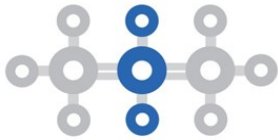
Developing guidance and standards represents one of the key mechanisms to enhance process safety performance across the sector. In order to encourage an open dialogue between the Competent Authority and the downstream oil industry in the UK, the Refinery Operators Forum has been established. The Forum has the following objectives:

1. Discuss common issues relating to COMAH regulation of refinery sites identified by the COMAH Competent Authority and Industry
2. Review new and updated legislation
3. Review and agree sector level priorities
4. Suggest strategic priorities to CASMG (Competent Authority Strategic Management Group), and the performance indicators that may be used to measure these
5. Share priorities in terms of planned delivery guides⁷ and, where appropriate, review feedback from guides
6. Review emerging issues and intelligence gained from the following sources:
 - a. Process Safety Forum incident reviews
 - b. Sector level Process Safety Performance Indicators
 - c. Competent Authority incident investigations
 - d. UKPIA members' investigations, reports and experiences
7. Proposal of work packages based on the review of emerging issues and intelligence, through:
 - a. Chemical and Downstream Oil Industry Forum
 - b. Energy Institute
 - c. UKPIA's Self-Assessment Modules

The Refinery Operators Forum takes input from other sector level process safety initiatives and, where appropriate, may commission work through other relevant groups or fora.

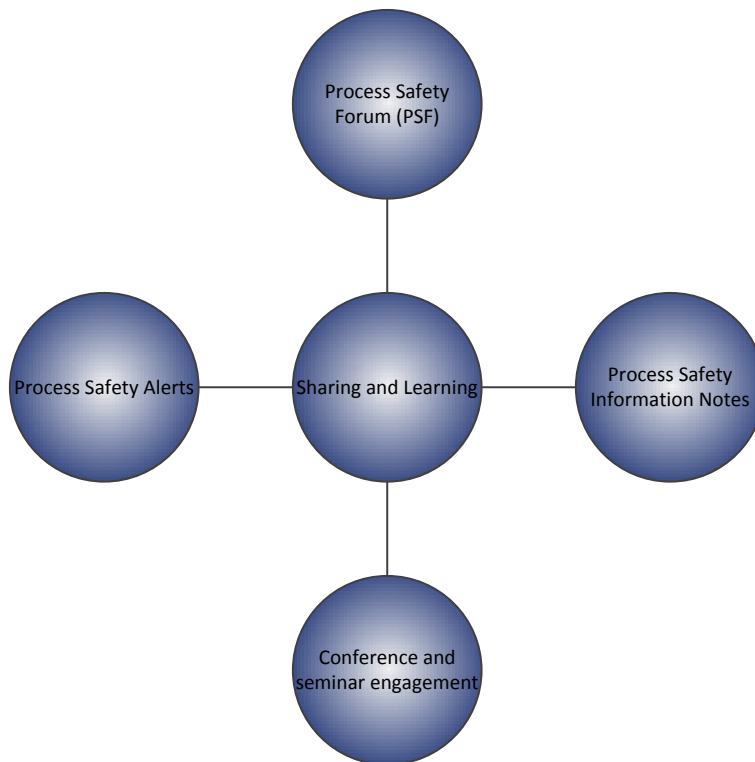


⁷ Delivery guides are the Competent Authorities mechanism for providing advice on the inspection of strategic priorities to site based inspection teams, but also provide a valuable reference for industry. Published delivery guides can be found here: www.hse.gov.uk/comah/ca-guides.htm



Sharing and Learning

Sharing and learning by communicating with other relevant industry sectors is key to enhancing process safety. UKPIA's sector level process safety strategy encourages this process through a number of initiatives.



