International Energy Safety Conference 2023

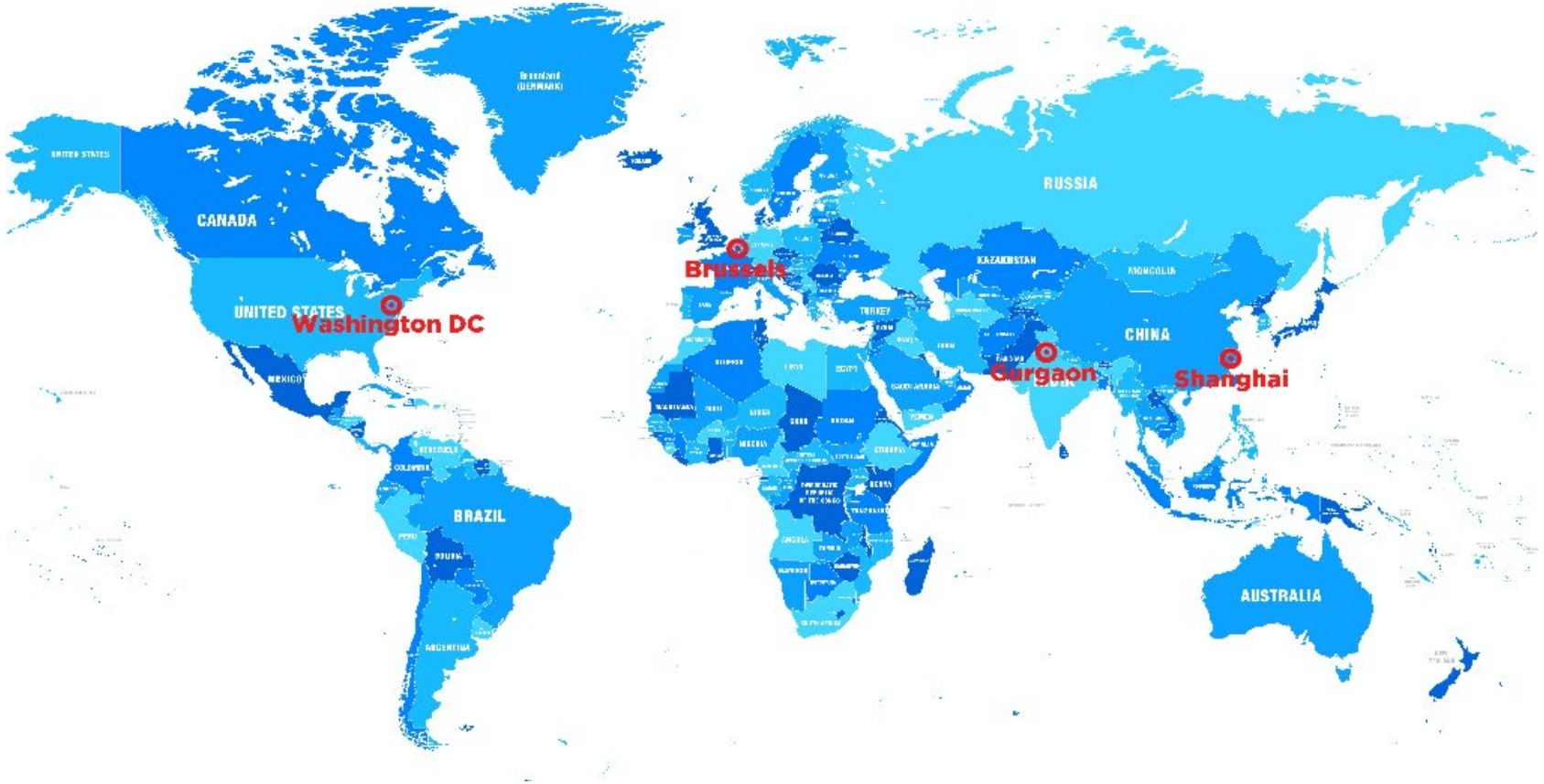
Peter Boks
President – Saybolt
Sponsor of TIC Council's Commodities Committee

In partnership with:

TIC Council

The Independent Voice of Trust

One Voice for Over 100 member companies & organizations active in more than 160 countries



TIC Council Vision and Mission

Vision

For the TIC Council to be recognized and trusted globally as the voice of the independent testing, inspection and certification industry, and to stand for best practice and the highest standards in safety, quality, health, ethics and sustainability.

Mission

To engage governments and key stakeholders to advocate for effective solutions that protect the public, support innovation and facilitate trade.

The TIC Council works with its members to promote best practices in safety, quality, health, ethics and sustainability.

TIC Council Compliance Programme

Protect the trust, social responsibility and reliability of the sector

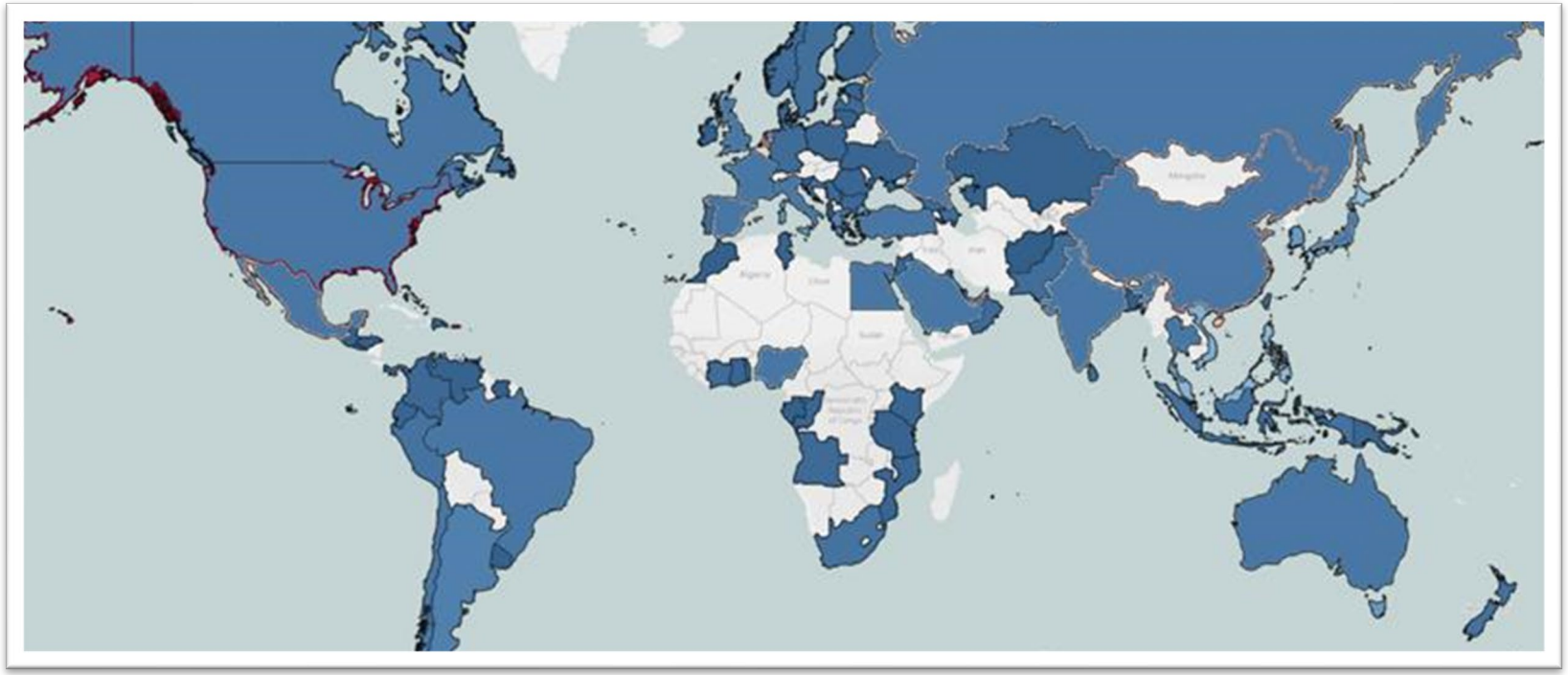
Principles:

- Integrity
- Conflict of Interest
- Confidentiality and Data Protection
- Anti-Bribery
- Fair Business Conduct
- Health and Safety
- Fair Labour

! Set the highest ethical business practices in the TIC industry.

Codes, Guidelines and Industry Recommendations

IFIA Certification Programme



* Countries with ICP certified inspectors.

- Petroleum Inspector Certification Programme
- Agricultural Superintendent Certification Programme

Joint initiative - TIC Council and O&G Majors

Forum to discuss and improve safety awareness and ethical behavior

Open, dynamic, result-oriented.

TIC Council Safety Conference

Previous Safety Conferences, a global effort

Rotterdam 2018

New York 2019

Singapore 2022

TIC Council
Petroleum and Petrochemicals Committee

Safety Code

Part 1: Field Inspection

FIRST EDITION
July 2019

Previous topics

- **Role of Leadership in Safety**
- **Ethics and Integrity in behavior-based Safety Systems**
- **Stop Work Authority**
- **Safety Code: Field Inspection**

Programme

Introduction to the TIC Council Laboratory Safety Code

Fuelling the Future: Safe Handling and Awareness of Alternative Fuels

Spectroscopic examination of Tank washing waters

Back to Basics Protocols

Human Behavioral Aspects of Safety

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Introduction to the TIC Council's Safety Code Part 2: Laboratories

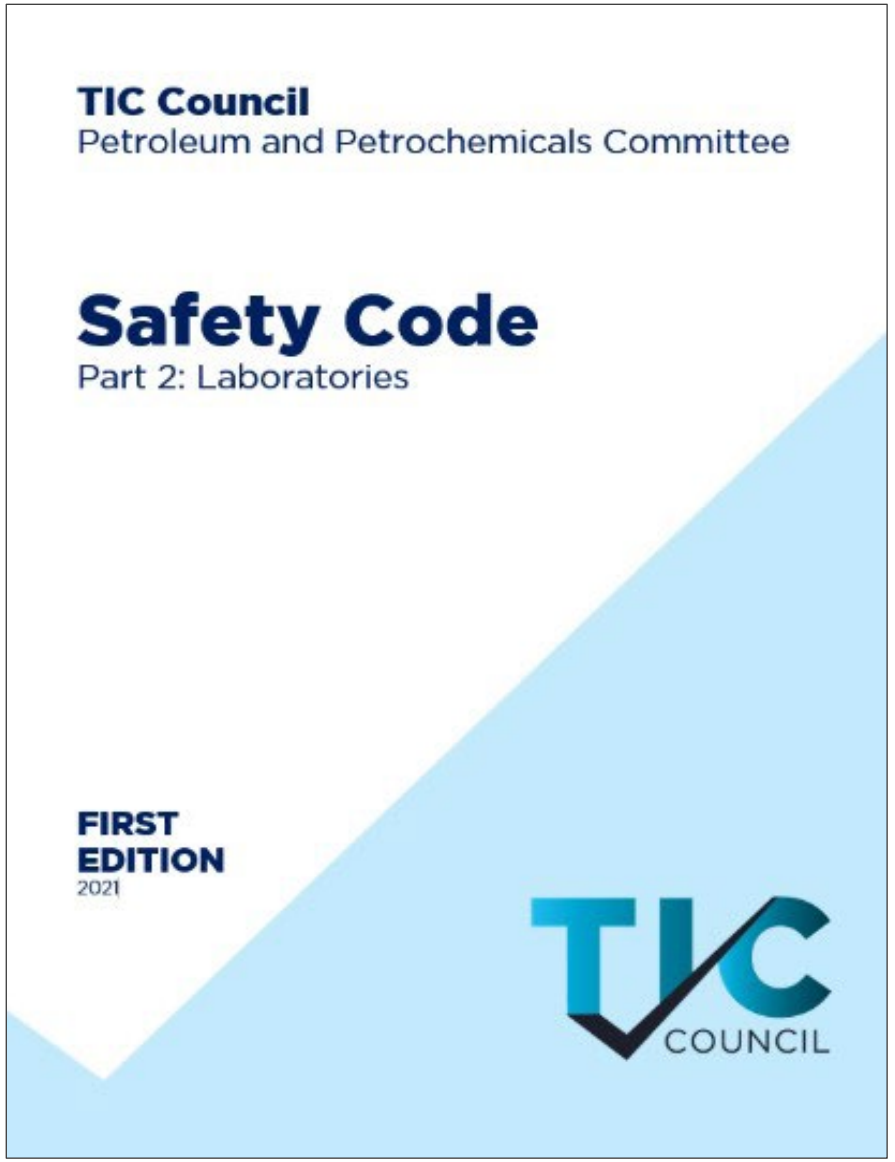
Mark Harrison
Global Inspection Lead – Caleb Brett
Intertek

In partnership with: bp Chevron ExxonMobil

TIC Council

Safety Code

Part 2: Laboratory



AGENDA

1. History of the laboratory safety code
2. Principles and limitations
3. Topics addressed in the document
4. General conclusions
5. Q & A

