

# RE:ACTION

Issue 21

April 2011

## Ageing Plant & People Special

Launch of Member 2 Member Benefits

What is meant by “Ageing Plant”

Will you have a skills gap?



Issue 21 sponsored by:



# Learn how to implement the latest Occupied Buildings Guidance.



CHEMICAL INDUSTRIES  
ASSOCIATION

## Occupied Buildings Seminar

19th May 2011

Textile House

9:15am – 4pm

Following the successful launch event of the Occupied Buildings Guidance in October 2010, YCF and the CIA are delighted to deliver the follow up seminar.

Experience a series of presentations and workshops that will focus on good practice from within process industries and which will supply you with the information and tools you need to implement the guidance effectively.

Networking will be an integral part of the day where you can share experiences with fellow delegates and experts from the industry.

This event is chargeable at £90 +VAT for members of the CIA or YCF. Non-members £120 +VAT.

To book your place, please e-mail: [WrightM@cia.org.uk](mailto:WrightM@cia.org.uk) for a booking form or download from the YCF website: [www.ycf.org.uk](http://www.ycf.org.uk).



This event is sponsored by



## Draft Programme

09:15	Registration and Coffee
09:45	Welcome and introduction – Jackie Coates, CIA
10:00	CIA Occupied Building Guidance – the principles. Ken Patterson, Yule Catto
10:30	HSE Expectations of site assessments, Mark Bishopp, HSE
11:00	The Structural Implications of Upgrading Existing Buildings, Trevor Phelps, ABB Engineering Services
11:30	Coffee and breakout sessions: Experiences in site assessments and key challenges in upgrading buildings
12:20	Feedback
12:40	LUNCH and networking
13:30	Experiences of tackling OBRA from the beginning, Ian Walker, Nufarm
14:00	Challenges in assessments : Kieran Glynn, BP
14:30	A company approach to Temporary Buildings, TBC
15:00	Tea and Breakout session; Risk criteria & Temporary Buildings . The key issues.
15:40	Feedback
15:55	Summary of the Day – Jackie Coates
16:00	Close

# Welcome to Issue 21 of Re:Action

OFFICIAL YORKSHIRE CHEMICAL FOCUS QUARTERLY MAGAZINE



Welcome to our Spring edition of Re:Action.

The improved weather seems to have stimulated business in our local chemical industry with many of you reporting improved and sustained commercial sales and increased manufacturing outputs. The government's austerity measures and increase in VAT, doesn't seem to have dampened the optimism within our industry. We hope that this positive position will continue for the rest of 2011.

The new Local Enterprise Partnerships (LEP's) continue to find their feet and direction whilst our Regional Development Agency (RDA), Yorkshire Forward, continues to run down its operations as it heads towards shutdown date of March 2012. Following the Government's announcement on the successful LEP bids, work has commenced to establish business-led LEP Boards which will be responsible for developing the LEP business plans. YCF will continue to keep close contact with the LEP's to assess where added value could be achieved by our members.

The CLP registration at the end of 2011 seems to have run smoothly for most of our members, with the focus now being directed towards safety data sheets (SDS). This will certainly be one of our focus points of our REACH meetings in 2011.

One date to draw your attention to is the 19th May, where we will be once again teaming up with the CIA to arrange a follow up event for the industry on "Occupied Buildings". Information can be found on page 2 or on our website.

As you may have noticed, this edition is our first sponsored newsletter. YCF very much appreciates the support and sponsorship given by ABB, both with this edition and at other events we have organised. This support helps YCF to attain their goal to be financially self sufficient and continue its support of the industry in this region.



**YORKSHIRE  
CHEMICAL  
FOCUS**  
*your chemical future*

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# Member 2 Member Benefits Service

We are pleased to announce the relaunch of our member 2 member benefit service.

We are confident that you will find this service useful. Should you wish to take advantage of the generosity provided by your fellow members, please contact them directly. Please note these offers are only open to YCF members. Companies providing benefits have the right to check your membership status.

If you have a service you would like to provide to fellow members, please contact Lisa Buck on 01484 346540 or email [lisa@ycf.org.uk](mailto:lisa@ycf.org.uk).

To read more about what the companies below have to offer, please visit our website [www.ycf.org.uk](http://www.ycf.org.uk) and click on member 2 member benefits.

**Free** initial consultation to identify your companies needs.

**Exponent**  
International Limited

**Free** initial consultation and YCF members have access to the **online Knowledge Library**

JSC*i*

**Free** initial consultation to discuss any issues you may have.

**RAS**

RISK & HAZARD MANAGEMENT

**10% Discount** to YCF members not currently utilising our services.

**SampleRite** LIMITED

**Free** information share, **discounts** for new business leads and early payments, commission payable.

Sub-Micron Industries Ltd

Your company name here

-  
What can you offer fellow YCF members?

When making your enquiry please quote the YCF member 2 member benefit service. Thank you.

# YCF Member Survey Results - 2011

Thank you to all who took the time to answer the YCF Member survey e-mailed out at the end of February. Below are the main findings:

- The main reason companies joined YCF was for events, networking and knowledge sharing.
- YCF members advised that they most value our Network meetings and our Re:action magazine.
- The top short term priorities for members are regulation and legislation issues, followed by business growth.
- Event topics that are of high interest are regulation & legislation updates and awareness plus networking with other manufacturers and support services, closely followed by sustainability issues.
- There is no clear winner for the main purpose companies use YCF, membership contact, health safety and environment and regulation were in the top few.

YCF will use the feedback from this survey to help shape the future of our organisation and to assist our members the best we can.

