

Creating an Enterprising Safety Management System In the INEOS Group

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Abstract: This paper explains how following major changes to the make-up of the business INEOS Enterprises revamped its Safety Management System, both to better comply with various INEOS central SHE systems and to ensure a more robust formal competence assessment process for some of the key roles at each of its sites. The paper describes challenges which had to be addressed by the new system, the system that was developed and lessons learned during its application over the last 2 years.

Keywords: Safety Management System, Competency, Assessment

Introduction – Setting the Scene

Background to INEOS Enterprises

INEOS Enterprises is one of the businesses that make up part of the INEOS group of companies. Currently there are 12 INEOS companies within the group. Together they have 65 sites, in 16 countries with approximately 17,000 employees across the globe, generating a turnaround of \$54 Billion per annum.

INEOS Enterprises is very different from the rest, most other INEOS companies all produce similar products using equivalent if not the same technologies. INEOS Enterprises is more like a mini INEOS, made up of 9 different business tubes, some stand-alone sites, some part of larger hosted sites, some SEVESO regulated and some not.

Table 1 – INEOS Enterprises at a Glance

Business Tube	Sites (Location, Country)	No of Employees	Key Products	SEVESO Yes / No
Styrenics	Breda, Netherlands	140	Expandable Polystyrene	Yes
	Ribecourt, France	70		
	Wingles, France	40		
Melanies & Paraform	Mainz, Germany	175	Melamines resins Paraformaldehyde compounds	Yes
	Fechenhiem, Germany	150		
	Indian Orchard, USA	100		
Salt	Runcorn, UK	95	Salt	No
Sulphur Chemicals	Runcorn, UK	50	SO ₂ , SO ₃ , Oleum	Yes
	Bilbao, Spain	75	Sulphuric Acid	
Compounds	Newton Aycliffe, UK	175	PVC compounded with other additives	No
	Sins, Switzerland	50		
	Helsingborg, Sweden	55		
Solvents	Moers, Germany	300	Range of C ₂ , C ₃ & C ₄ Alcohols, MEK	Yes
	Herne, Germany	120		
	Grangemouth, UK	40		
Biodiesel & Esters	Baleycourt, France	150	Esters, Biodiesel,	Yes
ICT	Tessenderlo, Belgium	100	Benzylchlorides	Yes
	Maastricht, Netherlands	40		
Nitric & Ammonia	Cologne, Germany	55	Nitric Acid	Yes
			Ammonia	

INEOS Enterprises started life in 2003 as a spin-off of some of INEOS Chlor's Runcorn based assets. It quickly grew until in 2013 a significant reorganisation within INEOS and an external purchase almost doubled its size to the portfolio shown in Table 1.

INEOS Corporate SHE Systems

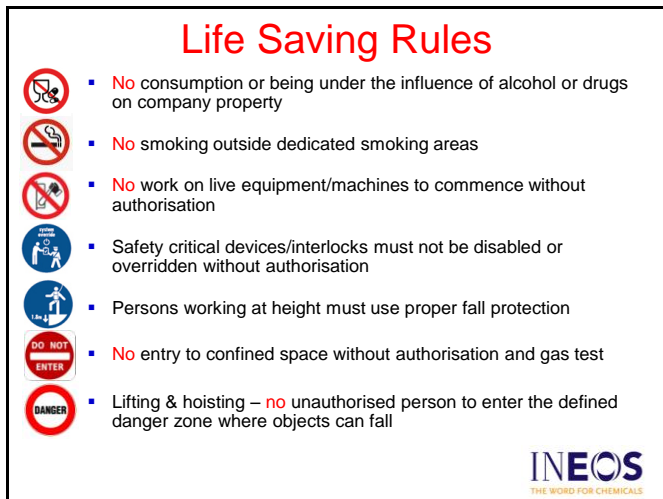
INEOS has a number of key corporate SHE systems that are applied across the whole INEOS family. These have within them specific requirements which must be implemented and give certain key roles responsibility for doing so. In order to better understand the INEOS Enterprises SHE and Engineering Requirements System it is helpful to have a basic

understanding of these corporate systems, and so be able to see how they dovetail together and need to be applied within INEOS Enterprises.