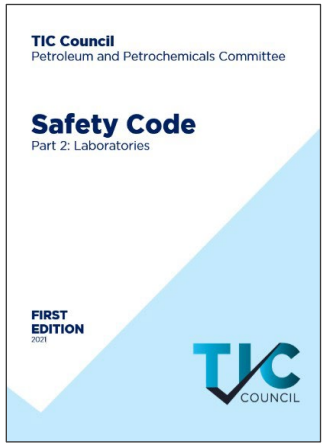
Safety Code

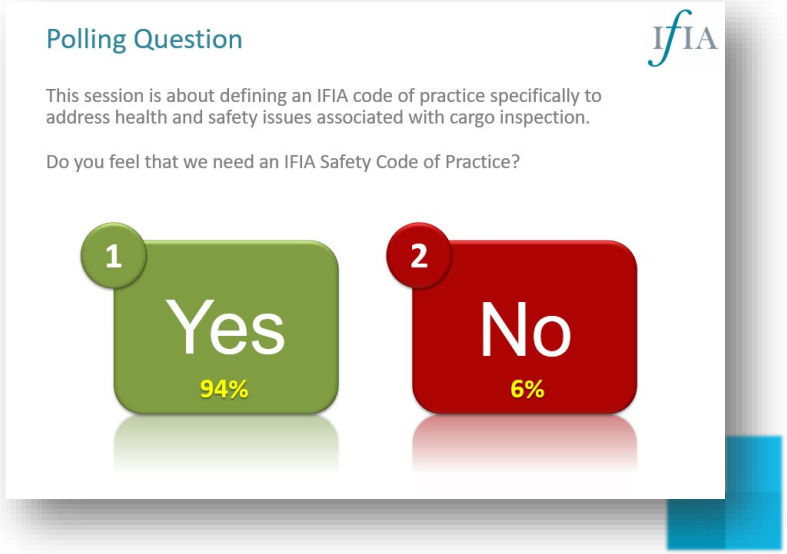
History

There are many Safety guidelines contained within the inspection standards or the terminal/refineries we operate in, all essentially have the same goal: **‘Everyone goes home safely every day’.**

During October 2018 in Rotterdam, we had a 94% consensus to produce a safety code and we agreed on scope and content, including minimum requirements on some specific topics

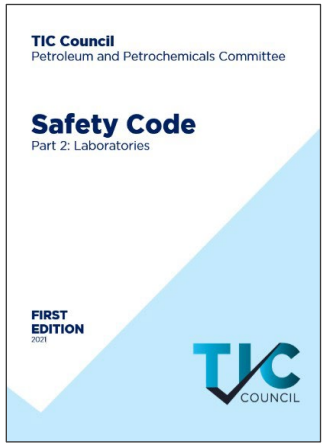
The TIC Council’s Safety Code – Part 1 was published in July 2019





Safety Code

Principles and Limitations



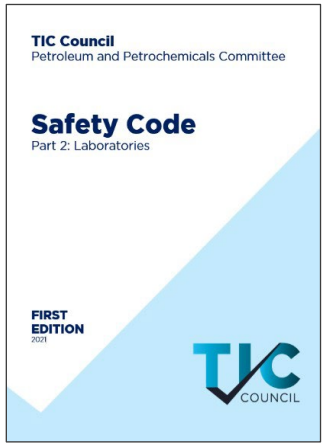
This code represents best practice guidance. It cannot itself ever be used as a compliant operating manual for any specific site.

It cannot give specific guidance applicable in every legislation, situation or commercial circumstance. Whenever specific documents to be used in a particular facility are being drafted, research must be made on the applicable:

- National, local and industry specific legislation,
- Specific hazards associated with the location, equipment or mode of operation,
- Corporate and/or contractual obligations, including policy documents, system requirements and site guidelines that need to be addressed.

Safety Code

Content



Responsibilities

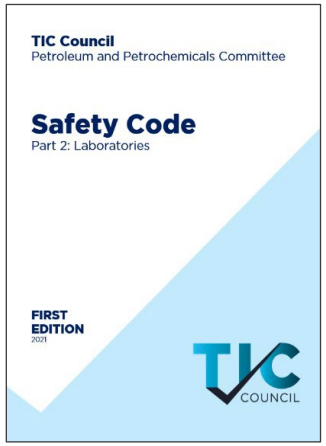
Safety Topics

1. Emergency Response Plan
2. Visitor Safety
3. HSE training
4. Personal Protective Equipment (PPE)
5. Emergency Equipment
6. Specific Safety Areas
7. Communications
8. Strong HSE culture and infrastructure to encourage reporting and intervention

Conclusion

Safety Code

Introduction



The TIC council members publish this document with three goals:

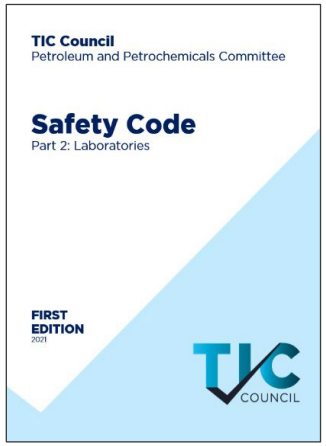
- To provide a baseline document that all stakeholders can refer to and that sets out broad principles and best practice guidance. This document does not seek to address every contingency, but rather allows the user to build the necessary specifics into a local program, including the documentation within that program.
- To set out the principles to be used by laboratory management staff when assessing, managing, and documenting risk in the laboratory.
- To encourage the staff and management of any TIC council member company to utilize appropriate training, monitoring, and corrective action tools to not only manage risk, but to proactively assess and eliminate it where possible, and where it is not, to minimize it.

Safety Code

Topics

HSE management in the laboratory

- The appointment, role and responsibility of specific staff members
- Management review and it's role in any HSE management system
- Employee health screening and early detection of health issues



Emergency Response

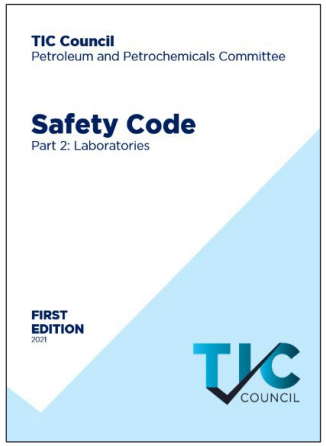
- Plans
- Drills
- Feedback
- Disaster Recovery

Safety Code

Topics

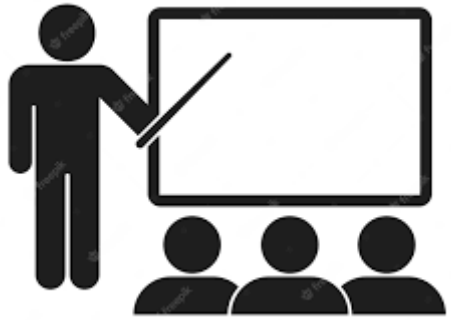
Control of Visitors

- Access control
- Orientation
- Visitor safety



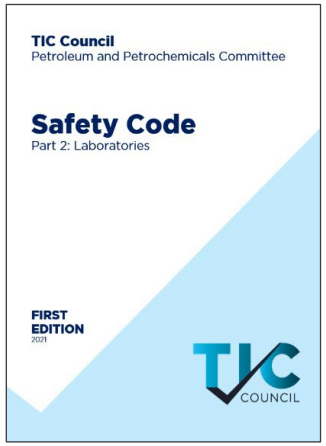
HSE Training

- General training
- Training with respect to specific hazards
- Onboarding new staff
- Refresher training



Safety Code

Topics



Personal Protective Equipment (PPE)

- Provisions
- Design

Emergency Response Equipment

- Fire Response and detection equipment
- Laboratory emergency showers
- Eyewash stations
- Spill containment equipment

Safety Code

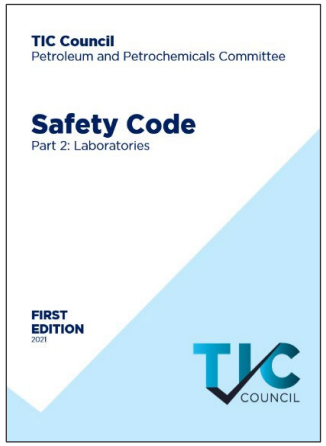
Topics

Industrial Hygiene Issues

- Working area materials safety
- Air quality
- Waste disposal

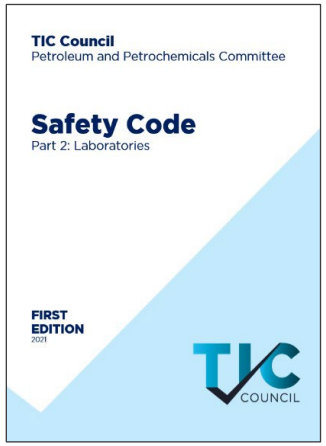
General Housekeeping Issues

- Storage of Hazardous Materials
  - Reagents and samples
- Waste Disposal
  - Solid and liquid waste and waste water



Safety Code

Topics



Specific Hazard Types

- Eating and drink in lab building
- Working alone in labs
- Slips, trips and falls
- Handling glassware
- Spills and spill containment
- Sample reception and handling
- Sample packaging and dispatch / shipping
- SDS information and awareness
- Labelling of lab reagents and equipment
- Hydrogen sulphide hazards in the lab
- Electrical safety
- Prevention and control of static electricity hazards
- Hot work control
- Cold work control
- Working with compressed gases
- Electrical and physical hazards, lock-out / tag-out system

Safety Code

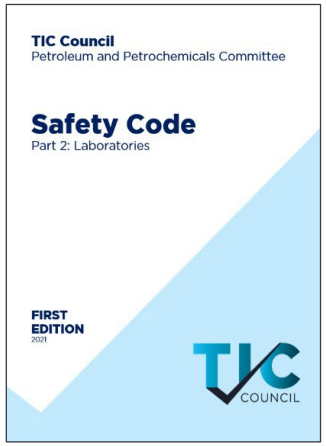
Topics

Communications

- Signage, notice boards, hazard notices, etc.
- Alerts, bulletins and briefings
- Verbal communication – HSE meetings

Creating a strong HSE Culture

- Risk assessment in the laboratory setting
- Hazard identification in the laboratory
- Near miss reporting
- Incident reporting
- Lessons learned from incident and near miss reporting
- Stop work authority in the laboratory

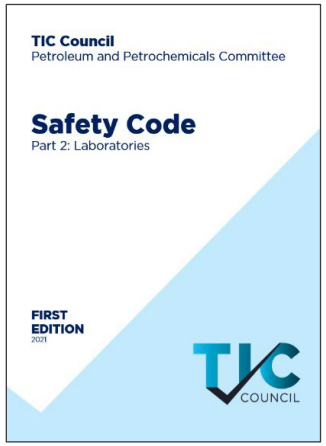


Safety Code

Conclusions

Laboratories can be a safe working environment but to maintain high standards requires:

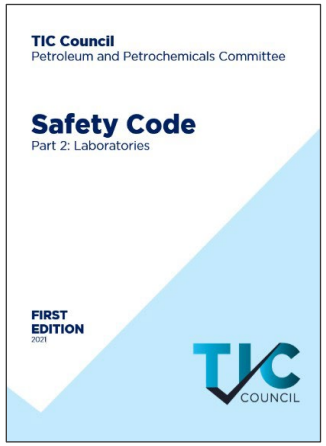
- Knowledge
- Vigilance
- Good communications and culture
- High levels of management involvement



Every laboratory is different. The physical layout, workflow, equipment and staff render each one unique. Whilst sound general principles should be applied, the specifics require analysis, review and management on their own merit.

Safety Code

Next Steps



External feedback on the Safety Code is welcomed and should be directed to secretariat@tic-council.org

SCAN ME

Part 1 – Field

SCAN ME

Part 2 - Laboratory

The Safety Code is available as a free download from the TIC Website:
https://www.tic-council.org/publications/codes-and-guidelines

Questions ?

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International Energy Safety Conference 2023

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International Energy Safety Conference 2023

Fuelling the Future

Safe Handling and Awareness of new and alternative fuels

Michelle Shea
Director of Renewables, Low Carbon Fuels, & Sustainability
Camin Cargo Control

In partnership with: bp Chevron ExxonMobil

Fueling the Future

AGENDA

1. Introduction
2. LNG
3. Ammonia
4. Hydrogen
5. Alternative Fuels
6. Next Steps

Introduction

Introduction

Alternative fuels, how do we handle these?

A good place to start is to look back to the last “New Fuel” when LNG started to become more of a traded cargo and therefore inspection became more common place.