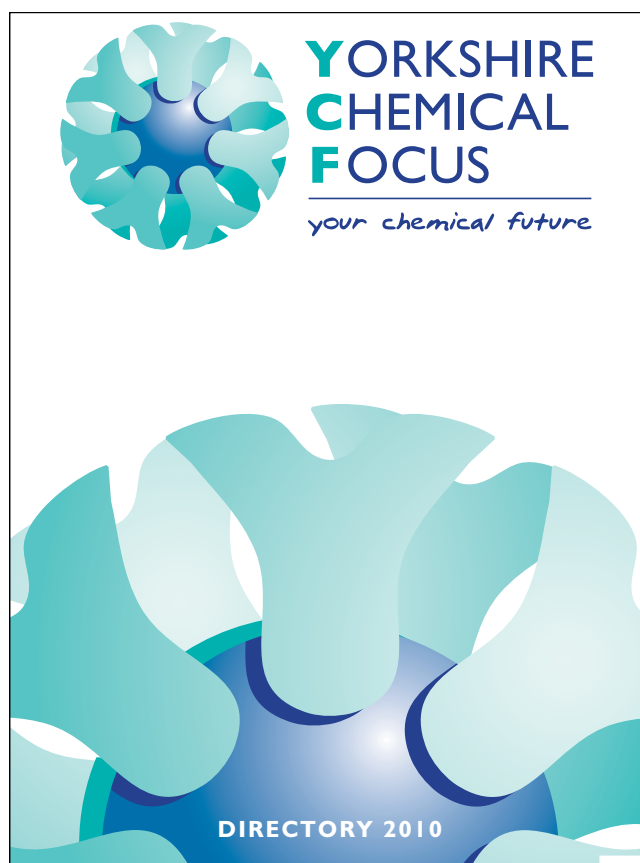
If you wish to provide further feedback, please e-mail [lisa@ycf.org.uk](mailto:lisa@ycf.org.uk)

## The 2011 YCF Directory will be published this summer.

Over the coming weeks you will be receiving a phone call from Distinctive Publishing, to see if you would like to enhance your listing.

All YCF / PCP members receive a free listing in the directory.

If you wish to contact Distinctive Publishing, please e-mail [john.neilson@distinctivepublishing.co.uk](mailto:john.neilson@distinctivepublishing.co.uk).



# Yorkshire Chemical Focus Members Collaborate



Following their recent purchase in 2009 of the McIntyre Group, chemical company **Rhodia** decided to transfer the manufacture of their amphotoacetate products from their site in Wortley, Leeds to their newly acquired site in Holywell Green, Halifax. The existing Halifax site assets were unable to accommodate this planned manufacturing shift and as a result a new facility had to be constructed within the new Halifax site boundary.

An existing warehouse building was earmarked for the new facility which will manufacture surfactants for the home and personal care market – a market in which **Rhodia** is one of the leaders worldwide.

**Manrochem Limited** of New North Parade, Huddersfield were appointed to carry out the detailed front end feasibility studies, the detailed design and are currently undertaking the engineering procurement and construction management for the project. [www.manrochem.co.uk](http://www.manrochem.co.uk)

Following over 12 months of detailed estimates, quotations and negotiations, **Richard Alan Engineering Company Limited** have been successful in winning the orders for the manufacture and installation of the structural and access steelwork, new pipework and plant installation and also for the removal and re-instatement of existing plant and equipment from the Leeds site. With a combined order value of over £1.4 million **Richard Alan Engineering** are delighted to be involved with such a prestigious project and look forward to a safe, successful and profitable outcome for all involved. [www.richardalan.co.uk](http://www.richardalan.co.uk)



The above collaboration between three members of the Yorkshire Chemical Focus Group highlights the advantages of working together with local professional companies, who are experienced in operating within the Chemical Manufacturing Industry.

- Richard Alan Engineering Company Limited have been working with both the consultant and client for over 12 months producing capex estimates and forecasts before the project received the green light. Richard Alan Engineering then spent over 6 months producing competitive tenders for various parts of the new project before success in gaining orders. To date, we are contracted for manufacture and installation of structural and access steelwork, pipework fabrication and installation and removal and relocation of plant and equipment from the Leeds site to the Halifax facility.
- Richard Alan have four independent teams working on the Rhodia contract with steelwork and pipework fabrication being carried out at our extensive workshops in Shaw Cross, Dewsbury. Vessels, equipment, steelwork and pipework being installed at Halifax by a third team and the removal and relocation of Leeds plant and equipment by the fourth.
- The total weight of the galvanised structural and access steelwork is approximately 85 tonnes with the pipework totals being in excess of 6,000 metres. The pipework includes stainless steel, carbon steel, PTFE lined carbon steel, polypropylene and galvanised mild steel. The total order values on the project are currently in excess of £1.4 million.
- Richard Alan personnel are fully qualified in all areas of fabrication and installation and have just been awarded commendations for completing 10,000 man hours worked without any lost time health and safety incidents on the current project. The operatives working on the site installation have all been rewarded with a personal gift for this achievement by the client and management team.
- The success of the project is down to the total commitment of all the team at Richard Alan Engineering and with the active back up of all the other Group companies, Richard Alan are perfectly placed and have the pedigree, to undergo “turnkey” and multi discipline projects. [www.richardalan.co.uk](http://www.richardalan.co.uk)



# Tradebe expands its range of specialist treatments

Tradebe acquired Britcare Limited a company that provides collection and disposal services for clinical waste through a unique processing technology and range of specialist vehicles. This new division for Tradebe will continue to operate from their existing facilities in Birmingham and Doncaster.

Following this acquisition Tradebe UK now has 10 strategically located sites that offer a comprehensive range of treatments, recovery and recycling options for the disposal of hazardous and non hazardous waste.

Announcing the latest acquisition Mark Olpin, UK Country Manager said: "We are excited about this new acquisition for Tradebe, both in terms of operating in a new and sustainable waste management sector, but also with the synergy benefits available from our existing operations to be able to offer an unrivalled range of services to the healthcare sector. We anticipate significant growth for this new division by being able to provide the full spectrum of waste management services to the NHS and Healthcare providers".



Bruce Wilson, Sales Manager at Dinnington Recycle Centre added "The acquisition is not only a great addition to the Tradebe Group and its portfolio of treatment technologies, but also our continued growth and presence within the Yorkshire area".