INEOS Life Saving Rules

Following a number of incidents across INEOS, where basic good practice in terms of working safely were not followed for various reasons, INEOS centrally introduced 7 life saving rules. These have been clearly communicated and deliberate breach of these rules will result in disciplinary action against employees or contractors being banned from our sites.

Figure 1 - Life Saving Rules Poster



20 SHE Principles

During the “noughties” INEOS introduced 20 SHE Principles. 10 covering Behavioural Safety and 10 covering Process Safety as a way to focus on SHE and prevent incidents.

Figure 2 – INEOS 20 Principles

20 Safety Principles

Behavioural Safety		Process Safety	
1	We believe all incidents and injuries can be prevented	1	The asset operating manager is responsible for its overall integrity
2	Everyone's first responsibility is to ensure they work safely	2	The asset engineers are responsible for maintaining the asset and protective systems integrity
3	Everyone has the duty to stop work if they feel the situation is unsafe	3	The responsibilities in the organisation for defining and maintaining the correct operating envelopes must be clear
4	The expectations and standards are the same for everyone on the site	4	Operating procedures and envelopes must be observed. Deviations must be reported and investigated
5	Rules and procedures must be observed and respected	5	Any changes must be properly risk assessed and subjected to MOC procedures
6	We should look out for each others safety and unsafe situations	6	Process hazards are systematically identified, risk assessed, reviewed and managed
7	All injuries and incidents /near misses must be reported and investigated	7	All assets must be subject to periodic inspection designed to ensure their integrity and the reliability of their protective systems
8	Risk assessment must be carried out prior to, during and on completion of work	8	Operations must always place the safe operation or shutdown of the asset ahead of production
9	All team leaders have a special responsibility for promoting and upholding these principles	9	When in doubt the asset must always be taken to its safest state
10	We must always work within the limit of our competency and training	10	We have emergency plans based on assessed risks which are regularly tested

20 Principles training for Supervisors (2015) 1

This was significantly enhanced with the introduction of a formal audit system in 2012. We run a 3 yearly rolling programme. In year 1 the Process Safety Principles are audited, in year 2 the Behavioural Safety Principles and year 3 is a year off to ensure the improvement actions from the previous years are completed and bedded in. 2016 is the second year of our second cycle of these audits.

Each principle has below it 4 to 8 sub principles that relate to a specific requirement that must be in place. The audit protocol then has a 4 quartile scoring system, shown in Table 1.

Table 1 – INEOS 20 Principles scoring system

Level 0	0 - 25%		Not an acceptable standard for Ineos
Level 1	25 - 50%		Minimum standards which must be improved
Level 2	50 - 75%		Practices are where Ineos expects them to be
Level 3	75 - 100%		World class or "Best in Class" practices

Sites are scored by reference to a word model which describes in detail the things you would need to have in place for that sub-principle. An example is given in Figure 3

Figure 3 – Example of 20 Principles Audit Protocol

PS# 5 Any changes must be properly risk assessed and subject to MOC procedures				
What does this mean? Each facility has a robust and comprehensive MOC process in place defining the changes that must be risk assessed, how this should be done and the administrative controls in place to ensure that the site MOC procedure is systematically applied before changes can be commissioned.				
All along their life cycle, operations facilities are subject to numerous changes that can put at risk operations integrity. Such changes, permanent or temporary, can not proceed unless they have been formally authorised, after the risks arising from these changes have been identified, evaluated, addressed and controlled at an acceptable level.				
	0 – 25%	25 – 50%	50 – 75%	75 – 100%
• PS 5.1 Does the site have a clear MOC procedure which covers technical as well as organisational changes? • Does the procedure cover both permanent and temporary changes?	• No formal MOC procedure in place.	• A written MOC procedure exists which covers permanent & temporary changes and includes organisational as well as technical changes. • The procedure defines how these changes should be risk assessed before they are commissioned.	• A written MOC procedure exists which covers permanent and temporary changes in the areas of new projects, engineering, maintenance, operations and new product introduction. • The MOC has clear guidance to identify when and by whom it should be applied.	• A written MOC procedure exists which also covers permanent and temporary changes in the areas of manning and organisation, standards and regulations.
<small>Copyright © INEOS 2006</small>				

Any red scoring items must be improved rapidly, yellow scoring items can have action plans to address them over a longer timescale but should be resolved by the next audit.