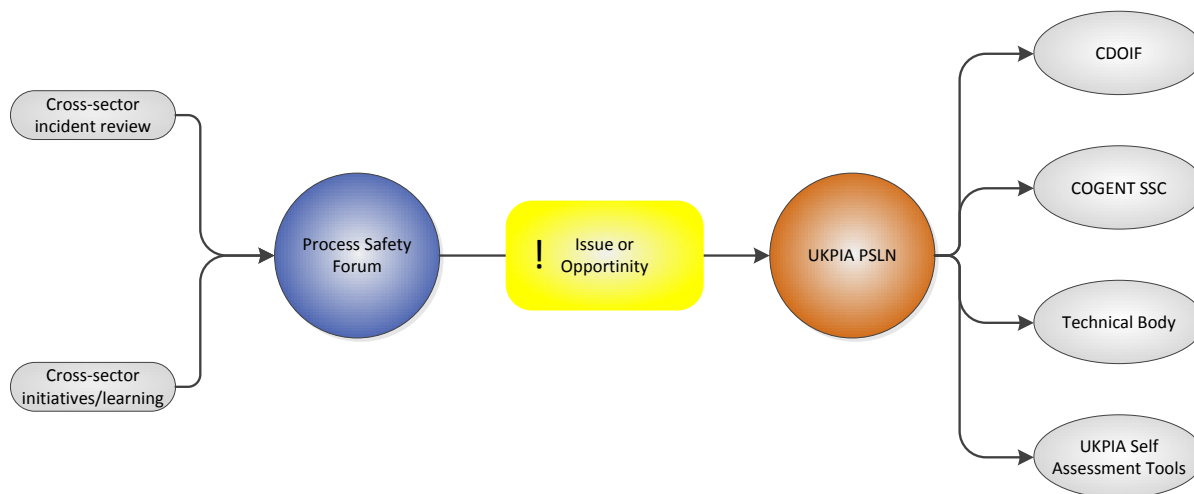
Process Safety Forum

The Process Safety Forum provides a platform for initiatives, best practice, incident learnings and process safety strategy to be shared across industry sectors. Membership of the Forum is through trade associations and, since its inception in 2009, it has grown to include upstream oil and gas, downstream oil, tank storage, chemicals, nuclear, rail, engineering and construction and energy networks sectors.

The Process Safety Forum:

- Reviews independent reports from significant incidents highlighting areas that may warrant further

Cross-sector incident reviews and high level learnings may be relevant to the downstream oil industry and warrant further analysis or work. This work can be taken forward (via UKPIA's Process Safety Leadership Network) by CDOIF, COGENT SSC or other relevant technical bodies. The Forum also provides a mechanism by which work commissioned by UKPIA is shared with other industry sectors.

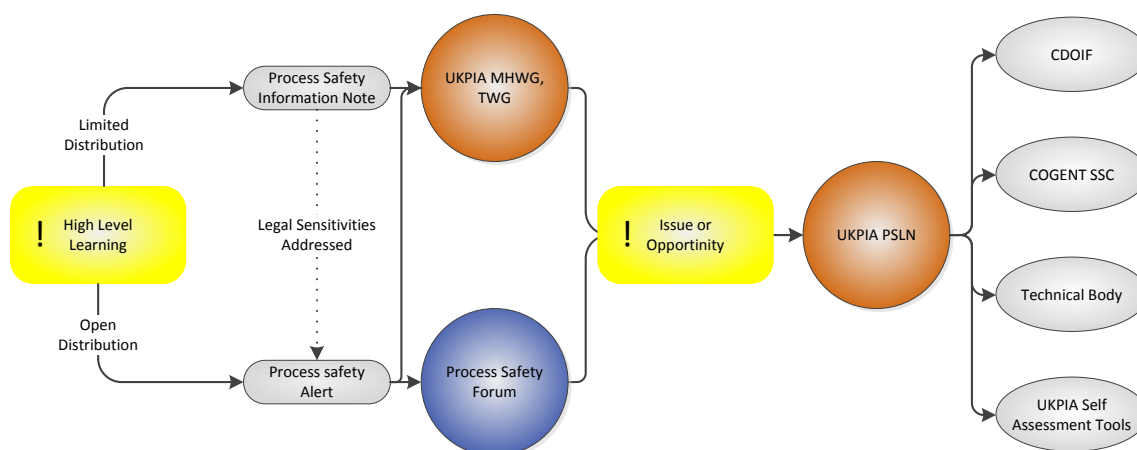


Process Safety Alerts and Process Safety Information Notes

Sharing high level learnings in a prompt manner is important to ensure that relevant and applicable information is disseminated amongst sectors. A two tier system has been adopted as part of UKPIA's sector level process safety initiative:

- Open Distribution – the learning has no legal constraints and will be distributed as a Process Safety Alert through, and on behalf of, the Process Safety Forum.
- Limited Distribution – the learning has legal constraints and will be distributed as a Process Safety Information Note by, and within, UKPIA only.