Liquified Natural Gas (LNG)

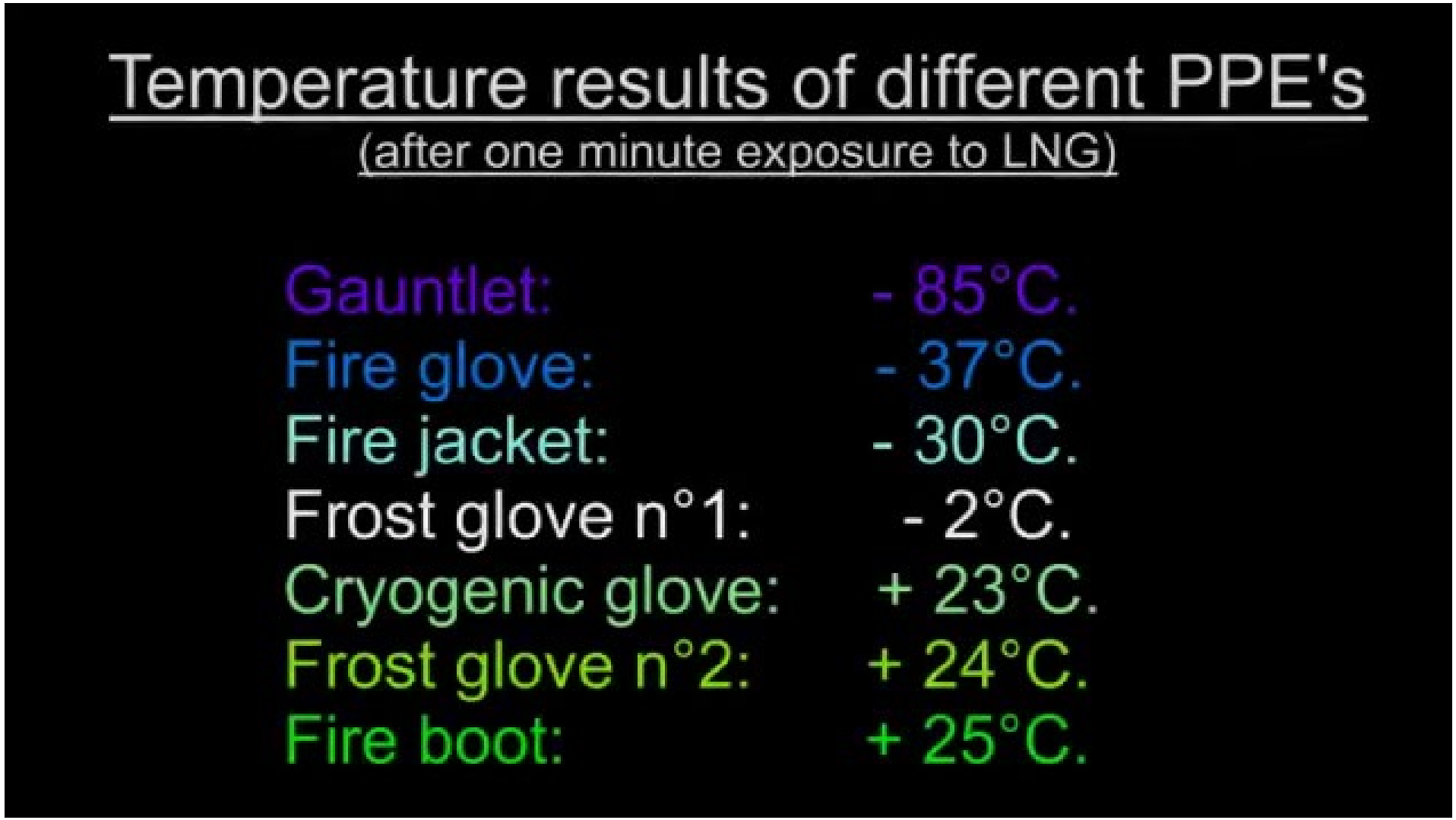
Liquified Natural Gas (LNG)

- **LNG has been around since the early 1960's**
- **Only in the last 20 years or so has this been more openly traded**
- **More variability for the inspection, sampling and calculations**
- **There was generally a gap in knowledge on the safety requirements as this is very different from other liquified gases, particularly when it comes to safety**

LNG Safety – Key Points

- **LNG burns explosively in the vapour phase, with the ideal mixture of air in order to burn 5 to 15% by Vol.**
- **Atmospheric boiling point of -163ºC to -160ºC.**
- **1 m3 of LNG at atmospheric pressure equals 600 m3 of natural gas.**
- **Asphyxiation in oxygen-deficient atmospheres**
- **Fire in oxygen-enriched atmospheres**
- **Liquid oxygen condensation**
- **Cold burns, frostbite and hypothermia from the intense cold**
- **Over pressurisation from the large volume expansion of the liquid**

LNG Safety – Key Points



LNG Safety – combustion test

LNG Safety – Detectors

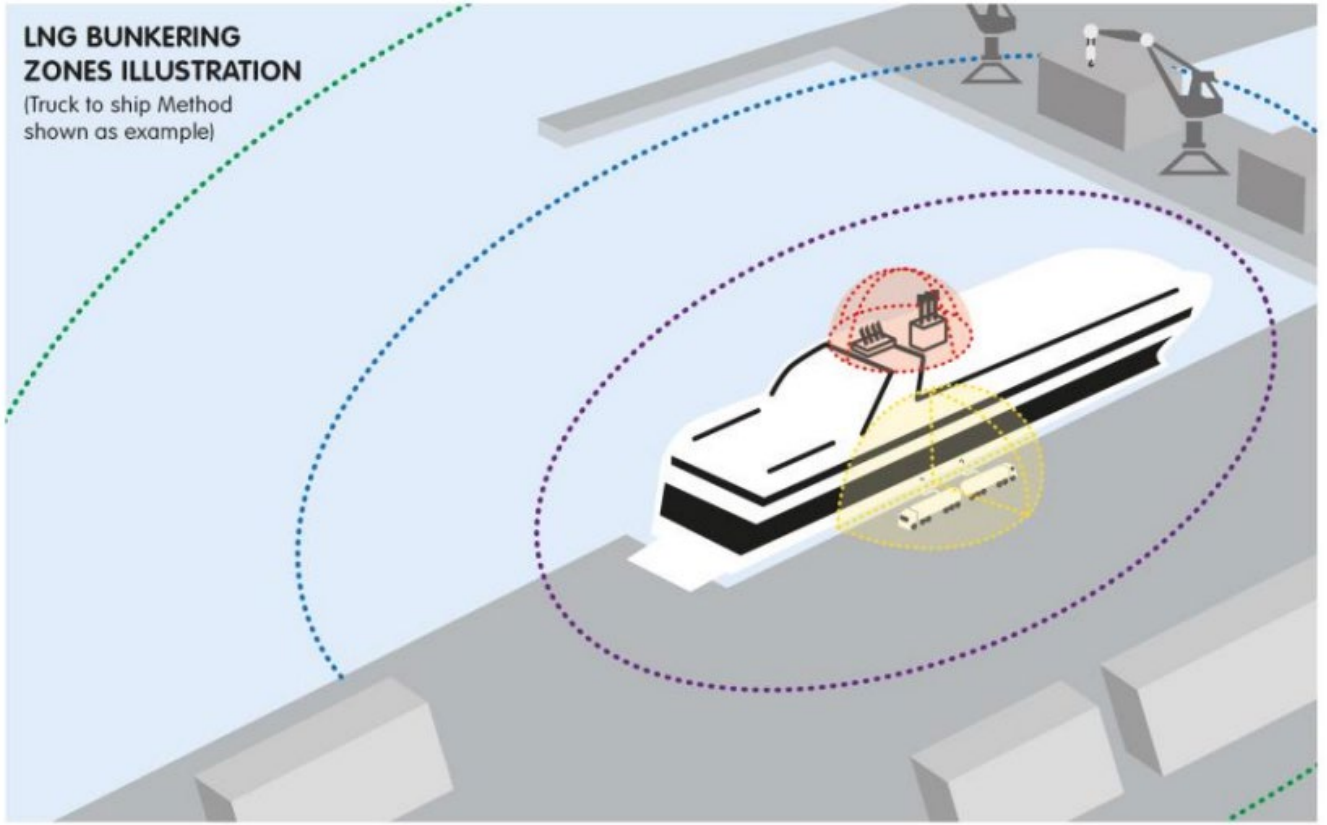
- **Combined oxygen / combustible gas detectors are activated only when the concentration of methane is relatively high (1000 - 5000 ppm about 2 - 10 % LEL).**

- **This equipment is less suitable to detect methane.**

- **IR and semiconductor sensor (Sniffer and E-nose) are far more sensitive and faster to detect methane at 10 ppm to 10000ppm level**

- **IR catalyst sensors are evenly sensitive to methane, but IR detection is much faster.**

LNG Safety – Safety Zones



I HAZARDOUS ZONE
II SAFETY ZONE
III MONITORING AND SECURITY AREA
IV MARINE ZONE
V EXTERNAL ZONE

* Truck to ship bunkering method shown as the example
** Hazardous zone around the ship/truck manifold(s) and truck relief valve not shown for clarity
*** Relative sizes and distances are for illustration purposes only

Summary of LNG Safe Handling Procedures

- **Facility Design and Engineering**
- **Personnel Training**
- **Leak Prevention and Detection**
- **Emergency Response Plans**
- **Vapor Management**
- **Transportation Safety**
- **Environmental Considerations**
- **Regulatory Compliance**

No OSHA Regulation to Date

LNG accident

Skikda incident in 2004

A leak in the hydrocarbon refrigerant system formed a vapor cloud that was drawn into the inlet of a steam boiler.

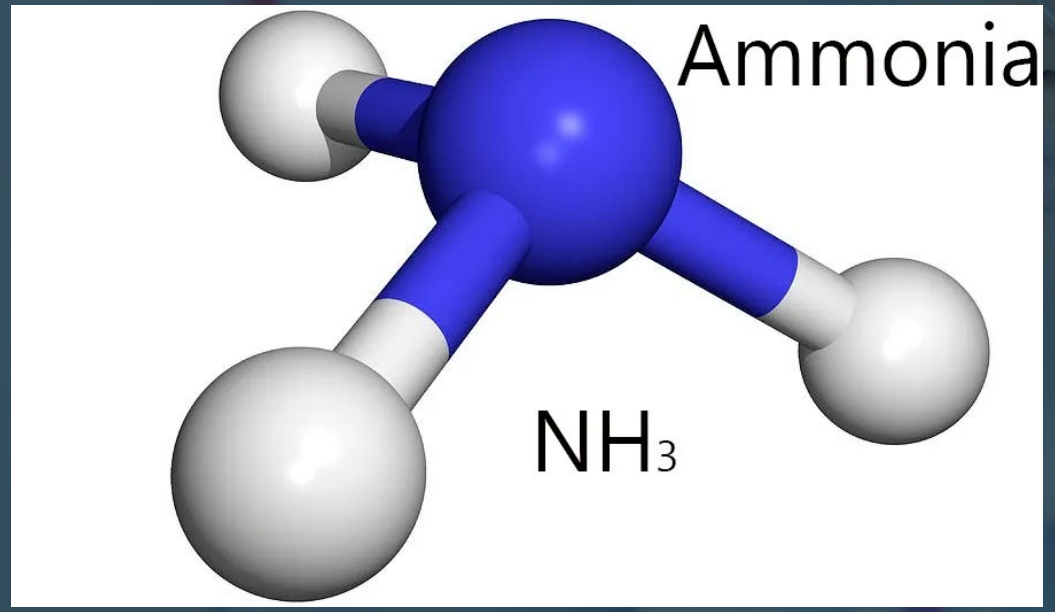
The increased fuel to the boiler caused rapidly rising pressure within a steam drum causing the steam drum to rupture.

The boiler rupture was close enough to the gas leak to ignite the vapor cloud and produce an explosion.

Fire took 8 hours to extinguish.

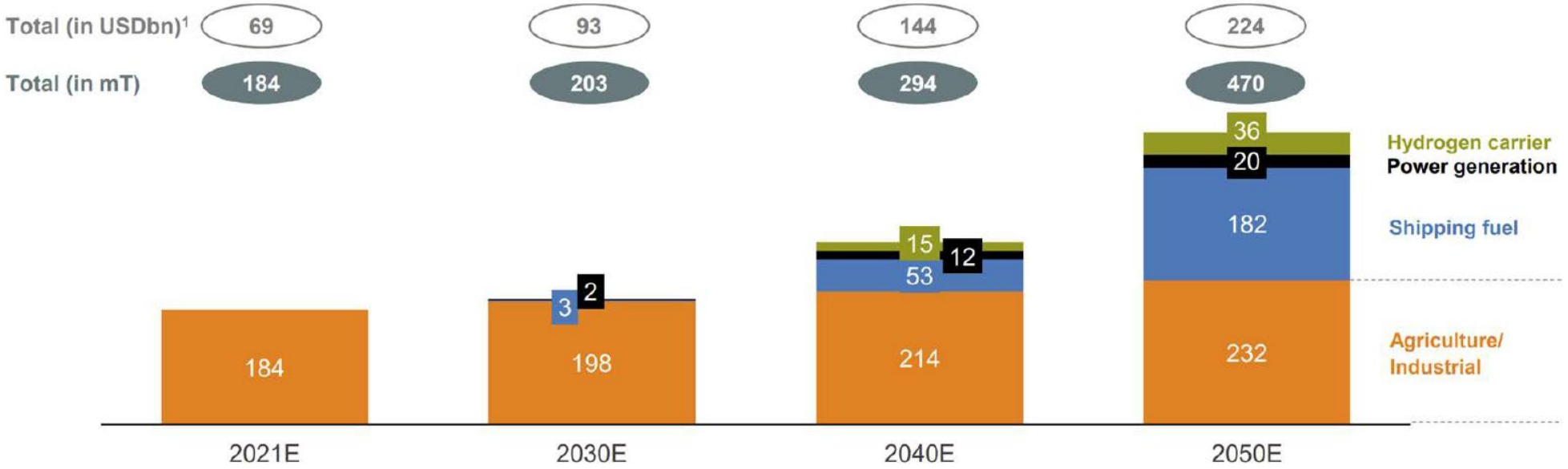
The explosions and fire destroyed a portion to the LNG plant and caused 27 deaths, and injury to 72 more.