INEOS Group Guidance Notes (IGGN's)

I like many reading this paper will have grown up with or know about corporate central engineering standards covering anything and everything you need to design, maintain and operate your chemical plants. In my case it was ICI's standards.

INEOS has grown through acquisition and so has a wide range of heritage companies, ICI, Bayer, BP, Dow and BASF to name just a few. It is not set up with a large corporate function generating corporate standards to be applied across the all locations.

However in the last 5 years INEOS has started to produce INEOS Group Guidance Notes (IGGN's) as a way of capturing best practice on a specific SHE or Engineering topic. The list has grown whilst we have been developing and deploying the INEOS Enterprises SHE & Engineering Requirements System and the list current stands at 21 IGGN's shown in Figure 4.

Figure 4 – INEOS Group Guidance Notes Index

INEOS Group Guidance Note	
OPS – SHE – 01	INEOS Group SHE Performance Definitions
OPS – SHE – 02	INEOS Group 20 Safety Principles Audit Protocol
OPS – SHE – 03	Clamp Recommendations
OPS – SHE – 04	Best Practice Guide for Work on Live High Pressure Systems
OPS – SHE – 05	Guideline for Management of Change (MOC)
OPS – SHE – 06	Safety Critical Alarm and Safety Critical System Definitions
OPS – SHE – 07	Operating Envelopes
OPS – SHE – 08	Process Safety Inspection Reporting
OPS – SHE – 09	Process Safety Principle 9.3 Guidance Note
OPS – SHE – 10	Management of Corrosion Under Insulation
OPS – SHE – 11	High Pressure Water Jetting Guideline
OPS – SHE – 12	INEOS Group Life Saving Rules
OPS – SHE – 13	Goods and Passenger Lifts
OPS – SHE – 14	Permit to Work & LOTO
<i>OPS – SHE – 15</i>	<i>Lightning Protection</i>
<i>OPS – SHE – 16</i>	<i>Contractor Safety</i>
OPS – SHE – 17	Assessment of Process Hazards - HAZOP
OPS – SHE – 18	HIPOs Raising Awareness
OPS – SHE – 19	Lifting Practice Learnings
OPS – SHE – 20	Safety Integrity Level - SIL SIS
<i>OPS – SHE – 21</i>	<i>Plant Start-ups</i>

Note – the IGGN’s shown in italics are in development and not yet issued.

Why Introduce a New System? – The Problem

The old INEOS Enterprises SHE and Engineering System was very closely linked to the ex-ICI systems from its UK origins. Enterprises never had its own set of standards. Via a service level agreement we had access to our sister INEOS company, INEOS Chlor’s standards, now called ICER’s (INEOS Chlor Engineering Requirements), these were very UK focused and referred to systems and procedures built up over the years primarily at the Runcorn site.

The previous assessment process also came from this ICI and INEOS Chlor background and was focused on UK legislation, standards and procedures that could not easily be transferred to a range of assets across Europe. Add to this the fact the historic assessment only covered 3 key roles (Responsible Person Operating, Asset Engineer & Basis of Safety Engineer). It had a very basic competence assessment process, where only 4 general questions were asked of these 3 key roles at each site. This was recorded and signed off by the Business SHE Manager and the appointment signed off by the Operations Director. This whole process seemed a bit superficial and was almost a box ticking exercise, supported by the fact no-one ever failed their assessments (not necessarily unexpected if initial recruitment systems are suitable) and there were never any actions from the assessments.