Process safety alerts and information notes may prompt the development of guidance, training standards, or self-assessment tools through discussion within UKPIA's Process Safety Leadership Network.



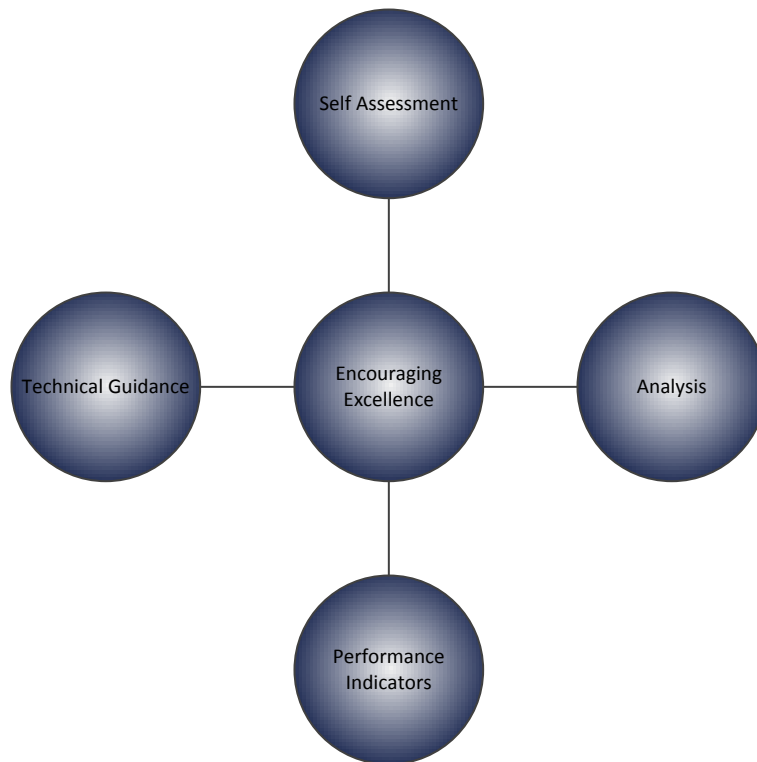
Conference and Seminar Engagement

Tools and guidance produced by UKPIA and CDOIF, along with Process Safety Alerts developed by the Process Safety Forum, are free to download. UKPIA also shares the mentioned through regular conferences and seminars. Whenever possible, UKPIA aligns speaking engagements with the release of new guidance or tools, maximising potential to reach their target audience.



Encouraging Excellence

By analysing performance and targeting specific areas, industry can enhance process safety and strive towards excellence.



Through targeted self-assessment and analysis of key areas of process safety, UKPIA encourages excellence and the development of relevant technical guidance. Guidance can be proposed by UKPIA through CDOIF, Cogent or other relevant bodies, such as the Energy Institute. In addition, sector level process safety performance indicators (PSPIs) are in place to measure improvement (and that of other initiatives in place through sharing & learning and working together).

Self-Assessment

UKPIA has established a framework under which self-assessment tools are developed to target specific areas of process safety.

These tools, formulated by experts from within UKPIA's member companies, aim to delineate sector's best practice and assist companies in reviewing procedures and processes, whilst identifying where improvement could be considered.