Ammonia

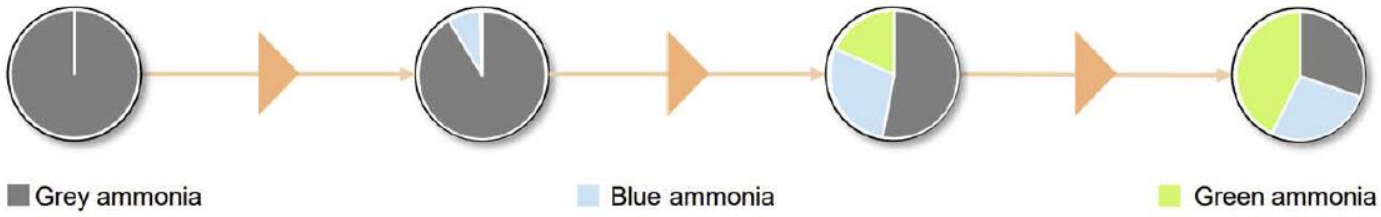


Ammonia Market

~50% of 2050 demand is projected to come from new applications, with shipping fuel as the main contributor



Ammonia supply expected to shift towards blue and green



(source: Capital Markets presentation 2022)

Ammonia safety

- **Toxicity: Highly toxic and can cause burns, irritation, and tissue damage when inhaled or exposed to the skin or eyes. Irritation of respiratory system, leading to difficulty breathing, coughing, and potentially life-threatening respiratory distress.**

- **Flammability: Ammonia is flammable at typically 15 to 28% by volume in air. It forms explosive mixtures when combined with certain substances, such as certain fuels or oxidizers.**

- **Corrosiveness: Ammonia is corrosive to many metals, especially in the presence of moisture. It can lead to the degradation of equipment, storage tanks, and piping systems, potentially resulting in leaks or failures.**

Ammonia safety

- **Reactivity: Ammonia is reactive with certain substances and can undergo chemical reactions, producing potentially hazardous byproducts.**

- **Storage and transportation hazards: Typically stored and transported as a compressed gas or cooled to -33oC. Improper handling or storage can lead to leaks or releases, resulting in exposure risks, environmental contamination, or even explosions.**

Ammonia safety

Ammonia safety

NB. Detection at low exposure means high exposure is rare

Exposure		Signs and symptoms
mg/m³	ppm	
35	50	Irritation to eyes, nose and throat (2 hours' exposure)
70	100	Rapid eye and respiratory tract irritation
174	250	Tolerable by most people (30–60 minutes' exposure)
488	700	Immediately irritating to eyes and throat
>1,045	>1,500	Pulmonary oedema , coughing, laryngospasm
1,740–3,134	2,500–4,500	Fatal (30 minutes' exposure)
3,480–6,965	5,000–10,000	Rapidly fatal due to airway obstruction, may also cause skin damage

Public Health England, Compendium of Chemical Hazards: Ammonia, 2015

Ammonia safety

To mitigate these safety risks, it is important to follow proper safety procedures and guidelines when working with or around ammonia such as:

- **Implementing appropriate ventilation systems**
- **Wearing personal protective equipment**
- **Providing training to workers**
- **Maintaining equipment integrity**
- **Adhering to relevant regulations and standards for storage, handling, and transportation of ammonia.**

Summary of OSHA Ammonia Regulation 1910.111

- **Handling Procedures: Providing guidelines for safe loading, unloading, and transferring of anhydrous ammonia to minimize the risk of accidents during these processes.**
    - **Loading and Unloading**
    - **Transporting**
    - **Use of Handling Equipment**
    - **Emergency Shutdown**
    - **Avoiding Overfilling**
    - **Protective Clothing and Equipment**
    - **No Smoking or Open Flames**
    - **Communication and Coordination**
    - **Contingency Planning**
    - **Training and Competence**

- **Written Operating Procedures: Developing and maintaining written operating procedures for the safe handling, storage, and emergency response for anhydrous ammonia.**

Hydrogen

Hydrogen safety

Safety concerns for hydrogen are:

- **Wide flammability range: 4% to 74% in air**
- **Low energy requirement for ignition**
- **Almost invisible flame**
- **Eliminate sources of ignition (sparks, static, flames, heat)!**
- **Storage at high pressure**
- **Leakage (small molecule)**
- **LH2: storage at extreme low temperatures (cold hazard)**

Hydrogen safety

Hydrogen safety risks depend on transportation mode employed.

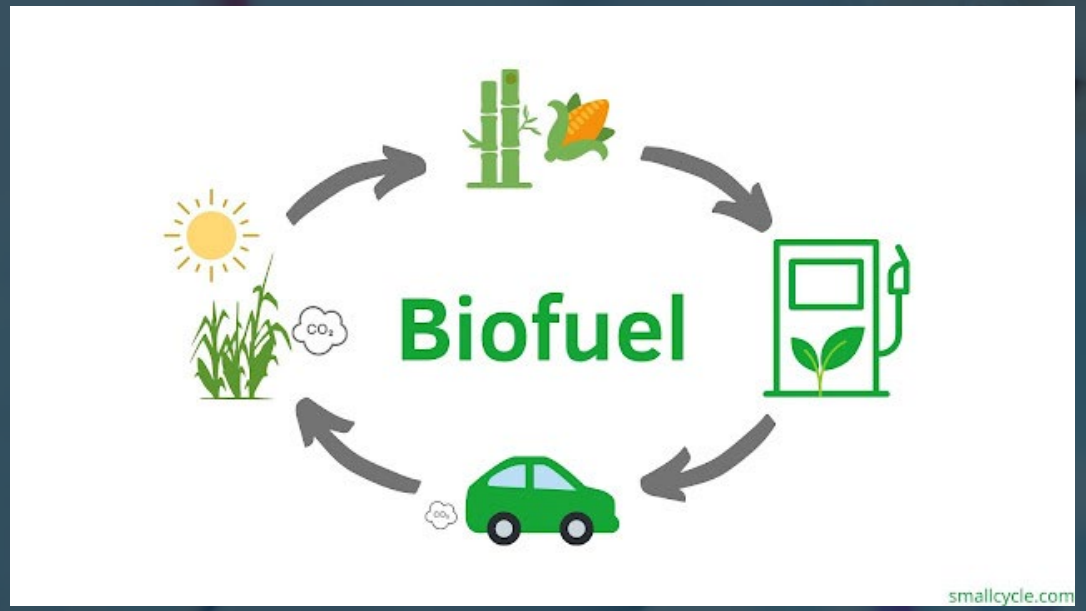
	Transportation temperature in ˚C	Production energy % of H2 LHV consumed	Liters needed per kg of H2	Comments
Compression	Ambient	3-4% at 10bar, 10-15% at 700bar	1245 at 10bar 25 at 700bar	Lowest transportation costs using pipelines. Low energy consumption but lowest hydrogen density.
Liquefied	-252.95	30	14.3	Highest transportation costs with highest energy consumption and low hydrogen density.
Ammonia	-33.3	15-20	8.3	Medium transportation costs with lowest energy consumption and highest hydrogen density. When combusted NOx is released. Thus to be green N2 must originate from air.
Methanol	Below 65	20	10.1	Low transportation costs with medium energy consumption and hydrogen density. When combusted CO2 is released. Thus to be green CO2 must originate from air which drives up costs.
LOHC (using methylcyclohexane-toluene)	Below 101	30	21.1	Low transportation costs with high energy consumption and lowest hydrogen density. Greatly depends on medium used.

Summary of OSHA Hydrogen Regulation 1910.103

General Requirements: The regulation provides general requirements for the safe handling, storage, and use of hydrogen in the workplace.

- **Ventilation**
- **Detection of Leaks**
- **Ignition Sources**
- **Compressed Gas Cylinders**
- **Dispensing Systems**
- **Design of Hydrogen Systems**
- **Training**
- **Fire Protection**
- **Hazardous Areas**

New or Alternative Fuels



New and Alternative Fuels

Name	Acronym	Origin	Use
Used Cooking Oil	UCO	Food industry	Feedstock
Technical Corn Oil	TCO	By-product / Waste from corn oil processing	bio-ethanol and/or animal feed.
Distillers Corn Oil	DCO	By-product / Waste from corn oil processing	bio-ethanol and/or animal feed.
Refined bleached deodorized (RBD) palm oil	RBD, RBDO		Feedstock
Spent Bleached Earth Oil	SBEO	Oil recovered from bleaching process of edible oils	Feedstock
Acid Oil		By-product of vegetable oil refining	Feedstock
Mixed Fatty Acid	MFA		Feedstock
Palm Oil Mill Effluent	POME	oily wastewater generated by palm oil processing mills	Feedstock
Palm Fatty Acid Distillate	PFAD	Waste product from palm oil manufacturing	Feedstock
Empty Fruit Bunch Oil	EFBO	Waste product from palm oil manufacturing	Feedstock
Brown Grease		Oily layer from grease traps	Feedstock
Soya Bean Oil			Feedstock
Carinata Oil		Mustard seed oil	Feedstock
Fatty Acid Methyl Ester	FAME	Vegetable oils, animal fats or waste cooking oils	Blendstock
Used Cooking Oil Methyl Ester	UCOME	Waste used cooking oils	Blendstock
Palm Oil Methyl Ester	PME		Blendstock
Rapeseed Methyl Ester	RME		Blendstock
Cashew Nut Shell Oil			Blended into distillate streams
Hydrogentated Vegetable Oil	HVO		Blendstock - mid distallates
Tall oil fat acid	TOFA	Wood - Tall oil is a by-product mixture of saponified fatty acids (30%–60%), resin acids (40%–60%, including mostly abietic and pimaric acids), and unsaponifiables (5%–10%) derived from the wood extractives of softwoods.	Feedstock
Forest pyrolysis bio oil		Wood	Feedstock
Animal fat			

Cashew Nut Shell Oil

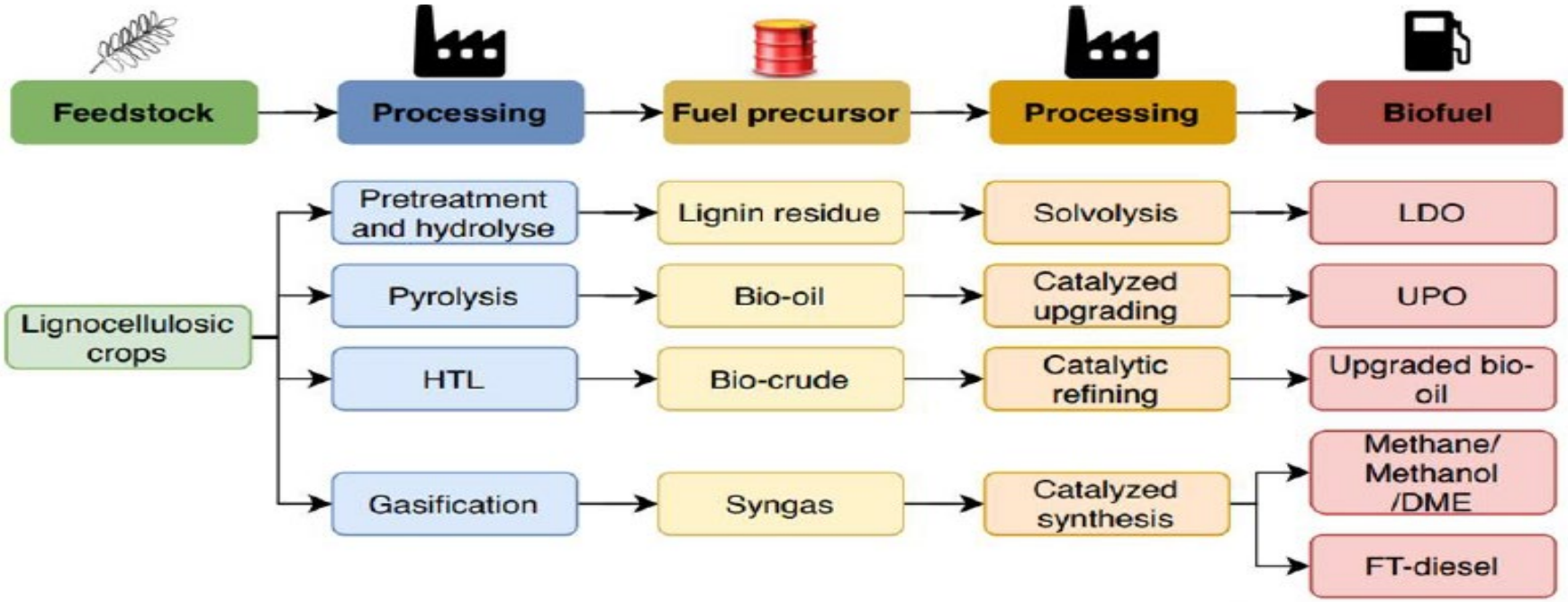
- **Cashew nut shell liquid (CNSL) is a dark brown viscous liquid.**
- **It is a natural resin found in the honeycomb structure of the cashew nutshell and is a byproduct of processing cashew nuts.**
- **It does not sound so dangerous but this a mixture of phenolic compounds – thus acidic.**
- **Products which appear to be harmless can still sustain serious risks to the individual.**
- **Safety data sheet must be available as a means of prevention.**