INEOS Enterprises had grown by both acquisition and internal INEOS wide reorganisation and now had moved away from its focused, ex-ICI heritage to a more European based portfolio with heritages from either historic INEOS companies or new acquisitions. For example INEOS Compounds joined INEOS Enterprises after the sale of the Films business that made up INEOS Films & Compounds. INEOS Solvents Germany GmbH was created after the purchase of 2 sites in Germany previously owned and operated by the South African based SASOL Ltd.

A usual question from new acquisitions was how does INEOS Enterprises want things done? Can I have a set of rules or procedures we now have to follow?

As you can see from Table 1 the range of sizes of the organisations and the different locations means we needed a system that could cope with these variations yet still lay out a clear set of SHE & Engineering Requirements that had to be covered by the local site systems. We also wanted a more robust competence assessment process for the critical management roles in relation to process safety.

Some sites have had questions from local regulators regarding formal assessment for engineering and management roles, which have been difficult to answer, other than to say we appoint appropriate people to these key roles. So the new system had to be more robust in this area.

SHE & Engineering Requirements Development – The Challenges

Link to INEOS 20 Principles

Since the introduction of the 20 Principles and then formal auditing process the profile and significant of these SHE principles has rightly grown. We have worked hard to integrate these into all stages of our operations. This has included delivering training to all staff on what they are and how their own roles link with the 20 Principles, updating internal incident investigation, sharing and cross business SHE alerts to highlight which 20 Principles failure contributed to the incident.

However, the previous ICI INEOS Chlor heritage standards had no mention of the 20 Principles or the systems required to meet the minimum requirements, or achieve a “blue” score within the audit schedule. The new system had to be closer linked to this vital part of our safety management system.

Coping with SEVESO & Non-SEVESO Sites

As can be seen from Table 1, 4 of the 19 sites that make up INEOS Enterprises are not covered by the SEVESO directive. The new system needed to be able to cope with SEVESO and non-SEVESO sites and not set overly onerous standards for the non-SEVESO assets that do not have the same range of hazards as the SEVESO sites.

Coping with an Entrepreneurial Organisation

INEOS Enterprises was changing into an organisation where its diverse business tubes could come and go over the years. This was supported by a minimal central organisation, currently we have 20 people in such roles including the board. As such the updated INEOS Enterprises SHE & Engineering Requirements had to cope with business tubes or sites coming and going. It had to set high level standards or “Requirements” but allow each business tube, or even each site to have its own systems that as well as meeting their own requirements, including varying national regulations, met the central requirements.

It not only needed to achieve this but had to achieve this with minimal effort for all concerned both centrally and within the business tubes and sites.

Coping with Different Sized Organisations

The new system had to cope with very small sites where staff have to wear multiple hats, or where activities that larger sites would have in house have to be contracted out. Yet it also had to cover larger sites with well-established systems and procedures and not add further complexity to those systems.

Where it fits in the INEOS Enterprises SHE Management System

The new INEOS Enterprises system had to be part of a coherent SHE Management model that started with the SHEQ (Safety, Health, Environment & Quality) Policy, included the 20 Principles and the IGGN's. At the time of development the Life Saving Rules had not been issued.

Better Competence Assessment & Records

A more thorough competence assessment system was needed which assessed individuals on a wider range of topics. This had to be flexible enough to cope with the varying technical aspects of each site. The hazards and therefore control measures needed for a PVC compounding operation are different to those required for an Ammonia and Nitric Acid plant. It had to take into account knowledge of national regulations and also check that INEOS systems were fully understood, a) because these were developing and some site managers already in INEOS had difficulty keeping up with the changes and b) for sites that come from acquisition that have no prior knowledge of the INEOS systems.

The new system had to have more extensive records of this competence assessment, which could be stored as part of the appointment process so these records would be available for regulators and auditors to review. It had to include not just knowledge and skill requirements but include behavioural elements as shown by examples of past behaviour under certain circumstances and as such be a true competence assessment.

Formal Appointment

We wanted to retain an element of formal appointment to key roles so that individuals were clear of their responsibilities and ensure this was granted by a board member. Key to this was ensuring the responsibility for SHE and Engineering standards sits clearly with the Asset Manager (in other places called Site Manager, Site Director etc). To this end we wanted certain appointments to be granted by the Asset Manager for responsibilities he delegates to others functional experts in his team.