Tradebe is one of the largest treatment companies in the UK and offer a fully integrated waste management service through its network of treatment and transfer station sites using a number of inter-linked process technologies for all major waste types including:

- Aqueous waste – Acid/Alkali
- Drum and Packaged Materials
- Hydrocarbon contaminated wastes
- Solvent-based waste streams
- Contaminated solids
- Process residues

They operate one of only two hazardous waste incinerators within the UK and were also issued the first UK permit for a vacuum Thermal Desorber at their treatment facility at Dinnington (previously featured in Re:Action magazine).

The unit has a capacity of 15,000 t.p.a. for the treatment of problematic oily solids and sludges. It works by heating the organic contaminated solids to remove the oil and solvents for recycling and in many cases, the solids for re-use as aggregate replacement.



**TRADEBE**

Managing Waste – Providing **Solutions**

Please call us for further information or to discuss your waste management requirements on 0845 603 2893 or e-mail [uksales@tradebe.com](mailto:uksales@tradebe.com).



## What is meant by 'Ageing Plant' ?

The term 'ageing plant' can be misleading; it is not just related to the age and design life of a plant, system or piece of equipment. HSE defines ageing plant as:

**Overall, ageing plant is plant which is, or may be, no longer considered fully fit for purpose due to deterioration or obsolescence in its integrity or functional performance. 'Ageing' is not directly related to chronological age.**

### Why is it a problem ?

Recent research shows that 50% of European major hazard loss of containment events arising from technical plant failures were primarily due to ageing plant mechanisms such as erosion, corrosion and fatigue. Between 1980 and 2006, there have been 96 major accident potential loss of containment incidents reported in the EU which are estimated to be primarily caused due to ageing plant mechanisms. These events equate to an overall loss of 11 lives, 183 injuries and over 170€m of economic loss. In the UK, between 1996 and 2008 there have been 173 loss of containment incidents that can be attributed to ageing plant mechanisms.

### What are the COMAH Competent Authority's plans ?

The COMAH Competent Authority has identified ageing plant as a strategic priority within the CA's workplan. The CA's ageing plant programme comprises three main elements:

- a) June 2010 – publication of new guidance for industry; 'Managing ageing plant – a summary guide' - see p147 of the pdf at <http://www.hse.gov.uk/research/rrpdf/rr823.pdf>
- b) July – Nov 2010 – an intelligence gathering exercise at sites where the CA has little or no information on ageing plant; and
- c) June 2010 onwards – an inspection programme during 2010/11 based on what is already planned on ageing plant issues, followed in 2011 by further targeted inspection based on improved intelligence from (b).
- d) June 2010 onwards – a gap analysis on sites where the CA has carried out previous interventions on ageing plant issues.

The targeted inspection programme will be developed to assess compliance with the new guidance, and is aimed at providing assurance of the following:

- There is coordination, leadership, ownership and senior management engagement in the topics below.
- There is an asset register for the site.
- There is a plant inspection regime, and that this process is being effectively delivered and on schedule.
- There is a planned plant maintenance system which is also being delivered on schedule.
- There is an effective electrical / C & I inspection and testing regime and it is being delivered.
- There is a regime for management of obsolescent EC&I plant and systems in place.
- There are sufficient and competent resources available to manage plant ageing issues.

For more information, please visit <http://www.hse.gov.uk/>

# Managing Integrity & Reliability on Ageing Assets

by  
BG Hudson and J Walkington  
ABB Global Consulting

## Introduction

The need for continued production well into the future combined with increasing levels of regulatory compliance featuring ageing asset issues is presenting significant challenges to the Operators, Duty Holders and Stakeholders in all segments of the Process Industries. The topic of Asset Life Planning, Strategies and Extension is assuming ever increasing importance and driving the need for resource efficient solutions that satisfy the demands of all stakeholders. The 'best practice' inherent in these solutions should be of interest to all operators, irrespective of region and sector.

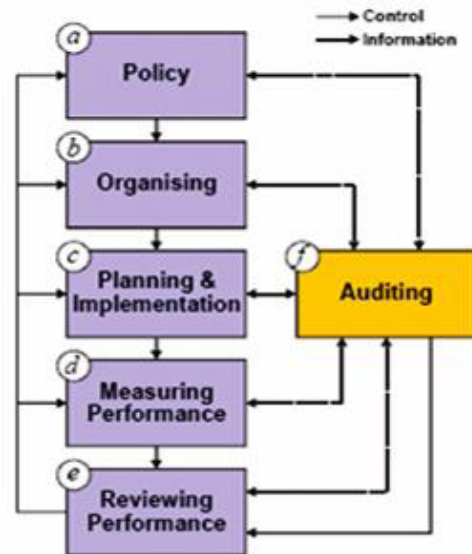
ABB has been active in the area of Asset Life studies for the Process Industry installations for many years and has experience with the same issues for high hazard oil, gas, petrochemical, chemical, pharmaceutical and power operations for over 20 years. The output from these studies presents learning opportunities for operators of Industrial facilities in all regions, particularly where the assets are already operating beyond their nominal design life.

## What are the issues that impact on Asset Life Extension?

The asset life and extension issues for areas such as process vessels, furnaces and boilers, piping systems and rotating equipment assets are becoming ever more critical for continued safe operation. Addressing these issues may not always be easy, but the investigations and solutions are generally equipment related. This is best illustrated by looking at the list of typical issues compiled from a number of asset life extension studies delivered over the last few years for Process Industry installations, ranging in age from over 30 to less than 10 years.

- Removal of redundant equipment – simplification, structural loadings or scope for uprates.
- Increased congestion of equipment from operational strategy changes or modifications.
- Replacement of obsolete equipment.
- Operation outside a defined equipment operating envelope.
- Turn down capacity of key equipment as process requirements change.
- Reducing equipment reliability, particularly machines and rotating equipment.

- Newly emerging corrosion/deterioration mechanisms, i.e. changes in process fluids.
- Integrity of minor structures (handrails, walkways, ladders).
- Neglect of utility systems (air, nitrogen, HVAC, cooling water etc.).
- High cost, usually due to age related unreliability of key systems, such as fire mains and pumps.
- Electrical power limitations affecting current and future operations.
- Compliance with current and future environmental legislation.
- Upgrading Safety equipment and Active/Passive Fire Protection to meet latest standards.
- Competencies against ageing workforce, and the need to substitute technology for skills and loss of corporate knowledge.
- Changed or reduced manning regimes and leaner organisations with increased reliance on sub-contractors.
- Lack of clarity for ownership of knowledge between operator and sub-contractors.
- Loss of 'Corporate Knowledge' and 'unfriendly' documentation systems.