Cashew Nut Shell Oil

- **A CNSL bottle did not have sufficient ullage space and was contaminated with product on the outside.**
- **No hazard pictograms were affixed to the package. Hazardous properties could not be identified. No familiarity with CNSL.**
- **Lab technician shook the product for homogeneity.**
- **As there was product on the outside of the bottle, which limited grip, the bottle fell on the ground while shaking resulting in product splashing.**
- **Lab technician directly washed the contaminated skin with water and soap.**
- **The next day some small irritations spots (blisters) appeared on both upper legs.**
- **Liquid soaked through the jeans, dripping on the upper legs.**
- **There is a serious health concern when in contact with this product : Contact dermatitis or temporary skin rash or irritation in certain sensitive individuals.**

Pyrolysis oil

- **Pyrolysis is a thermochemical process during which sustainable biomass feedstocks are broken down using heat in the absence of oxygen.**
- **This process produces a bio-oil intermediate that can be further refined to create renewable hydrocarbon transportation fuels.**



Pyrolysis oil

- **Fast pyrolysis oils contain a large number of oxygenated organic chemical compounds.**
- **The toxicity of fast pyrolysis oils will be a function of composition, which in turn is process and feedstock dependent, and possibly with age.**
- **Aldehydes and unsaturated oxygenates pose the greatest acute toxic threat from fast pyrolysis oils.**
- **The chronic toxicity of fast pyrolysis oils is unclear with one study indicating no tumor promoting ability and other studies showing mutagenicity or chromosome damage.**

Next Steps

Next Steps

Do we understand the safety requirements of all these new fuels?

How do we ensure that the Safety requirements are detailed?

How do we share these with all stake holders?

Q & A for Panel

Acknowledgements

The preparation of this session was a collaborative effort of the industry, and made with the contributions of:

- Melanie Dill – Global Inspection Contract Holder – Shell
- David Gauci – Global Lead Product Quality and Testing - Saybolt
- Mark Harrison, Global Inspection Lead, Intertek
- Keith Kirvan – HSE Global Director – Camin Cargo
- Michelle Shea – Director of Renewables, Low Carbon Fuels & Sustainability – Camin Cargo

TIC COUNCIL

International Energy Safety Conference 2023

In partnership with:

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Morning Break
Until 11:30

Full programme:

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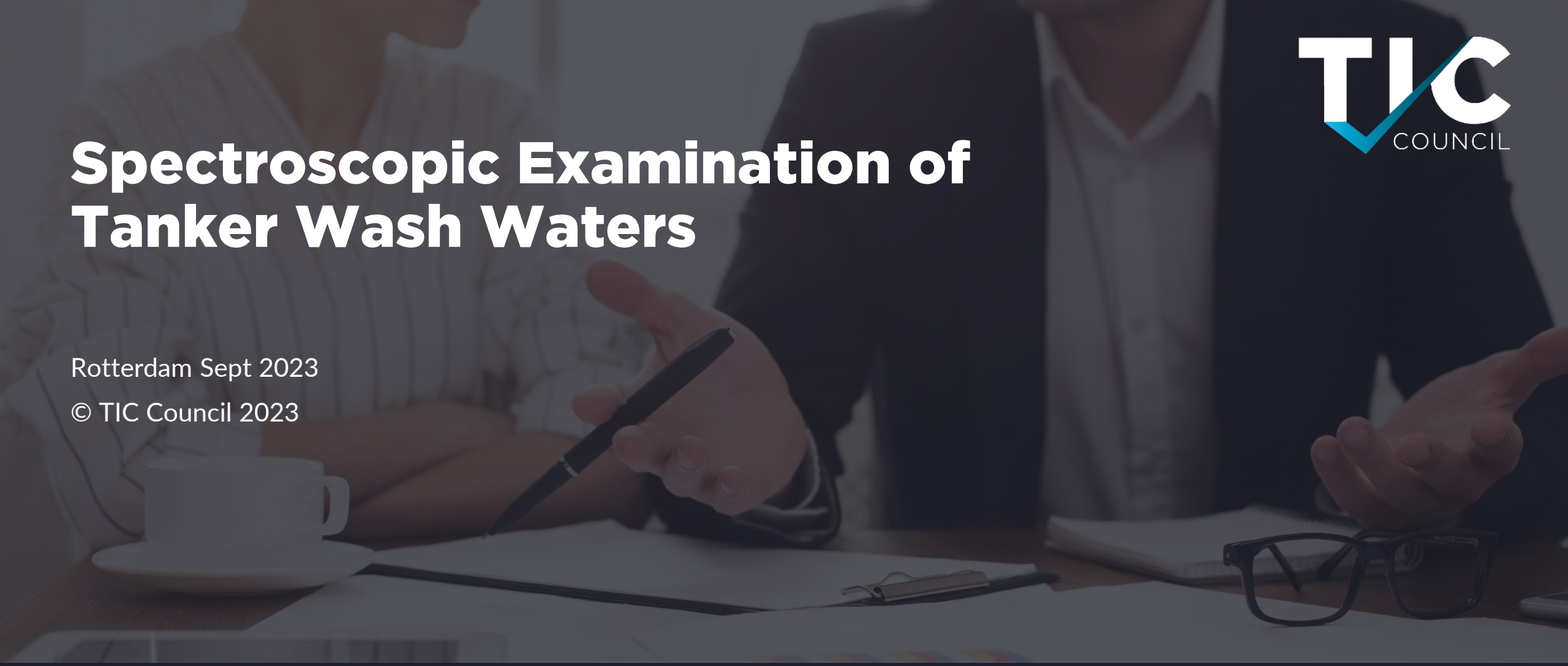
Spectroscopic Examination of Tanker Wash Water

Peter Maasland
Deepsea Operations Manager
Stolt Tankers

David Gauci
Global Lead Product Quality and Testing
Saybolt International

In partnership with: bp Chevron ExxonMobil



Spectroscopic Examination of Tanker Wash Waters

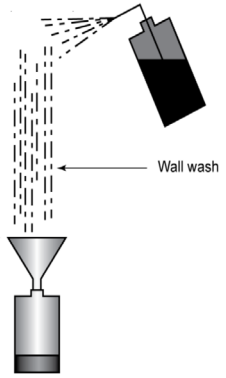
Rotterdam Sept 2023

Traditional Ship's Tank Cleaning Verification

Part of the established and traditional pre-loading inspection as per API MPMS chapter 17.8 :

- ✓ Level of cleanliness required is agreed on (dependent on previous cargo, cargo to be loaded, tank coating etc…)
- ✓ If no OBQ is observed then any need for wall wash is determined by level of cleanliness required
- ✓ Tanks have to be certified as gas free
- ✓ Tank entry permits issued by vessel are needed (confined space entry permit if available and/or allowed by autho
- ✓ Select solvents for intended contamination (deionised water / acetone / methanol)
- ✓ Wall wash any accessible surface of tank (piping, sumps, heating coils, tank surfaces) usually below 3m height
- ✓ Samples are tested in lab to verify conformance with specifications such as ASTM E2664 for methanol wall wash t glycol

Tank Capacity	Minimum No. Areas to Wash
<500 M^3 (3000 bbl)	5
500–1000 M^3 (3000 bbl to 6300 bbl)	7
>1000 M^3 (>6300 bbl)	9

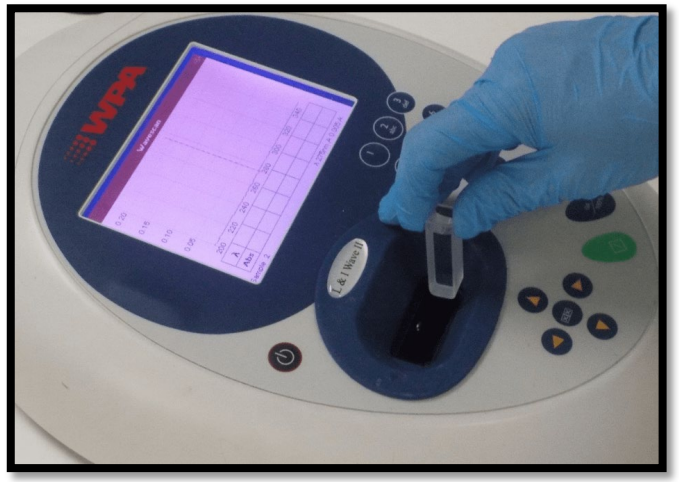


Wall Wash Technique Challenges

- ✓ Entry in confined spaces poses a safety risk.
- ✓ Level of cleanliness required is subjective.
- ✓ Wall washing is time consuming.
- ✓ Degassing tanks, wall washing and subsequent analysis is expensive and time consuming.
- ✓ The wall wash test is random by definition and thus impossible to standardize.
- ✓ Sampling technique represents at most 10 to 15% of the internal surface area of the cargo tank.
- ✓ Can only be performed when vessel is all fast.
- ✓ Much of the associated cargo handling system such as pipes and pumps cannot be assessed.

Tank Washing Waters Analysis Technique

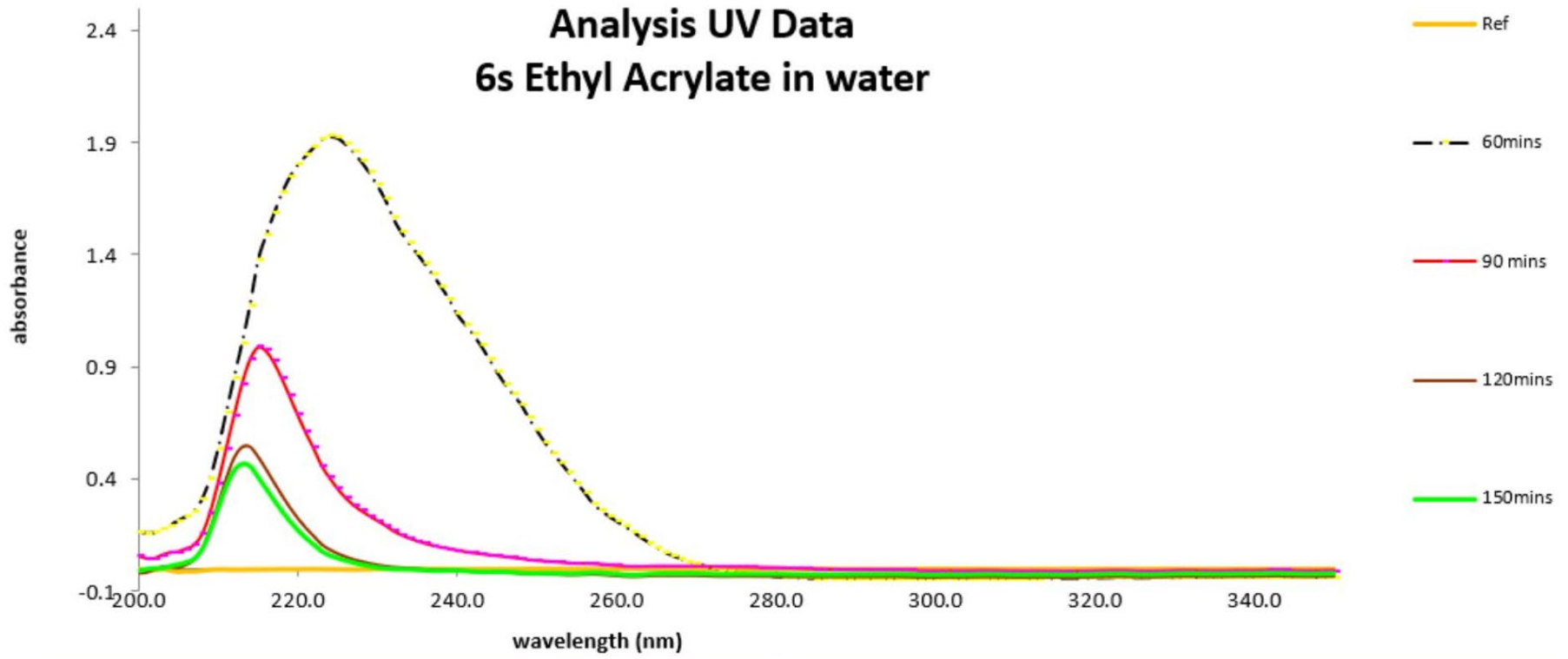
- ✓ Cargo tank water washing plans should be documented by ship's crew.
- ✓ Vessels should carefully determine the effluent wash-water sample point location(s) to be located at the end(s) of the cargo system being cleaned.
- ✓ Online analysis of wash-water are performed live during onboard cargo tank cleaning operations.
- ✓ Charterers and shippers must be in agreement on the use of the results from wash-water analysis to declare it adequately prepared.
- ✓ If wash-water sample is conformant and largely free from previous cargo residues, the cargo tanks and lines can also be considered adequately prepared.
- ✓ Analysis performed using a UV spectrometer capable of scanning between 200nm and 350nm which detects the common contaminants.