We wanted a level of independence so in most cases the competence assessor should be different from the final appointer to role.

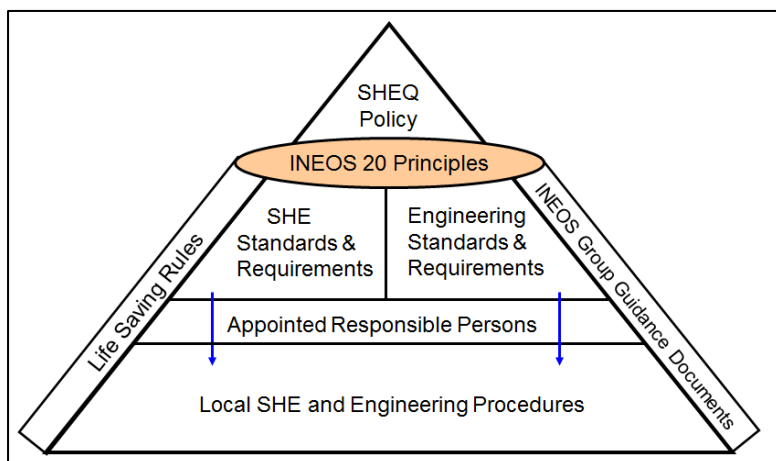
The old system had no time limits, so the appointment would last for as long as the incumbent remained in that role, with no re-assessment or re-appointment. We felt this was out of step with competence management systems appropriate for high hazard assets.

The New SHE & Engineering Requirements System – The Solution

SHE & Engineering Requirements Document

To meet these challenges a new set of SHE & Engineering Requirements were written. They have at their heart the INEOS 20 Principles and are designed to be part of a coherent Safety Management System (SMS) that copes with the challenges of the current and future INEOS Enterprises activities. This SMS can best be described in the pyramid shown in Figure 5.

Figure 5 – INEOS Enterprises Safety Management System



This starts with a common Enterprise wide SHEQ policy document, stating our aims and signed by board members. Next comes 20 INEOS SHE Principles. Delivering and expanding on those is the INEOS Enterprises SHE & Engineering Requirements. These are translated into Local SHE & Engineering procedures by the formal appointments defined within the Enterprises SHE & Engineering Requirements. This SMS is supported by the Life Saving Rules on one side and the IGGN's on the other.

The top 4 layers and the supporting sides are common for all Enterprises locations. The lower level being potentially different in each location. This allows for differences required by different national legislation or for differences due to the different hazards in each location or whether the site is SEVESO or not.

The SHE & Engineering Standards & Requirements are then detailed. This is done by grouping them in relation to each of the 20 Principles shown in Figure 2. Each principle is covered in a single page of A4 to make the document readable. Each page starts by describing what that principle means in practice, giving examples. It then has a series of bullet points defining the Minimum Enterprises Requirements eg "All sites will maintain a current and complete asset register including a spares inventory". These minimum requirements apply to all sites whether SEVESO or not. There is then an additional set of requirements under the title Additional Best Practice Guidance. These highlight what additional standards and requirements must be followed for SEVESO sites.

Key Roles and their Appointment

There are 6 key roles identified within the SHE & Engineering Requirements Document.

- Asset Manager (historically Responsible Person Operating) and usually the site or plant manager with ultimate responsibility for the SHE & Engineering systems on their assets
- Asset Engineer (historically Responsible Engineer) and is someone from a professional engineering background with key responsibility for maintaining the asset integrity in order to prevent a loss of containment
- Basis of Safety Engineer this is often a senior process engineer or operations team member with responsibility for defining the safe operating limits of the assets, ensuring suitable hazard assessment has been carried out and is the guardian of the control measures put in place to prevent these from happening.
- Design Authority ensures that new designs (or modifications to existing) are carried out by an appropriate body to the correct design standards, usually this the Asset Engineer or Process Engineer for the process
- Design Verification Authority is appointed to complete independent verification of the modifications or new design being carried out. Often this can be an external individual or company
- Inspection Authority is a clearly appointed independent 3rd party, suitably qualified, experienced and accredited to carry out inspections on equipment. Often this a separate company or individual.