**“Successful Health and Safety Management”, HS(G) 65**

Figure 1 – Asset Life Management Framework (HSE 1997)

This list illustrates how managing the impact of ageing assets is not simply equipment related, but also is highly reliant on effective management systems supported by commitment at all levels in the organisation. This clearly demonstrates the importance in the eyes of the UK Regulator of the commitment to and demonstration of capability in the management of ageing assets. This is further reinforced in Figure 1, which shows a typical process for managing asset life given in the UK Health and Safety Executive HSG65 report on Asset Life Management (2). Key areas of emphasis include clear,

open strategies and a committed, planned programme of any necessary remedial or mitigating actions.

A robust approach to the management of ageing assets is becoming a clear and consistent requirement from regulators or stakeholders. Essentially, managing asset life is not simply equipment focussed, but must take into account the full range of activities, as illustrated in Figure 2.



Figure 2 – Factors with Asset Life Management

### Basics of an Asset Life Extension Methodology

An Asset Life Extension Methodology needs to address two areas:

- The effectiveness of the management organisation.
- The integrity of the equipment relative to present and future demands.

### The effectiveness of the management organisation

There are many options for assessing Risk Management capability in terms of the people, practices, procedures and systems aspects of the current regime. Methodologies, often called Health Checks, in this area are usually in the form of a gap analysis, using a combination of quantified measures, such as benchmarking or best practice KPIs in combination with the semi-quantification of qualified assessments, using

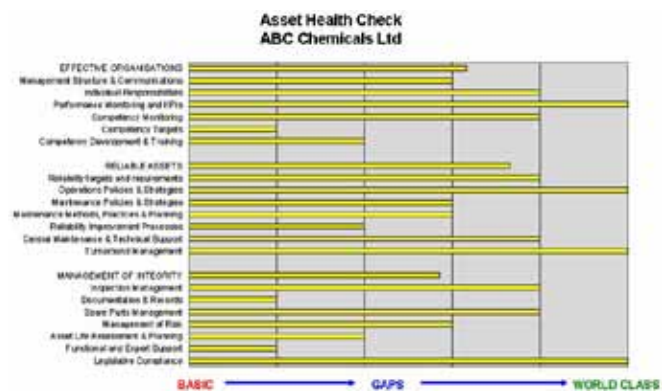


Figure 3 – Typical Gap Analysis

word models to assess areas such as the quality of the inspection process, availability of expert technical support or the levels of people competency. A typical gap

analysis could look something like that shown in Figure 3.

### The integrity of the equipment relative to present and future demands

Studying the asset life limitations for equipment requires an understanding of the likely deterioration modes and assessment of the capabilities of the equipment to resist the deterioration, largely based on a life cycle based approach and the capability of the organisation to manage the risks. A key step is to decide which systems or individual items of equipment are to be covered by the study. An obvious route is a conventional criticality assessment, maybe incorporating some assessment of vulnerability or management of risk as shown in Figure 4.

Figure 4 – Criticality with Risk and Mitigation Combined

The HSE (A) and Production (B) Consequences together with the Likelihood (C) are assessed using a conventional approach using word models ranking the scenario on a scale from 1 to 5, where 5 represents the worst case, such as an outage measured in weeks through to 1 where the outage is minimal and measured maybe in hours.

The Risk Factors (D) are assessed against a series of mitigation processes including Maintenance Policies and Practices, Operating Policy and Practices Fitness for Purpose, Predictive Maintenance, Technical support, Management of Vulnerability and Protective Systems.

This approach allows greater discrimination of criticality and allowing those issues with the highest criticality and the least levels of mitigation to be handled first.

### Factors influencing Asset Life Extension

A conventional approach to assessing Asset Life would be based on deterioration mechanisms or modes.

A typical list of the deterioration modes relevant to static equipment (vessels, piping and storage) is:

- Corrosion, particularly those arising from changing operations and production profile.
- Fatigue, particularly where corrosion and material loss results in stress increases.
- Creep.
- Structural and Fabric Integrity.
- Wear Out.
- Obsolescence.
- Thermal induced deterioration.

- Overstress as loadings change over time.
- Blockage and Choking resulting in dead legs for corrosion and overstress.
- Explosion which is an extreme view but often relates to inadequate management of risk from equipment in potentially explosive atmospheres.
- Reduction in reliability or operability.
- Compliance with legislation.

This is fine for static equipment where the consequences of failure dominate, but less helpful for other equipment groups such as rotating equipment, instruments, electrical equipment or similar systems where reliability (frequency of failure) dominates. Figure 5 illustrates a comparison of risks versus loss of integrity for equipment on high hazard duties, resulting in different risk management strategies.

<b>HIGH HAZARD, PRESSURE CONTAINING EQUIPMENT</b> High Consequences Low Likelihood	<b>OTHER EQUIPMENT ON HIGH HAZARD DUTIES</b> Lower Consequences Higher Likelihood
Fewer, but complex failure modes. <b>DETERIORATION MECHANISM LED APPROACH</b>	Wide range of complex failure modes. <b>FAILURE MECHANISM LED APPROACH</b>
Risk Management by managing deterioration (operations or environment) and pre-failure detection by inspection and monitoring (Focussed Scheme of Examination)	Risk Management by preventing failures (quality control and operations) and pre-failure detection by inspection, performance and condition monitoring (Maintenance Policy)
Complex nature of most deterioration mechanisms dictates bespoke solutions	Risk from most failures can be managed generically by following best practice

Figure 5 – Strategies for Risk Management

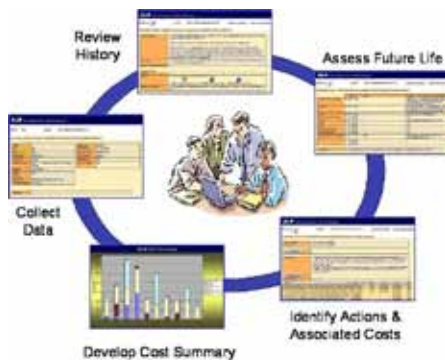


Figure 6 – Equipment Asset Life Assessment

The same approach can be used for all equipment types, but where appropriate, deterioration is defined against the performance of the various management, maintenance and engineering activities that reduce the likelihood of failure, such as maintenance practices, condition monitoring and others similar to the risk factors shown in Figure 4. In essence, physical deterioration is substituted with deterioration of the systems.