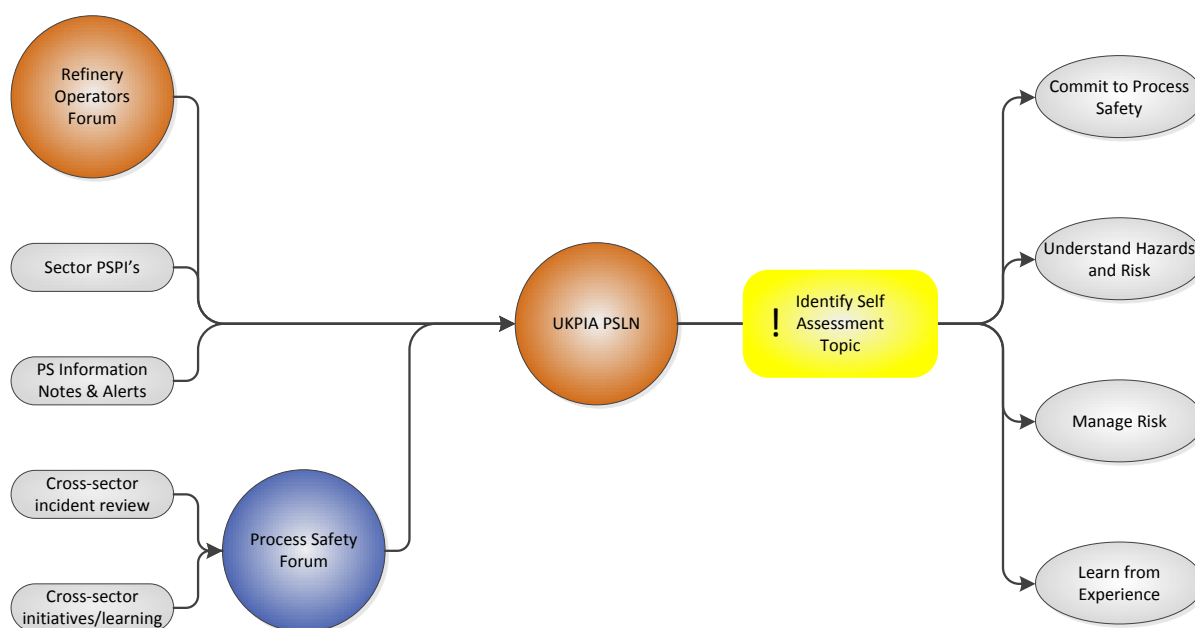
The Centre for Chemical Process Safety's guideline for 'Risk Based Process Safety'⁸ has categorised and grouped self-assessment tools. The guideline classifies process safety management systems under four categories:

1. Commit to Process Safety
2. Understand Hazards and Risk
3. Manage Risk, and
4. Learn from Experience

Under each category, UKPIA's Process Safety Leadership Network (PSLN) identifies areas for development based on:

- member companies' priorities
- other sector level inputs, such as Process Safety Performance Indicators, Safety Alerts, Process Safety Information Notes
- feedback from both the Process Safety Forum and Refinery Operators Forum.

This methodology ensures that the right self-assessment tools are developed to address key issues.



Each self-assessment tool consists of a series of questions, categorised according to the subject matter. Responses from 0, 1, 2, 3 or 4 are provided, representing respondents' view of current implementation of the process safety management system:

0. Practice is essentially non-existent or ad-hoc. Reliance on key people. Reliance on Initiative. Minimal processes and procedures available.
1. Some evidence that the practice exists (limited or no documentation of processes or practices). "We are aware of our gaps and are developing programs and procedures".
2. Documented. Implementation on-going/not effective. "We have established programs and procedures and are working on implementation effectiveness".
3. Documented and effectively implemented. "We consistently follow our programs and procedures".
4. Effective and efficient. Visible continuous improvement culture/efforts in place. "We are systematically applying lessons learned and best practices to improve performance".

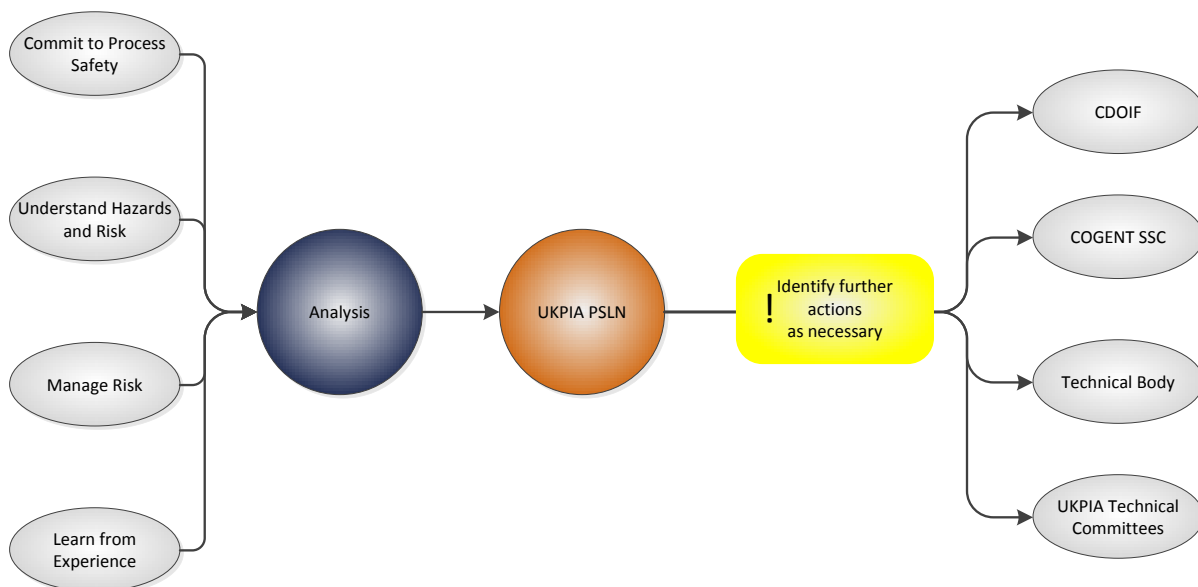
⁸ The CCPS Guidelines for Risk Based Process Safety is often called the 'Red Book' and represents one view of the structure of a Process Safety Management System.