Appendix 1 of the SHE & Engineering requirements document includes a more detailed definition of these roles and their responsibilities. These roles have are competence assessed and formally appointed as per Table 2.

Table 2 – 6 Key Formal Appointments and their assessors and authorisers

Role Title	Assessed by	Authorised by	Revalidation Period
Asset Manager (Responsible Person Operating)	Business SHE Manager & Engineering Integrity Manager	Operations Director	5 years
Asset Engineer (Responsible Engineer)	Engineering Integrity Manager	Asset Manager	5 years
Design Authority	Asset Engineer	Engineering Integrity Manager	5 years
Design Verification Authority	Asset Engineer	Engineering Integrity Manager	5 years
Inspection Authority	Asset Engineer	Engineering Integrity Manager	5 years
Basis of Safety Engineer	Business SHE Manager	Asset Manager	5 years

This system ensures that responsibility is cascaded through the organisation on function lines. The Asset Manager is competency assessed by someone in a corporate central role with the appropriate skill sets for that assessment and the final sign off sits with the board member with specific SHE responsibilities, the Operations Director.

The Asset Manager then delegates the detail of his responsibilities through the Asset & Basis of Safety Engineers, which he formally appoints after they have been competence assessed by some independent of the site and with suitable skill for that assessment. Further reinforcing the fact he has ultimate accountability for these topics.

The Asset Engineer is then responsible for the systems in his site for ensuring design and inspection is carried out correctly so carries out the assessment process for those 3 roles, but formal authorisation sits with the central Engineering Integrity Manager to ensure suitable consistency of approach across INEOS Enterprises.

A timescale for the appointment has been set at 5 years. We felt this a suitable compromise that did not create unnecessary work (with 19 sites this means 114 assessments so if spread over 5 years around 20 a year) yet still could ensure people were remaining competent in role and keeping up with changes in national regulations, INEOS standards and industry best practice. It also allowed for a full cycle of INEOS 20 Principles audits to take place, which would give a good indication of the health of the systems the appointees are responsible for.

It is through these roles that the SHE & Engineering Requirements are delivered by the local systems and procedures. Therefore ensuring competence of those key roles is vital to ensure the safety management system works as expected.

Competence Assessment Proforma

A tabular style proforma was developed for each of the 6 key roles. Split into sections relevant to that role and covers topics such as education, previous experience, knowledge of INEOS Enterprises systems, understanding SHE risks on their asset etc. It acts as a prompt for the assessors to have an in depth discussion with the appointee. Specific knowledge or skill requirements have been identified and evidence is looked for to assess against those requirements. Notes are taken ensuring specific examples raised during the discussions are recorded. An example page of the assessment proforma for the Asset Manager role is shown in Figure 6. The style of the assessment was always expected to be a discussion, rather than a series of question and answers or any kind of test.

Figure 6 – Extract from the Asset Manager Assessment Proforma

Knowledge or Skill Area Required	Specific Knowledge or Skill	Evidence of Knowledge or Skill	Development Activity Required	Date Comp/ Sign off
Safety, Health and Environment				
Safety Management and legal requirements	Management of Occupational SHE Course. Relevant Seveso /COMAH report INEOS Enterprises SHE & Engineering Standards and Requirements Environmental consents – air/water/soil Wider legal compliance			
Site Instructions/Procedures	Understanding of all relevant SSOW procedures and instructions How are these audited and maintained/updated for the site Particular reference to MOC, PTW and RA			

Roll Out of the Assessments – Making it Work

We realised that it would not be possible to complete all 6 competency assessments during once site visit. So we focused our efforts on first appointing the 3 key roles of Asset Manager, Asset Engineer, and Basis of Safety Engineer.