Technical State	Design	Construction	Operational & Inspection History	Deterioration	Criticality	Actions & Outcomes
Corrosion under insulation	Yes	Minor CUI possible on opening at top end of atmospheric storage tanks		Consistent on deterioration inspections		
Corrosion	Yes	Minor general corrosion expected, but significant below 50 g/m <sup>2</sup> tanks				
Welding	Yes	Flange up to 10mm being noted				
Stress Corrosion Cracking	Yes	Potential for environmental cracking from the recent oil field based mining it was susceptible to cracking - current design standard and require to stress relieved vessel. 100% PWHT/100% stress relieved vessels (both top and bottom vessels) carried out in 1994 and linked NPT in 1996				
Cracks	Yes	Some potential particulate with the several distribution pipes				
Cladding	No					
Leakage	No					
Mechanical Damage	No					
Living Contamination	No					
Comments on Deterioration Mechanisms	Background The recent risk report indicates that this vessel has the potential for environmental cracking, which is a well understood age related deterioration mechanism for atmospheric vessels. This vessel was not heat treated when manufactured making it significantly more susceptible to cracking - current design standard would require for a stress-relieved vessel. The vessel had 100% stress detector, PWHT carried out internally on vessels within both top and bottom vessels in 1994 and linked trace detection 100% carried out on vessels in 1996.					

Figure 7 – Equipment Asset Life Assessment for a typical vessel

Case Prepared																									
Complete																									
Review Outcome & Comments	Immediate replacement should be considered for the severely corroded roof, handrail, staircase and chopper plates. Extensive remediation of the panning on primary beams and major refurbishment of other corroded structural components with proper surface finish should be carried out as part of the next major maintenance campaign. Following the replacement and remediation work, routine inspection and maintenance program should be carried out annually, which includes appropriate care, remediation of the panning and replacement of the severely corroded parts. <input checked="" type="checkbox"/> Add to Report Appendix																								
Asset Life Categorisation	B Major work required within the stated plant life time																								
Sub-Categorisation																									
Opportunities for Improvement	<input type="checkbox"/> Add to Report Appendix																								
Each action given a cost and date																									
<table border="1"> <thead> <tr> <th>Action</th> <th>Type</th> <th>Cost</th> <th>Due</th> <th>By</th> <th>Responsible</th> </tr> </thead> <tbody> <tr> <td>1. Replace the severely corroded components and remediation on panning</td> <td>Actions required</td> <td>300000</td> <td>2006</td> <td>Plant</td> <td>Client</td> </tr> <tr> <td>2. Spot repair of the corroded components</td> <td>Actions required</td> <td>70000</td> <td>2010</td> <td>Plant</td> <td>Client</td> </tr> <tr> <td>3. Spot repair and remediation on panning</td> <td>Actions required</td> <td>200000</td> <td>2011</td> <td>Plant</td> <td>Client</td> </tr> </tbody> </table>		Action	Type	Cost	Due	By	Responsible	1. Replace the severely corroded components and remediation on panning	Actions required	300000	2006	Plant	Client	2. Spot repair of the corroded components	Actions required	70000	2010	Plant	Client	3. Spot repair and remediation on panning	Actions required	200000	2011	Plant	Client
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3. Spot repair and remediation on panning	Actions required	200000	2011	Plant	Client																				

Figure 8 – Actions and Outcomes for a typical structure

However, the basic process for assessing the equipment integrity, irrespective of equipment type is fairly standard and is shown in Figures 7, 8 and 9. Figure 6 shows the basic process and Figures 8 and 9 some detail from the individual stages.

Figure 7 illustrates an assessment of asset life of an item of equipment, in this case a deteriorating vessel.

The process of establishing the technical specification for the vessel, the original design criteria, construction materials and operational/inspection history is not as time consuming as it might appear and can often be achieved electronically or worst case as a clerical exercise. The deterioration stage is similar to that used for a RBI (Risk Based Inspection) study and is a top down approach rather than a remnant life assessment. The difference between a top down approach and a remnant life assessment will be explained later.

The deterioration review leads to the identification of actions either to manage the risk in terms of best practice actions from the gap analysis, further activities to clarify the risk, such as further inspections, or repair/replacement activities. Each action is allocated a cost and an implementation date, such as that shown in Figure 8, and this allows the production of a budget histogram.

### Asset Life Extension and Remnant Life

The methodology and approach to asset life extension is often confused with and not the same as a remnant life assessment.

Effectively a remnant life assessment is an estimate of the remaining life by calculation or quantification of the effect of the deterioration mechanisms in comparison with the original design. They are governed by specific guidelines and standards, such as API RP 579, for each type of equipment and can be extremely time consuming.

The principal difficulties with remnant life assessments can be summarised below:

- Remnant Life assessments depend on predictable (usually linear) deterioration and consistent operations.
- Hence they are only sensibly accurate over short time periods and usually only add value towards the end of the Asset Life Cycle as shown in

Figure 9.

- The accuracy needs to be greater than the shutdown interval.
- They need a lot of fundamental design information to do the calculations for each deterioration mechanism.
- Our experience suggests that it is best to only use them when you have to!