This scoring mechanism allows data from each company to be reviewed and analysed anonymously by UKPIA (these are not shared outside of UKPIA's membership). Results are then presented to PSLN. Self-assessments are repeated periodically to determine improvements over time.

Analysis

Whilst completing the self-assessment tools at company level provides an invaluable insight into how well an organisation is performing, analysis at a sector level is instrumental in identifying wider trends. The benefits are threefold:

- Analysis results - issued by PSLN to the technical committees of the Major Hazards Working Group (MHWG) and Terminals Working Group (TWG) - provide information to specialists to assist them in improving their own systems (technical peer review).
- Where further information is required to address a common trend, further high level or technical guidance is commissioned via CDOIF or other relevant technical body.
- Where skills' gaps are identified, the development of training standards and/or skills' related guidance through COGENT is encouraged.



Performance Indicators

Monitoring sector-wide performance is essential in order to:

- understand how well the sector is performing, thus identifying potential areas for improvement,
- measure the success of initiatives such as the Process Safety Forum, CDOIF and UKPIA's self-assessment modules.

In the UK, UKPIA's members have adopted the American Institute of Petroleum (API) Standard RP 754 (Process Safety Performance Indicators for the Refining and Petrochemical Industries). This provides a simple, agreed methodology for sector level reporting.

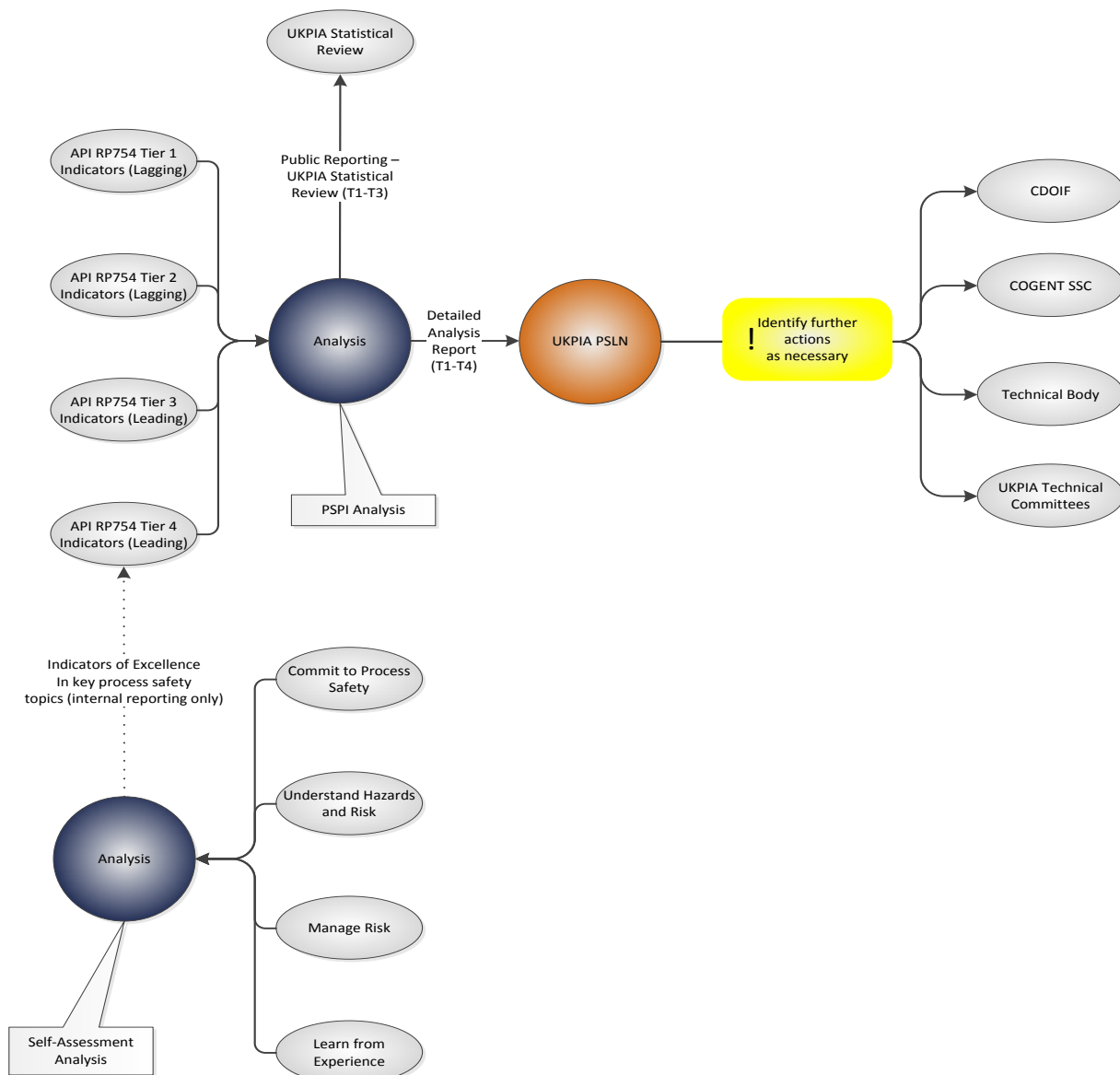
The standard is based around four tiers of information:

- Tier 1 – a loss of primary containment with the greatest consequence
- Tier 2 – a loss of primary containment with a lesser consequence
- Tier 3 – a challenge to a safety system that progressed along the path to harm, but stopped short of a tier 1 or tier 2 event
- Tier 4 – performance of individual components of a safety management system

UKPIA collects members' data for Tier 1, 2 and 3 events. Analysis of data is used to identify where resources, such as CDOIF, can be engaged to produce relevant guidance or a self-assessment module. Tier 4 indicators are not formally collected by UKPIA. However, analysis of results from self-assessment tools can be seen as a leading indicator.

UKPIA analyses and presents all information collected through API RP 754 indicators as follows:

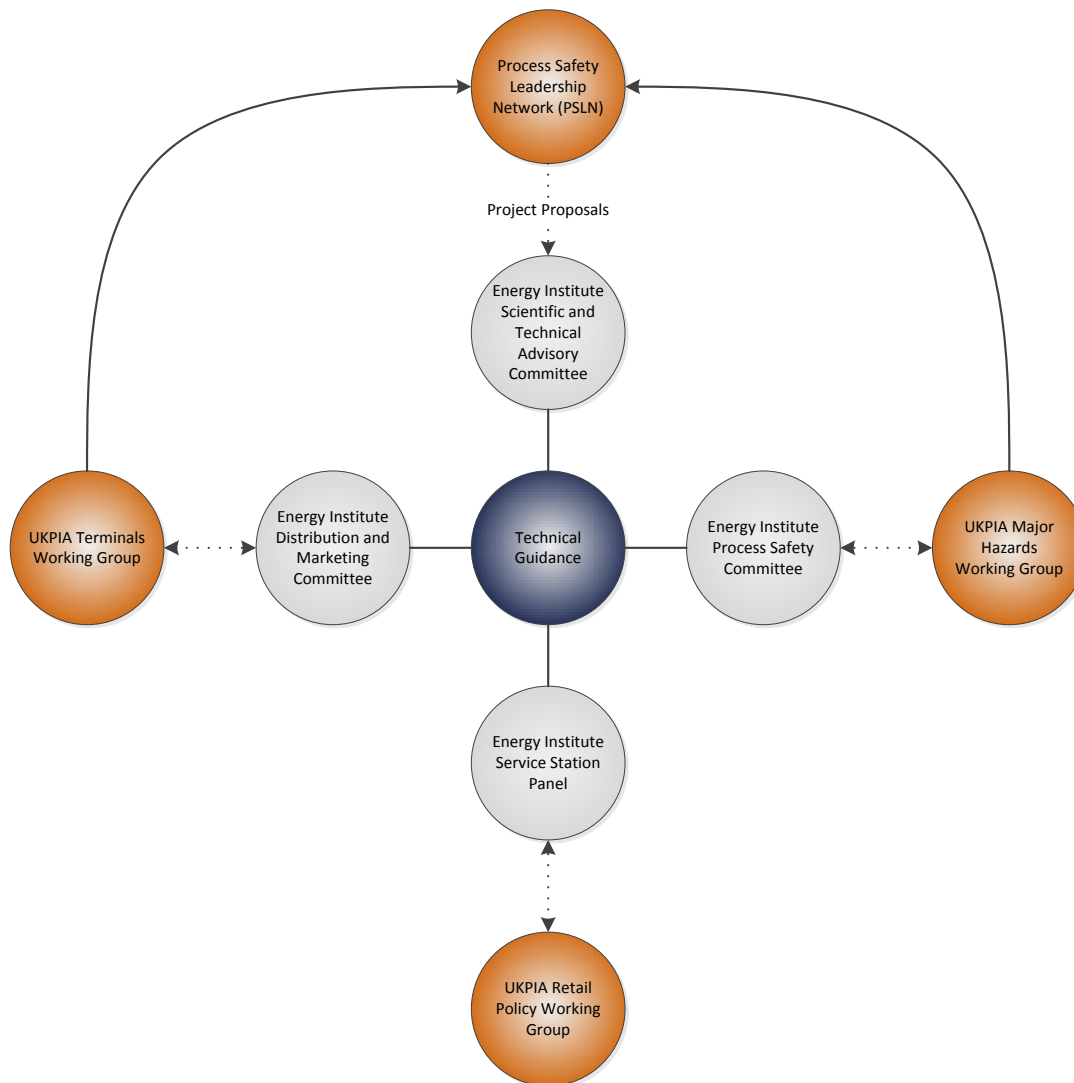
1. High level information is collated and published in UKPIA's Statistical Review, which provides an overview of sector's performance.
2. A comprehensive report analysing the detail of performance indicators is circulated for internal use.



Note: When considering the development of sector level indicators, it is important to note that companies will already have in place comprehensive process safety performance indicators. UKPIA's aim is not to replace existing corporate standards, but to provide a common platform for performance measurement and analysis.

Technical Guidance

In developing effective technical guidance for sector level process safety, UKPIA engages with relevant professional bodies, such as the Energy Institute.



The Process Safety Leadership Network collects information (e.g. Process Safety Performance Indicators) and identifies areas requiring development of detailed technical guidance to address any emerging gaps in knowledge. Potential projects are subsequently proposed to the Energy Institute through the Scientific and Technical Committee (STAC).

Note: The Energy Institute represents several energy sectors. The STAC committee votes on proposed projects from all of its membership and only those sanctioned are commissioned as projects.