Typical Assessment Visit

This usually comprised of a 2 day visit to the site by the Business SHE Manager and the Business Asset Integrity Manager. We would undertake interviews with the nominated staff for the first 3 key roles. Each interview took around 3 hours with the Asset Manager interview being done jointly. We then split up for the Asset Engineer and Basis of Safety Engineer discussions.

Overall Timescale

We significantly underestimated the overall elapsed time to complete the process. With the fact it relied on 2 key members of the central team, then being able to fix dates with 3 key member of staff on the site meant it sometimes took a while to finalise dates which then could have to be moved due to other issues (central staff being involved in due diligence for new acquisitions as an example) or operational issues on the assets.

Outcomes

None of the appointees have failed an assessment as yet. However through the structure of the assessment proforma a number of training or coaching opportunities have been identified for certain individuals. This is expanded upon in the “Feedback from Appointees” below.

We now have a what we feel is a fit for purpose SHE Management System, which is fully integrated with the wider INEOS SHE systems and can cope with the range of businesses both in terms of location, size or whether SEVESO or not. Appointments are in place for over 60% of roles and a robust formal competence assessment with follow on development plan is at the heart of this system.

Learning Through Doing - Lessons Learned So Far

Lessons from the Assessors

Unfortunately the 2 key assessors do not speak much German or French, let alone Dutch or Swedish. Meaning the assessments had to be carried out in English.

The discussion based format of the assessments meant that as the conversation flowed the assessor had to jump around the assessment proforma taking notes. After the first few assessments we realised there appeared to be a more logical flow for the conversation to take and updated the proforma accordingly.

As stated already above the time to complete the competency assessments is not the issue. Making sure assessments are written up promptly, when other priorities are raised when you return to your office can sometimes be an issue.

We then sent draft copies of the assessments to the appointee's to make sure our understanding of the discussions and systems used on the sites was correct. Obviously reading and returning these was not everybody's first priority so inevitably this caused some delays.

Then assessments had to be raised in our appointments database, a Lotus Notes database which not all Asset Managers had access to due to the legacy IT platforms operated in some locations. This required a work around so approval could be via email which was included in the assessment record, generating this work around causing another small delay.

Despite sending through copies of the assessment forms to be used and the SHE and Engineering Requirements Document itself there were some occasions when the assessment process doubled up as coaching on what the requirements were or meant, especially for recently acquired locations. This was not a significant issue and this coaching has proved well worth the extra effort.

An unexpected benefit has been in a better understanding of the sites and their systems by the Business SHE Manager and Asset Integrity Manager, which has additional benefits for future interactions with those sites.

A key action from each assessment is for the site to carry out a gap analysis against their existing systems versus the SHE & Engineering Requirements.

Feedback from Appointee's

Most appointee's found the process on the whole less difficult than they initially imagined.

Many appreciated the suggestions of training or further coaching that came with most assessment processes and I have seen evidence of people then attending the training that was suggested. The biggest area we have feedback on is the focus on ensuring the individuals in these 6 key roles stay up to date with legislation changes or industry best practice. This focus has helped many invest time into training or attending industry forums etc. The fact it is a requirement of this system helping to justify the time and expense involved. This has helped to counteract something we have seen in many locations where people new into the company or into the role get formal training but once you reach a certain level or have been in role for a period of time this training falls by the wayside. How then can we expect these people to stay current in their respective fields, let alone truly be competent.

Some appointees made comments about the fact this rigorous process with involvement of board members and senior central staff gave a very strong message in terms Leadership in Safety, both Process and Behavioural and felt this was recognised by those then appointed within their teams. This was seen as a good example of making SHE a priority and saying that competence in these roles is important to our business. Something we never explicitly set out to achieve but a welcome by-product none the less.

Gap Analysis against Enterprises SHE & Engineering Requirements

Here the pace of response and then actions to close any gaps identified has been the most variable. Some sites have completed the analysis and are well on the way to closing the gaps (often due to the integration with the 20 Principles, meaning the same action is required from one of these audits). Other sites have yet to complete the gap analysis. This is something that requires ongoing monitoring and management through each of the business tubes that make up INEOS Enterprises. A task in itself that is not be underestimated.