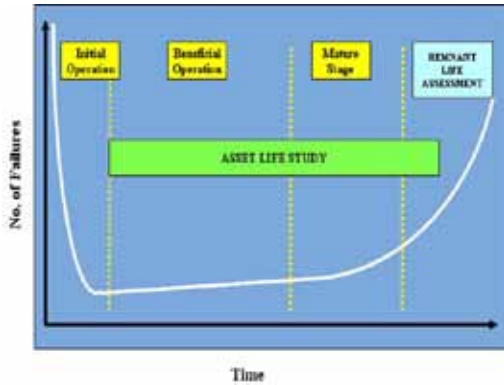


Figure 9 – The Asset Life Cycle

An alternative to the conventional remnant life assessment is the Top-Down approach. Here, starting from the normal design life, taken from design standards or best practice, the impact of deterioration mechanisms is estimated and an assessed life produced. This can appear to be a rather crude estimate, but when the limitations and accuracies of conventional remnant life calculations are taken into account, it is certainly comparable and has the considerable advantages of speed and much lower resource usage. Top-Down approaches can give the impression that they are superficial and do not investigate the issues in sufficient depth. However, when they are done properly, they go onto the same level of necessary detail as other approaches, but only to the level of detail required to justify the required asset life extension. The fundamental objectives of any rigorous top-down approach are to avoid work that does not add value or simply tells the operator what they already knew! In effect, this approach takes the desired life extension date and assesses the reasons why it should not be suitable for operation to that date. If detailed calculations are required, then not



Figure 10 – Maintenance Strategies for Ageing Assets

only is the resource usage justified, but the process can be managed to an appropriate level of rigour. It should also be borne in mind that the assessment should be proportional to the Safety, Health, Environment and

Business risks presented by the failure of the equipment.

An obvious question relates to what standards to apply when considering the asset life. Over the life of an installation, standards will change. Retrospective application of new standards can result in complex and expensive actions to maintain asset life. A better approach is to understand why the new standards were introduced and review the deterioration or future asset extension requirements in that context.

## Maintenance Policies and Practices for Ageing Assets

Figure 10 shows a classical view of the maintenance and reliability improvement journey from 'reactive strategies' to 'world class'. As assets age many operators find that the number of 'one off' equipment failures, where root cause analysis does not suggest an elimination solution, other than equipment replacement. The Asset Life Planning strategy approach as described can make a major impact in pro actively identifying equipment failures of this nature but, since the assessments are based on risk, an ability to mitigate the impact of such failures by managing breakdowns effectively, including provision of spares or contingency planning, is a key feature of any effective ageing asset management strategy.

## Conclusions

Management of ageing assets is not just about equipment. It also requires a focus on management systems. Getting the management systems right before focussing on equipment life will potentially result in less equipment replacement over the long term. Focussing on equipment only delivers value for both now and the short term. Proactive approaches around how things are done and managed are key aspects for managing assets in the longer term. In summary, effective asset management starts before equipment deterioration takes place, not after.

## References

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2. Health and Safety Executive (United Kingdom), Successful Health and Safety Management, HSG65, ISBN0717612767, published in 1997
3. Health and Safety Executive (United Kingdom) - Offshore Installations (Safety Case) Regulations 2005

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## European Commission strengthens legislation on safety at European chemical plants

In late December 2010 the European Commission presented draft legislation to strengthen rules on the control of major accident hazards involving chemicals. The revision of the so-called Seveso II Directive will align the legislation to changes in EU chemicals law and will clarify and update other provisions. This includes introducing stricter inspection standards and improving the level and quality of information available to the public in the event of an accident. The new Directive should apply from 1 June 2015.

Environment Commissioner Janez Potočnik said: "The Seveso II Directive has been instrumental in reducing the likelihood and consequences of chemical accidents. However, such accidents still occur and can often have devastating effects. We cannot compromise with safety. This is why the proposed new rules will further strengthen legislation in this area and ensure the necessary high levels of protection."

The review was prompted by the adoption of rules to align the EU classification system to the UN Globally Harmonised System. It will ensure that the same hazards are described and labelled in the same way all around the world.

Other important changes proposed include stronger provisions relating to public access to safety information, participation in decision-making and access to justice, and improvements to the way information is collected, managed, made available and shared. The proposal also introduces stricter standards for inspections of installations to ensure the effective implementation and enforcement of safety rules.

The remaining changes are technical modifications including simplifications to reduce unnecessary administrative burdens. The revision should maintain and improve current levels of protection without significantly affecting costs.

The proposed new Directive follows a review process that included stakeholder consultation and various studies on the effectiveness of existing rules and the impact of possible options for improvements.

For further information, visit: <http://ec.europa.eu/environment/seveso/review.htm>

### Background

In the UK, Seveso II is implemented through the COMAH regulations. The Seveso II Directive and its predecessor, Seveso I, were prompted by a major accident at a chemical plant in Seveso, Italy, in 1976. The legislation aims to prevent accidents involving large quantities of hazardous substances and applies to around 10,000 industrial establishments in the EU. There is a tiered approach to the level of controls, with larger quantities of chemicals subject to stricter rules. Under the Directive, operators of establishments where hazardous substances are present must notify their activities and establish a major accident prevention policy. Operators of 'upper tier' establishments must also establish a safety report and put a safety management system and an internal emergency plan in place. There are also obligations on public authorities relating to external emergency plans and public information on safety measures for upper-tier establishments, domino effects, land-use planning, accident reporting and inspections. For more information, visit: <http://ec.europa.eu/environment/seveso/index.htm>

## CLP Substance Notifications Changed to 107,067

The original number of 24,529 given for substances notified under the CLP Regulation in Europe has been corrected by ECHA.

The actual number of substances reported as of January 19 is: 107,067. Original number reported was: 24,529

Corrigendum to the CLP statistics [from ECHA, the European Chemicals Agency] says that the 3.1 million Classification and Labelling notifications received by ECHA cover a total of 107,067 substances, not 24,529 as published on January 4, 2011 by ECHA.

The change in number is because a small number of bulk files were incorrectly counted as single substances, while in fact they contained notifications for many distinct substances. The discrepancy was identified during the initial analysis of the submitted Classification and Labelling notifications.

CLP Overview: Manufacturers and importers placing on the market a hazardous substance on its own or in a mixture, or a substance subject to REACH registration, shall notify its Classification and Labelling within one month to ECHA.