Tank Cleaning Spectrum

When obtained spectrum is below the reference spectrum for the pre-agreed limit, the tank is considered adequately prepared.

The level at which the wash water conforms it set by the charterer as there is no standard yet.



Tank Washing Waters Analysis Advantages

- ✓ Increased safety – less tank entries
- ✓ Time saved, increased efficiency / less demurrage exposure – load ready shortly after arrival at the berth (preapproved)
- ✓ Standardized methodology – objective records of the reading by the instrument
- ✓ Records are fully traceable
- ✓ Reducing last cargo restrictions – testing for traces of last cargoes
- ✓ Cleaning reassurance for the whole system (including tanks and lines)
- ✓ Environmental benefits : Each hour of hot water washing reduced saves 1.9MT CO_2 release into the atmosphere

Tank Washing Waters Analysis Challenges

- ✓ Currently not covered by any published API MPMS procedure and thus not yet established as a norm in the industry
- ✓ There will be questions if any guarantee can be given on accuracy, as is usual with any innovation. The industry and marine law tend to be conservative .
- ✓ Legal backdrop yet to be established, whereas wall wash testing is very well established and is often stipulated in contracts.
- ✓ Ship owners have to discuss and agree on the applicable terms and conditions with their charterers, insurers, and surveyors as this a relatively new process. This requires a transition period.

Tank Washing Waters Analysis Challenges

- ✓ Due consideration should be given to risk assessments, training protocols, etc. when establishing such new processes and procedures.
- ✓ Inspection companies role is only to interpret the scans as supplied by the vessel's spectrometer and are not responsible for the accuracy and traceability of the data provided.
- ✓ If a cleanliness certificate is required, inspection companies cannot take responsibility as data generation lies with the vessel.
- ✓ Wall wash water specifications is not correlated with tank washing waters analysis specs. Inspection companies are not to be held responsible for specs which are too permissive.
- ✓ Currently we are in transition from wall wash to washing water analysis and thus UV spectrometers are still relatively uncommon on vessels.