Next Steps – Making it Better Next Time Around

Missing Pieces of the Jigsaw

At the time of writing all sites have had assessments and appointments completed for the first 3 roles, Asset Manager, Asset Engineer, and Basis of Safety Engineer. However as this has taken over 18 months of elapsed time inevitably some members of staff have either changed roles or left the company, so creating further missing bits in the jigsaw to be filled in during 2016.

In addition INEOS Enterprises portfolio has changed during the initial implementation. One site being moved into a Joint Venture and another being purchased, so no net change at 19 locations, but a new site to explain the system to and complete initial assessments for. This will be a good test as to how flexible the system can be.

Completion for the other 3 roles, Design Authority, Design Verification Authority and Inspection Authority has been fully completed at some sites and is just starting at others. Again the aim is for this to be completed across the board during 2016.

Closing the Gaps

As stated before a key requirement is to undertake a gap analysis against the SHE & Engineering Requirement document and then develop an improvement plan to close any gaps for a particular site. Completion of the gap analysis is not yet complete for all locations, let alone completion of the actions from that analysis. Given the lessons learnt from this process so far we are ensuring action plans are realistic whilst at the same time not letting critical requirements be left undone.

Thoughts for Round 2

Although we have yet to complete every appointment for every site as yet, we have already been considering what to do when the 5 year re-appointment becomes due.

Including a review of the sites 20 Principles audit results as part of the re-appointment process will be included as these audits give a good indication as to the health of those systems the key appointment holder are responsible for.

The IGGN suite has been expanded whilst we have been rolling out this process. They now contain not just guidance on SHE systems but have been updated to make some requirements mandatory. This potentially means changes are required at sites systems in order to comply with these mandatory requirements. Appointee's within the SHE & Engineering Requirements have key responsibilities in delivering the changes needed so the assessment process needs to be updated to better check understanding of the IGGN's and how they are progressing closing any gaps at their sites.

Options for the re-appointment process have included :

- Complete repeat of original assessment via face to face interviews
- Review assessment noting changes and update records via shorter face to face interviews or even over the telephone
- A more question and answer based re-assessment process, quizzing the appointees on their understanding of certain key topics
- Appointee submits documentation to prove they understand their accountabilities under the INEOS Enterprises SHE & Engineering Requirements and give examples of how this is achieved on their site
- Appointee gives a face to face presentation to suitable central or site staff showing they understand their accountabilities and can give examples of how this is achieved, plus face questions from the panel. This could be focused on a specific a hazard on the site, how it has been assessed and what control measures are in place.

This is yet to be decided, and we have time before a decision needs to be made. Perhaps lessons from that process will be a paper at a future HAZARDS conference....

Conclusions

The system described in this paper is not rocket science nor does it include any major cutting edge techniques. Instead it is a pragmatic, fit for purpose system that we believe helps to underpin our SHE culture. It dovetails with the wider INEOS

systems and allows for integration with a range of local site systems to give flexibility in how the requirements are met across the diverse portfolio that makes up INEOS Enterprises

Its implementation is not totally finished at the time of writing, but already it has helped new acquisitions integrate into the INEOS systems more effectively and has generated improvement plans that sites are working through. Completion of these action plans will not only align sites with the INEOS 20 Principle requirements but ensure that they have more robust SHE management systems which should reflect in better scores in the next audit round.

Key roles within the process have been robustly competency assessed and formally appointed to role.

More importantly by complying with the INEOS Enterprises SHE & Engineering Requirements system we believe all INEOS Enterprise locations will minimise their risk of a major SHE incident, process safety or otherwise. Something that anyone working in our industry would strive for.

Acknowledgements

I cannot take credit for the development of this updated INEOS Enterprises SHE & Engineering Requirements System myself. I was involved in its creation and as Business SHE manager in its implementation. However I must recognise my colleague, Mr Neil Brow, Business Engineering Integrity Manager (amongst many hats he wears in our central organisation) as being pivotal in this new systems development and implementation.

I must also thank INEOS Enterprise for allowing me to submit a paper on this topic to a wider audience.