# Mind the gap

The UK's science industry continues to be world-leading and as a recognised growth sector, is one which generates billions of pounds every year for the UK economy.

The chemical sector is constantly evolving and responding to market forces and therefore needs to reflect external economic conditions such as increased costs associated with raw materials and customer demands. If the UK is to continue to set the global agenda, there is a real need to ensure the appropriate workforce is in place to do so.

There has been a recent decline in the number of graduates with pure science degrees. This, combined with a lack of practical expertise amongst those entering the industry, has resulted in an estimated 25 per cent skills gap in the industry and a need for more training.

Another issue is the high attrition rate of science, technology, engineering and maths graduates who choose to pursue a non-STEM career. A recent report from the Department for Business, Innovation and Skills (BIS) found one of the key reasons for this may be an unawareness of the career opportunities available. The report suggests that STEM employers need to make their case to graduates more visibly, in terms of the attractiveness of the work they offer and its career prospects.

A number of funding initiatives have also been established, including the National Skills Academy (NSA), part of the National Skills Academy for Process Industries. The NSA will provide the Composites and Biotechnologies industries with £1.98m of funding over three years, to be matched by employers, bringing employers, government agencies and

education providers together to develop new professional standards and training programmes that meet the fast-evolving skills needs of these industries.

At the other end of the employee scale, however, is the issue of retirement age and the imminent scrapping of the Default Retirement Age (DRA). With the legislation coming into force this April, much debate has been created on the impact retaining the skills of older employees will have on the employment landscape.

A report last year from the Chartered Management Institute (CMI) and the Chartered Institute of Personnel and Development (CIPD) highlighted that only 14 per cent of employers believe their organisation is ready to cope with an increasingly older workforce. Nevertheless, the report also highlighted that some 93 per cent of employers see value in retaining the knowledge and experience of older workers.

For the chemical industry to be sustainable and meet its growth expectations, a balance of graduate and experienced workers is required to maintain the industry's global reputation. This combination of stability and insight offered by more experienced employees will ensure graduates are equipped to become the experts of the future.

Search Consultancy is a leading total recruitment solutions provider across the UK. Our Scientific Division specialises in providing all levels of scientific professionals from entry level graduates, to PhD scientists, lab managers and scientific executives. More information on Search Consultancy's Scientific Division can be found online, <http://www.searchconsultancy.co.uk/content/html/divisions/scientific.htm>, or by calling 0113 308 8058.

Bruce Swan, MSc, is the divisional manager of the Scientific Division of Search Consultancy, based in Leeds.



search scientific

# YCF Skills network meeting

On the 10th February Yorkshire Chemical Focus invited members to participate in discussions around skills gaps and shortages, future labour demand and how to engage collaboratively with the public sector in order to find solutions to the issues the sector is facing. Several members from companies of all sizes attended the meeting at the Huddersfield Textile Centre and after introductions quickly became engaged in a very lively debate around skills and education.



It is very apparent that the main problem the sector is facing in terms of personnel is the aging workforce that is due to leave or perhaps has already left the companies, taking with them a wealth of knowledge and expertise. All companies present at the meeting reported this back to us which led to the discussions around the changes in the educational sector and how recruitment campaigns should become much more innovative in order to attract the badly needed skilled workforce of the future.

These issues reflect the state of the UK wide chemical sector and are mirrored in other sectors as well. The process industries in the Humber, for example, are also facing an ever increasing demand of new fresh blood into their companies. This is at all levels of the companies, in particular the engineering, project management and operators / technicians disciplines are reporting acute skills shortages. Additionally, the newly emerging renewable sector which is very prominent in the Humber region, is arriving with such a high number of skilled labour demand that our sector is now almost competing with these new industries in terms of skilled personnel. The Offshore Wind Power projects alone will offer several hundred, if not thousands, positions for engineers, technicians, managers, administrators, environmental assessors and finance experts. The list goes on and on.

This in itself is very good news for the UK but how much are Yorkshire companies prepared for the inevitable brain drain into these new emerging industries? How can we attract young people, equip them with the needed skills and qualifications? How can we ensure that the existing personnel's intelligence and experiences are retained and transferred? Can we together develop appropriate training programmes and share costs and resources? Can we together raise our sector's reputation to a level that will make young people want to study more STEM subjects and consider the careers which will offer them a long term future with high rewards?

Come and take part in the discussions around these and other skills issues at the next YCF Skills network meetings.



## Patience is a virtue.

Somewhat reluctantly perhaps, Dr Martin Schiele in 2006 attended one of the early meetings held by Competitiveness (undertaking a project on behalf of Yorkshire Forward) which led to the formation of the Personal Care Programme. Fast forward to today and two products from the Company can be found across the country in Boots stores, a range of products are on sale in Holland and other products are on test in Boots, with every expectation that they will be rolled out into wider distribution. Much work has gone into this progression, but in a small way the Personal Care Programme has helped Salcura cope with the demands of a major retailer and a demanding European customer.



Through a series of meetings with Boots in Leeds and Swansea where Boots host an Innovation Centre Salcura's novel approach to skin therapy was introduced to Boots as an example of the innovative work going on in the Yorkshire and Humber region. Encouraged by what they saw the Boots Innovation team were able to support the products internally and Salcura was contacted by the team responsible for introducing new products into Boots stores. The work then really began and following a successful test in Kingston upon Thames the products were given wider distribution by Boots in late 2009. This relationship has led to a close dialogue between Salcura and Boots as a recognised customer. The sales through Boots are acting as an additional selling point with existing and potential overseas customers.



Dr Schiele remains a firm supporter and member of the Personal Care Programme and is cooperating with a number of local Companies and Universities. He has kindly donated samples for the major events in Leeds and York last year, thankfully receiving very positive feedback for this gesture from product trialists and mothers alike.

"We are very grateful for the support of David Elliott in his role as Facilitator of the Personal Care Programme and Yorkshire Chemical Focus" Dr Martin Schiele.