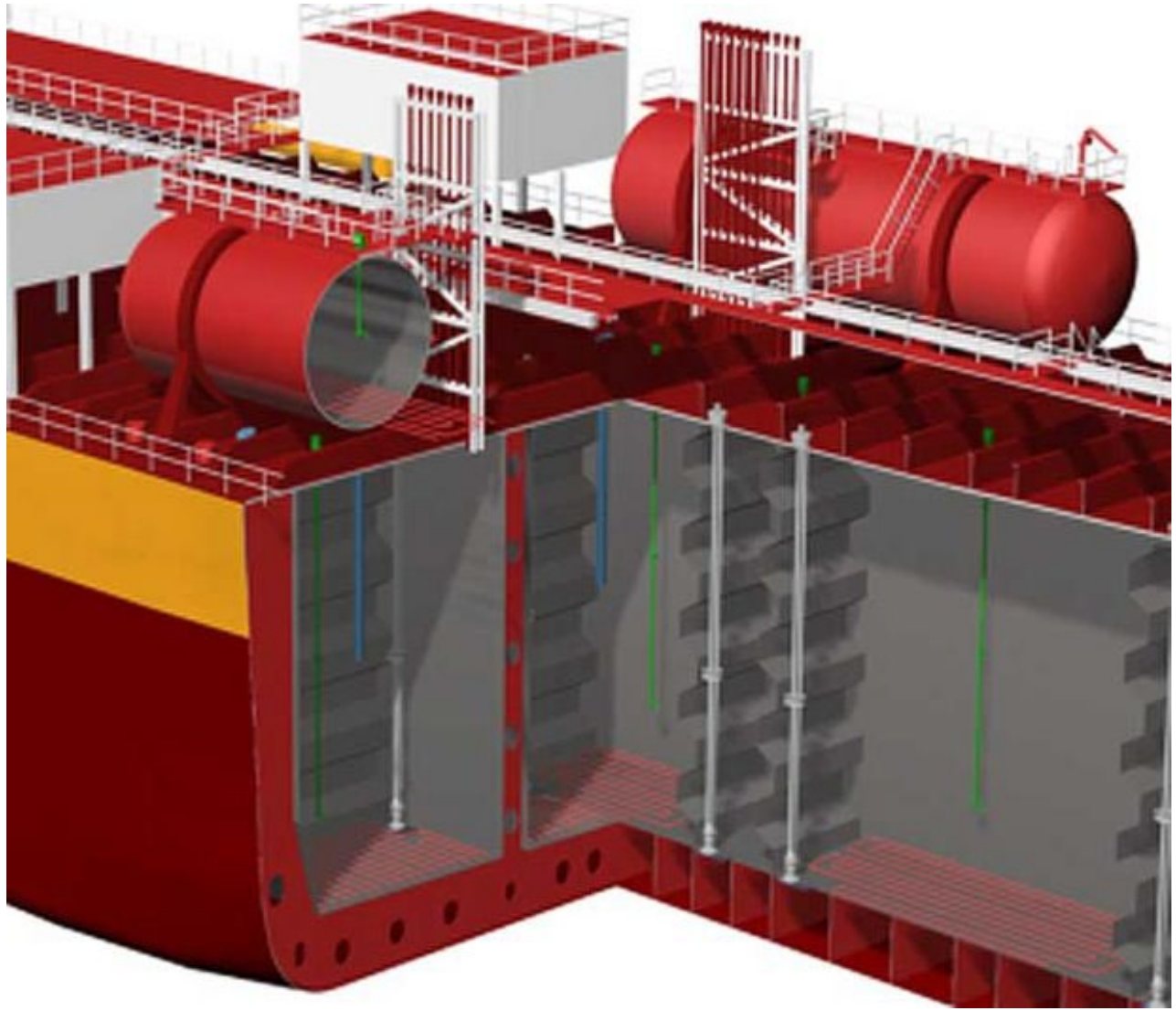
UV Spectrometer on Chemical Tankers

Peter Maasland

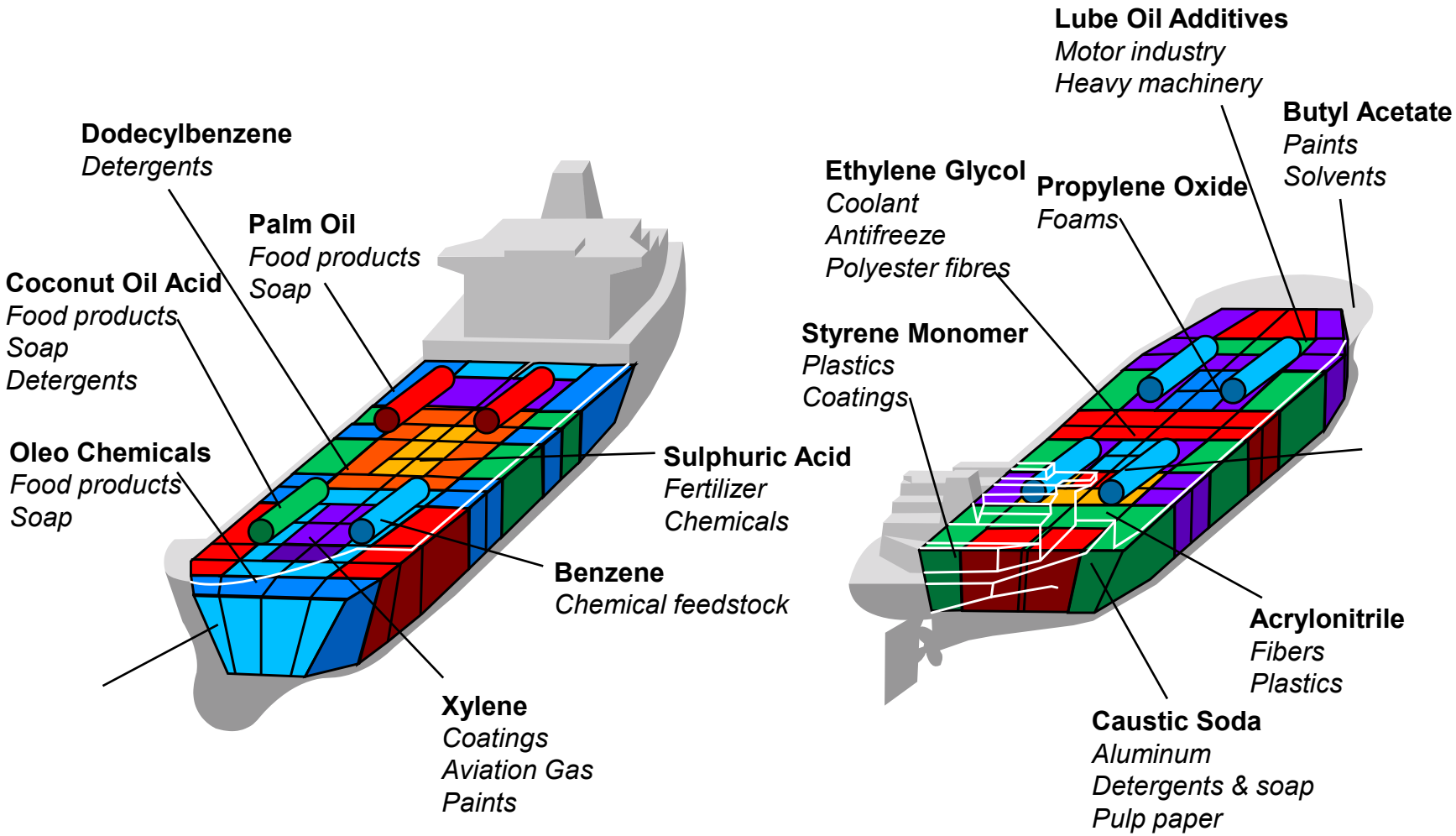
Stolt Tankers

Tank Cleaning

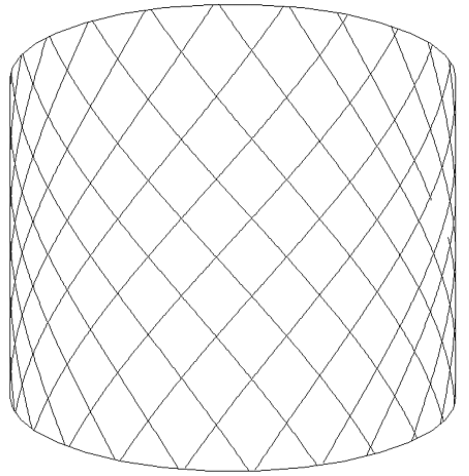
Tank Cleaning

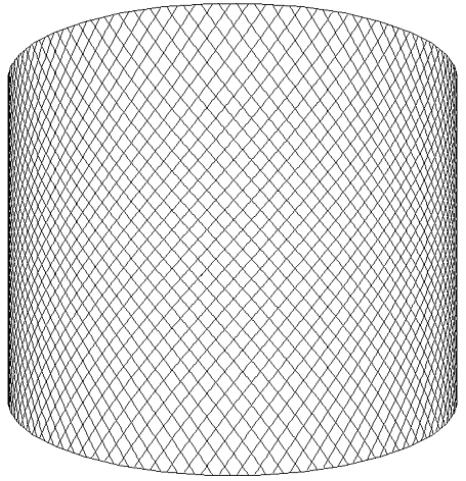


Tank Cleaning



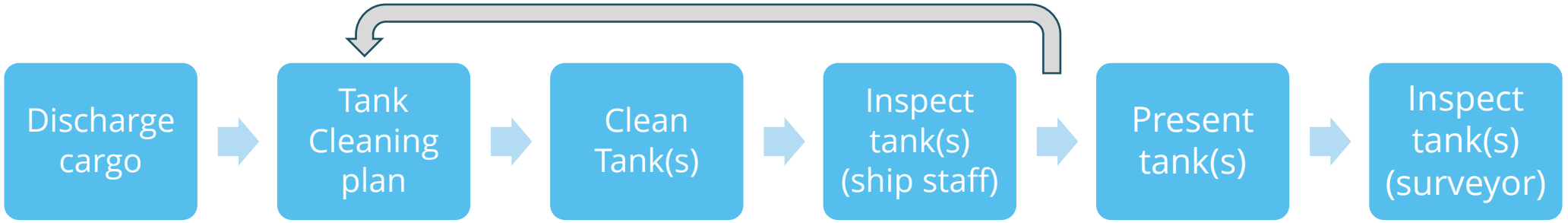
Tank Cleaning



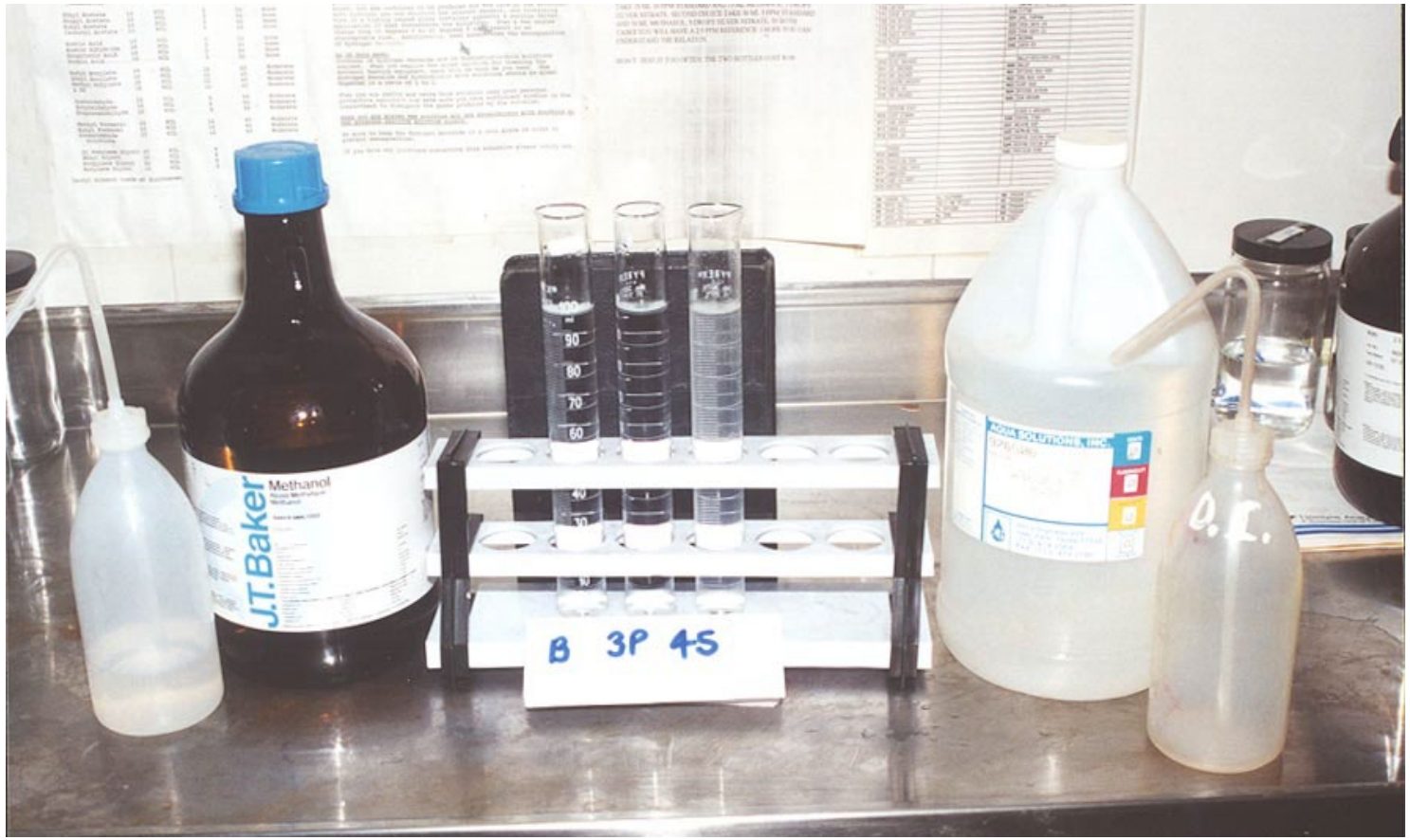


Tank cleaning

Tank Cleaning

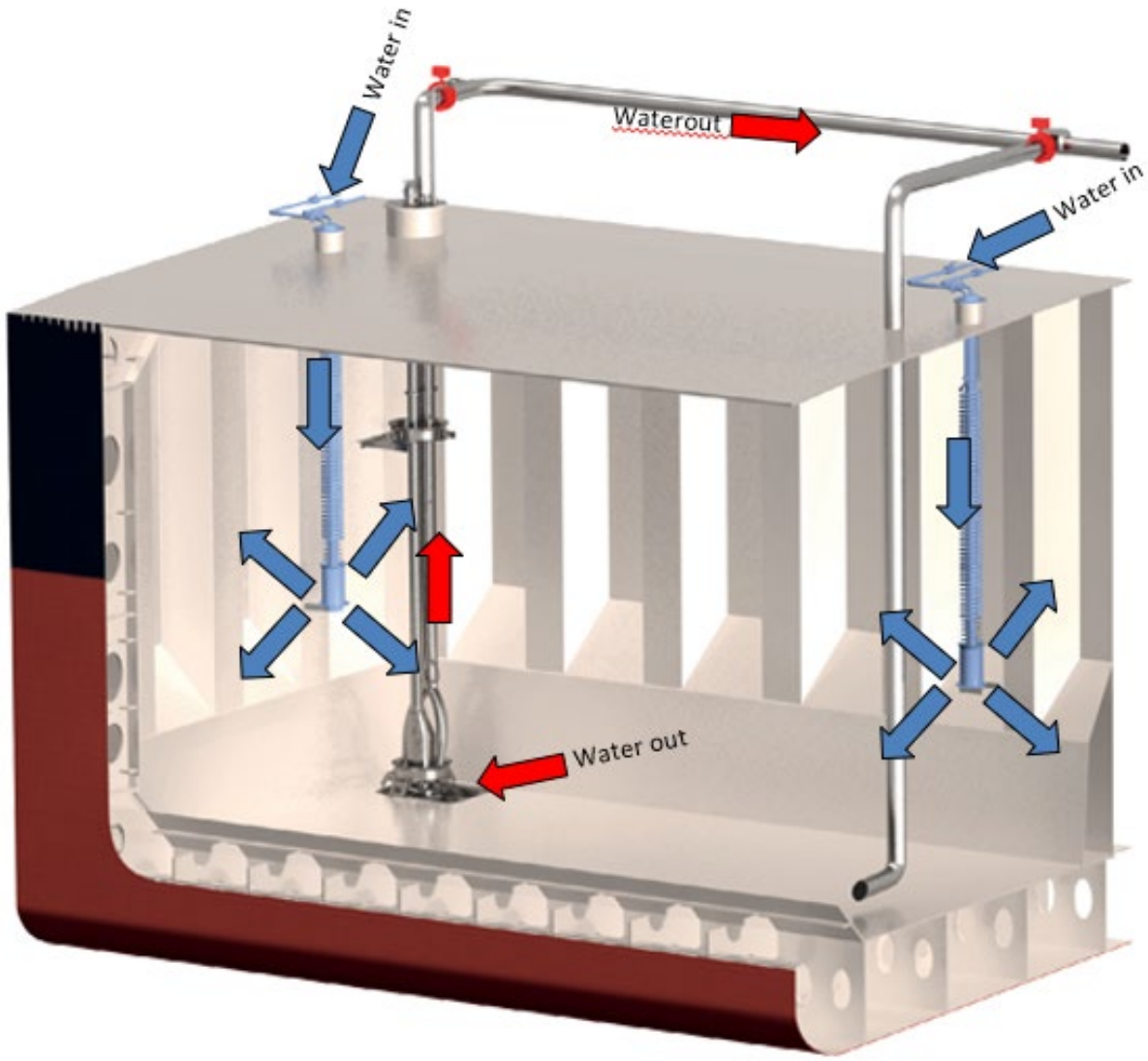


Tank Cleaning

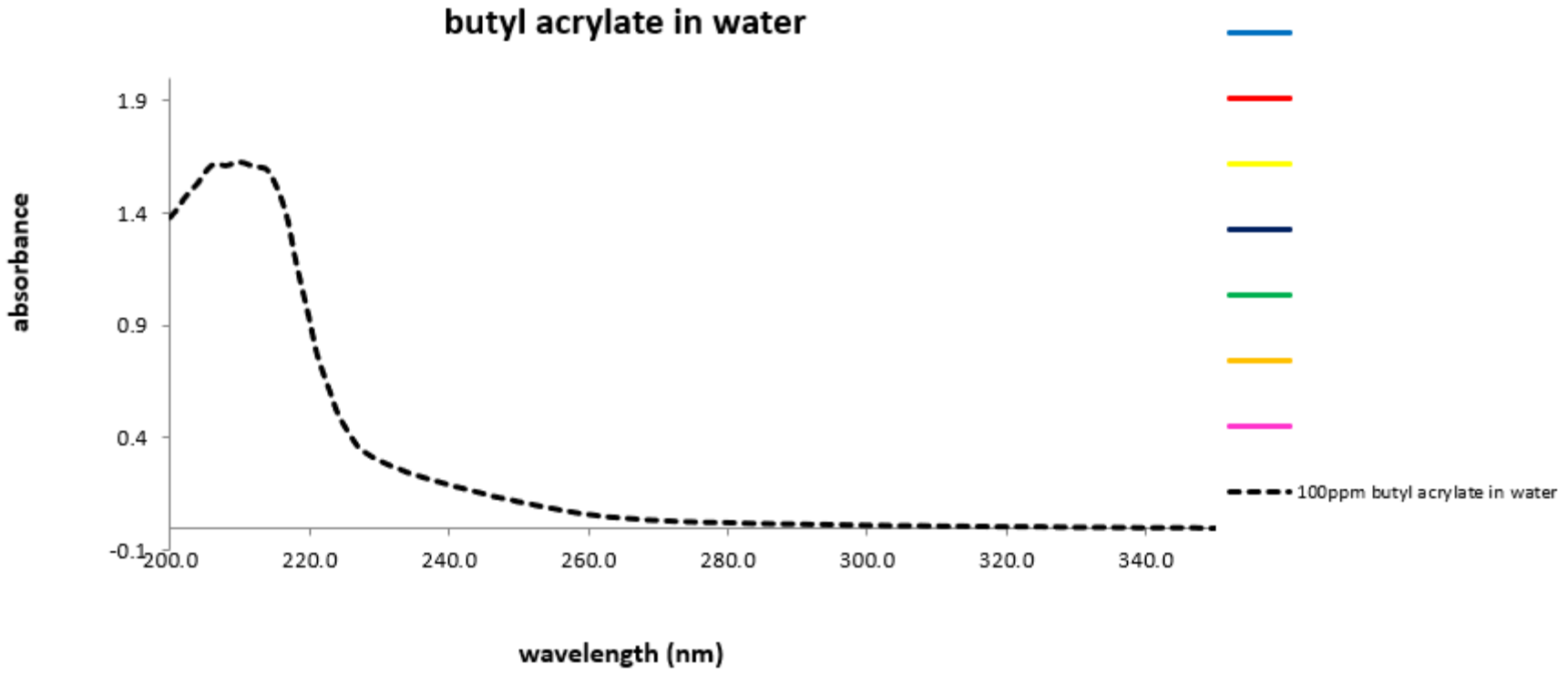


UV spectrometer

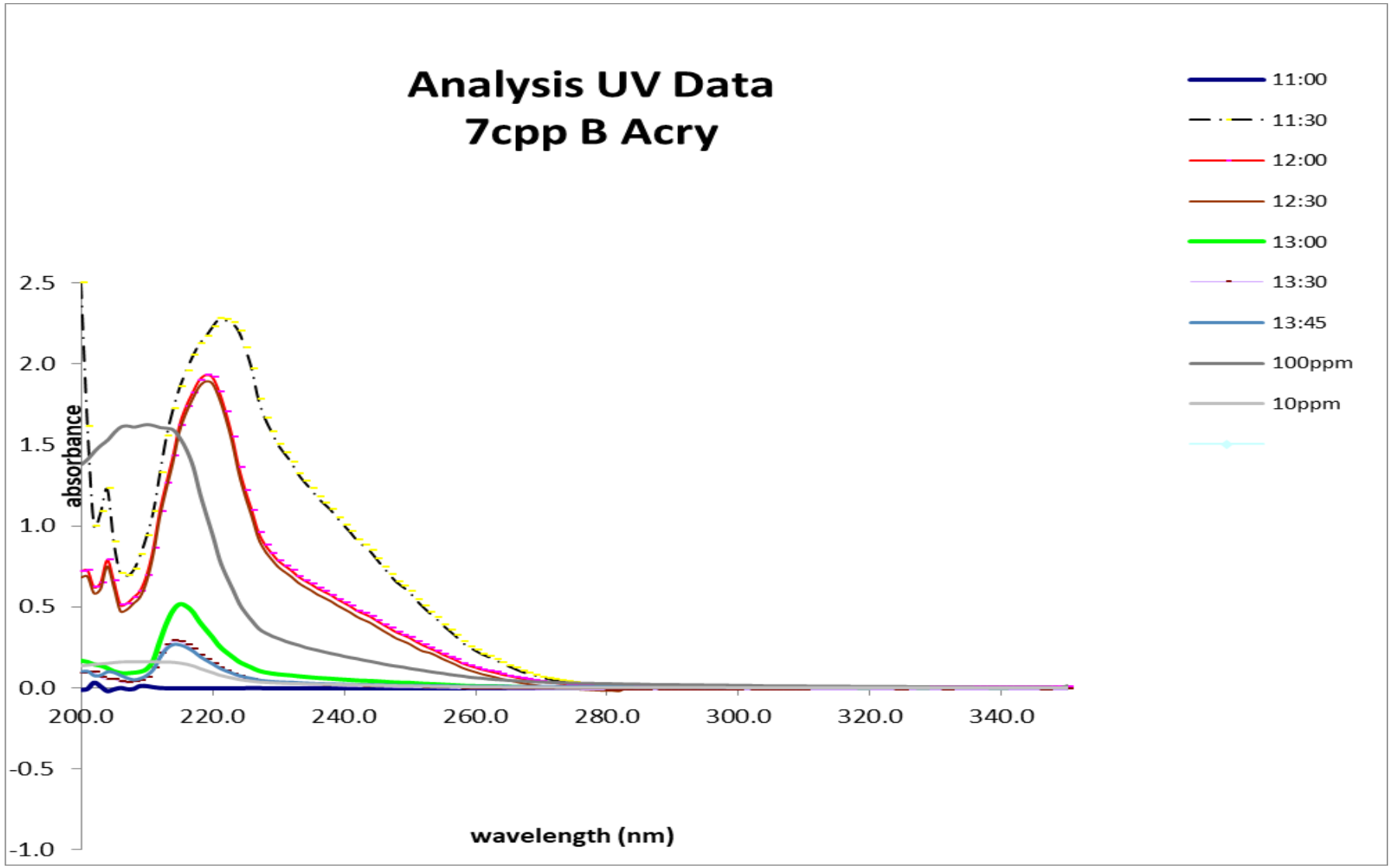
UV spectrometer



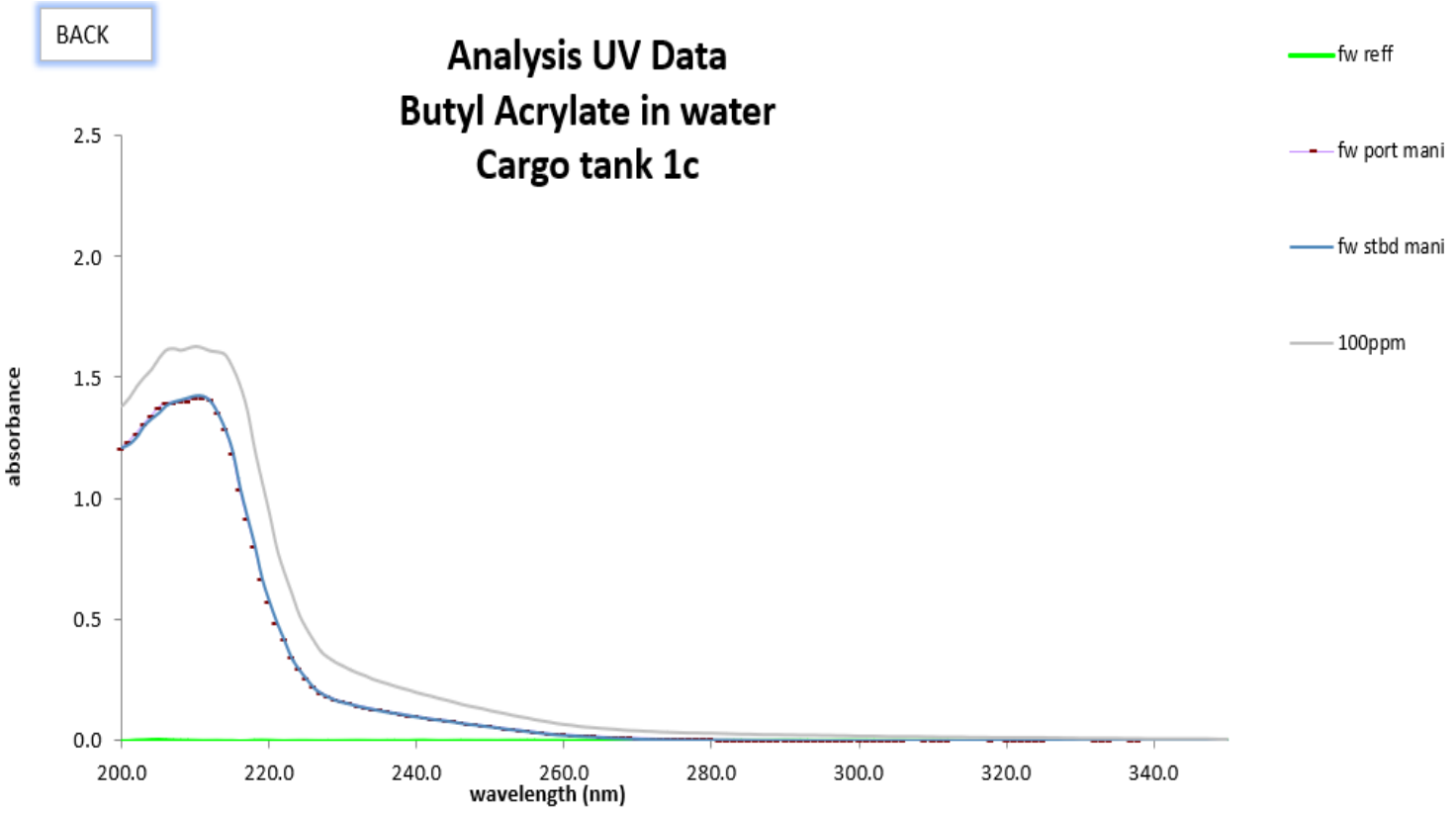
UV spectrometer

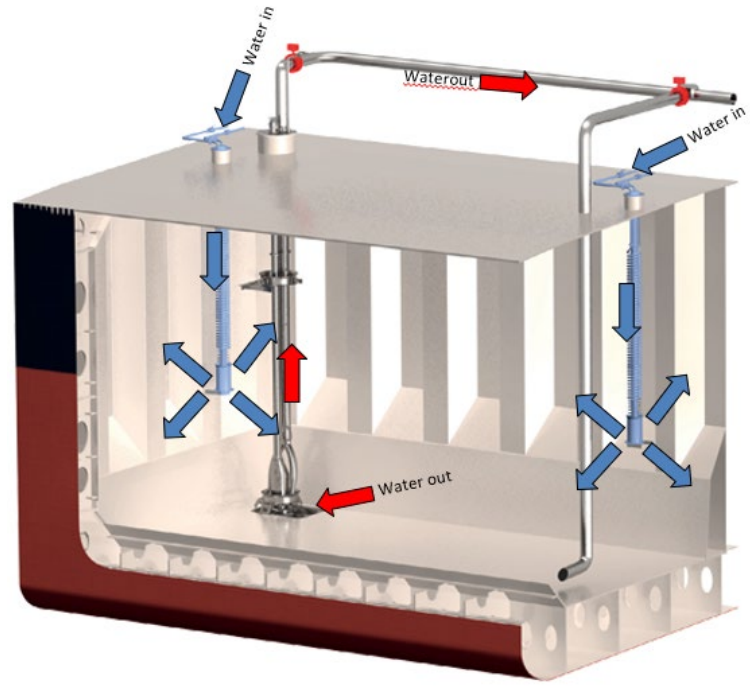


UV spectrometer



UV spectrometer





UV spectrometer

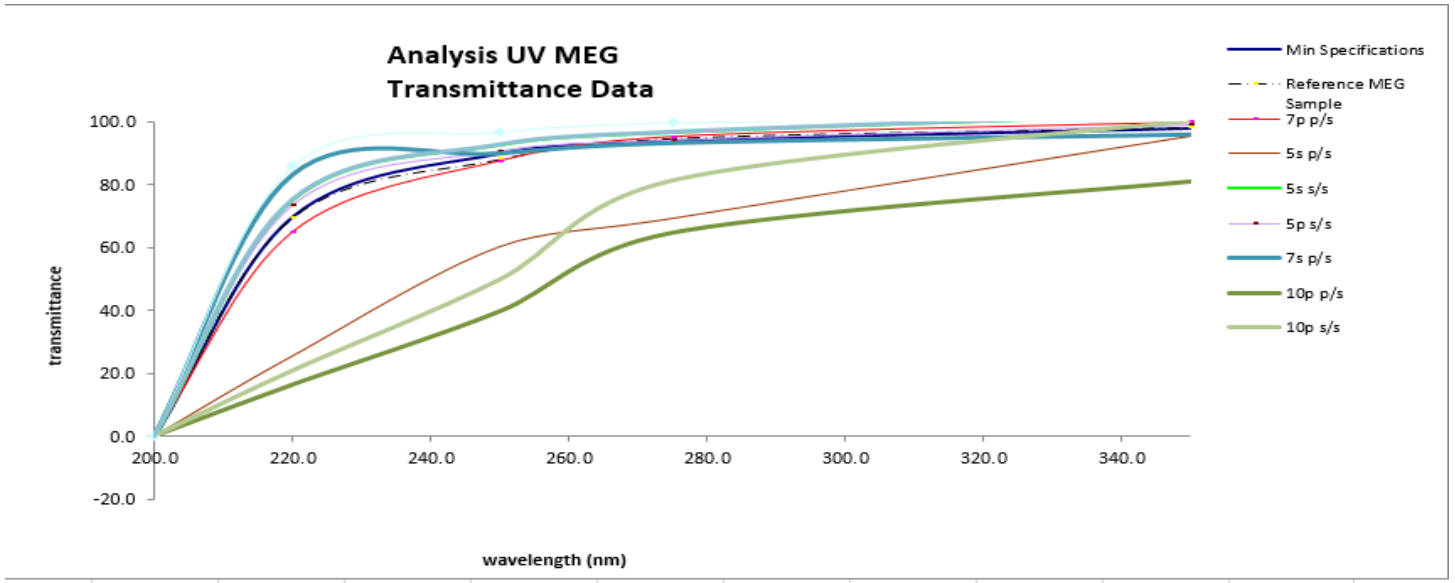