There are differences between guidance commissioned through the Energy Institute and that of the Chemical and Downstream Oil Industries Forum.

- The Energy Institute produces detailed technical guidance - commissioned by its Scientific and Technical Advisory Committee (STAC) - carried out by external consultants. Work is funded through members' subscriptions.
- The Chemical and Downstream Oil Industries Forum produces high level guidance - proposed by its membership - developed by relevant experts from within member companies.

Whilst much of UKPIA's work on the development of detailed technical guidance is through the Energy Institute, it also contributes to relevant projects commissioned by other technical bodies such as CIRIA and EEMUA.

Conclusion

Safety is our top priority. UKPIA's *Assuring Safety* initiative cements the industry's unyielding commitment to enhance process safety and delineates the importance of effective means in place to improve performance throughout the industry by working together, sharing and learning and encouraging excellence.

To this end, we have developed a sector level strategy that fosters cooperation within our industry.

An effective sector level strategy must be based on:

- A mechanism by which all relevant stakeholders can work collaboratively - identifying common priorities and goals and using available resources to close skills and knowledge gaps.
- A mechanism by which we can look beyond good practice – identifying now what could go wrong in the future and proactively encouraging excellence in process safety performance.
- A mechanism by which we can look outside of our own industry sectors, gaining information on potential hazards that could affect us, by sharing key information.
- A mechanism by which we can measure our success as a sector, along with the success of the initiatives we have in place.

Assuring Safety encompasses all of these mechanisms and provides a clear reference point for other sectors wishing to develop a similar strategy.



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