# Personal Care Programme

## PCP

### Network Meeting

Friday 27th May 2011

10:00am - 2:00pm

Textile House, Red Doles Lane,  
Huddersfield,  
HD2 1YF

This is the second Personal Care Network Meeting of 2011 and will include a varied programme from 3 companies within the Personal Care sector.

Plus there will also be opportunities for networking and we will provide lunch and refreshments.

We hope to see new faces as well as old friends.  
This meetings speakers include:

**Ian Mains - NSAPI**

**Ian Scoular - Alcyomics**

"Vitro human skin testing; safety, allergy and contact sensitivity"

AND

**Tom Jenkins - Bio Sciences KTN  
(TBC)**

To register please telephone  
Zoe Moore 01484 346 541 or e-mail  
zoe@ycf.org.uk

## Personal Care Programme Membership

Our membership scheme aims to provide you with opportunities to share knowledge, share best practice and above all to network.

Join us and reap the rewards of our membership!

The Personal Care Programme is a network run by Yorkshire Chemical Focus a non-for profit organisation. There are 3 ways to join the PCP network:

Personal Care Programme membership:  
£100 +VAT

Individual membership of YCF inc PCP:  
(1 named member, less than 10 employees)  
£150 +VAT

Company membership of YCF inc PCP:  
(5 named contacts, more than 10 employees)  
£450 +VAT

PLUS a one off administration fee of:  
£50 +VAT

For non members network meetings will now incur a charge of £35.00 +VAT per delegate

For more information please contact the membership services team on  
01484 346 540

# HEALTH FROM LAND AND SEA

16th – 20th May 2011

## Partnering Mission to Atlantic Canada and Quebec

Supported by UK Trade & Investment, High Commission of Canada and Personal Care Programme

UK Trade & Investment, in partnership with the High Commission of Canada in London and Yorkshire Chemical Focus' Personal Care Programme is offering businesses the chance to build links with life science companies and research institutes from Canada's Atlantic Provinces.

The mission will build on the strong links currently in place between Yorkshire's personal care sector and the life science community in Eastern Canada, visiting Nova Scotia, Prince Edward Island and Quebec\*. Delegates will have the opportunity to meet and forge links with potential partners, many of whom have developed processes for the extraction of naturally derived active ingredients with applications in personal care and natural healthcare products. The mission will also include a one day seminar, on the theme of "HEALTH FROM LAND AND SEA", featuring speakers from Canada and the UK.

Mission participants will include a mix of companies (natural products, ingredient suppliers/manufacturers, platform technologies – isolation, fermentation, formulation etc.), research institutes, universities and networking/trade associations. The Canadian Government will also invite participants from other European Markets to ensure a truly international event.

The **key benefits** of participation are to:

- learn about the Canadian market and regulatory environment;
- identify new commercial opportunities, including introducing UK manufacturers and formulators to novel ingredient suppliers within Canada and identifying possible clients for R&D service providers, specimen libraries and technology platforms;
- build strategic R&D and commercialisation partnerships;
- showcase the UK as a source of innovative technologies and hence promote ourselves as 'the partner of choice' and as a future investment destination.

If you are interested in participating in the mission and would like further details please reply to:

Alastair Gardner  
Chemicals, Biotechnology and  
Environmental Industries Sector Specialist  
UK Trade & Investment  
1 Capitol Court  
Capitol Business Park  
Dodworth  
Barnsley S75 3TZ  
Tel: 07810 852314  
E-mail: [a.gardner@uktiyorkshire.co.uk](mailto:a.gardner@uktiyorkshire.co.uk)

Canada 

UK  
TRADE & INVESTMENT 

 Personal Care  
Programme

 YORKSHIRE  
CHEMICAL  
FOCUS  
*your chemical future*

\*final itinerary to be confirmed.



## FREE Interactive Seminar and Workshop

### Learn how the latest characterisation techniques and instruments can help you

- improve your formulated products
- optimise your formulation processes
- speed up your R&D projects



Experience small group demos from leading instrumentation companies and listen to case study presentations



Anton Paar  
UK LTD



Meritics Ltd



**Stable Micro Systems**



freemantechology

Effective use of physical characterisation and analytical methods for formulated products is an essential tool in improving product performance, product quality, process robustness and productivity in R&D labs.

Fortunately, characterisation and analysis for formulation are areas where new developments are being made so now is the right time to find out how you can make use of them.

This FREE event will introduce you to the range of different characterisation methods in the market place, and you can meet the manufacturers and suppliers of characterisation instrumentation and equipment.

The equipment will be at the event and live demonstrations will be taking place throughout the afternoon you can even bring along a sample for a demonstration there and then!

There will also be companies presenting who use the equipment on a day to day basis a chance

**Take advantage of this chance to see the latest equipment in action and talk to suppliers and experts**

to hear how the instrumentation is used in their formulation development, and the benefits the different characterisation methods bring to their company.

This event combines the chance to hear from world experts in the field of characterisation for formulated products, as well as experience live demonstrations of the latest characterisation equipment direct from the manufacturers.

Our keynote speaker, Professor Paul Luckham from Imperial College London, will discuss 'Characterisation of Formulations': the type of information which it is important to determine about a formulation and how those features might be measured. He will consider generic properties of formulations, common to any sector, such as sedimentation, particle size and rheology.

**To book your place, simply call 01484 346 540 or email [info@intelligentformulation.org](mailto:info@intelligentformulation.org)**

The event is FREE as long as you register by 26th April. A cancellation charge will apply to registrants who do not attend without prior notification.

# YCF Events Programme

## April

6th - Fire & Security Network - Textile House, Huddersfield

13th - Responsible Care Cell - Nufarm UK Limited, Bradford

## May

16th - 20th - Partnering Mission to Atlantic Canada & Quebec

19th - Occupied Building Seminar - Textile House, Huddersfield

27th - PCP Network - Textile House, Huddersfield

## June

7th - Extended REACT Network - Venue TBC

13th - Supply Chain Network, Textile House, Huddersfield

16th - Manufacturing Excellence Programme - Venue TBC

22nd - CPD & Skills Network - Textile House