- Minimize enclosed space entries
  - eliminate enclosed space entries by third parties
- Verification of entire cargo system
- Reduce operational time:
  - inspection time alongside
  - total port time, congestion
- Reduce tank cleaning time
  - positive environmental impact

Trust

UV spectrometer

UV spectrometer

- **Product analysis**



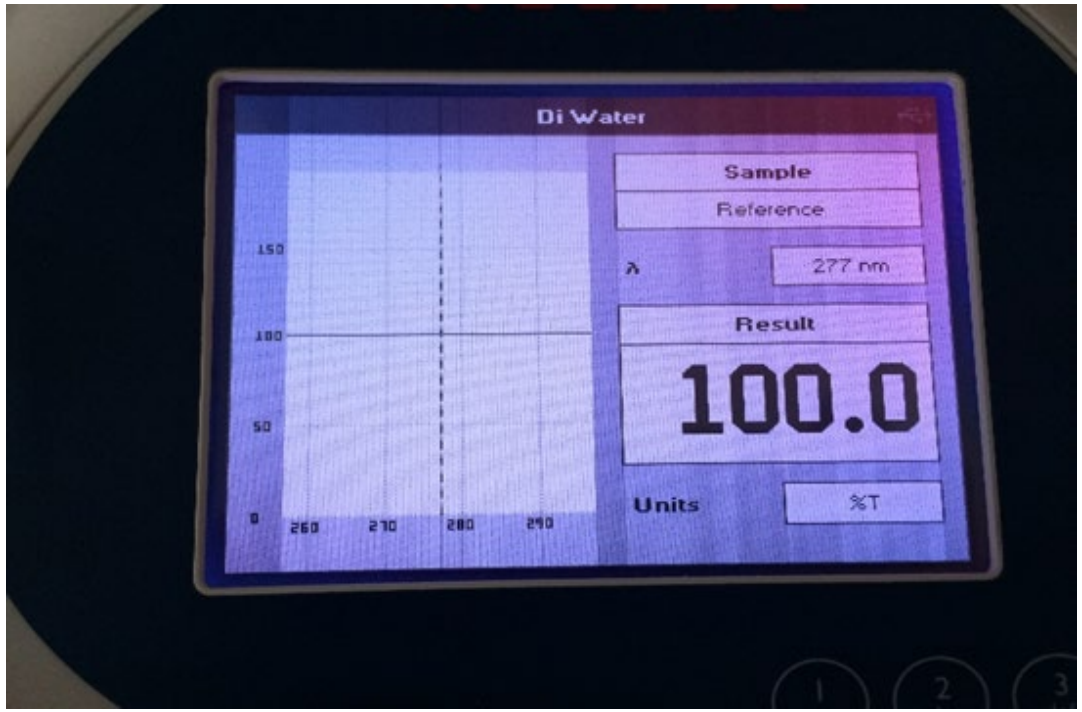
Date:-

Time	Min Specifications	Reference MEG Sample	7p p/s	5s p/s	5s s/s	5p s/s	7s p/s	10p p/s	10p s/s	10s s/s	5s s/s
200.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
220.0	70.0	69.4	64.8	25.4	75.1	73.3	83.1	16.3	20.8	85.8	75.1
250.0	90.0	88.0	87.4	60.1	92.6	90.6	89.9	39.6	49.7	96.7	92.6
275.0	94.0	94.7	95.1	69.1	96.6	94.0	93.2	64.6	81.2	99.7	96.6
350.0	98.0	98.2	99.7	95.2	102.4	98.9	95.9	80.9	100.2	102.3	102.4

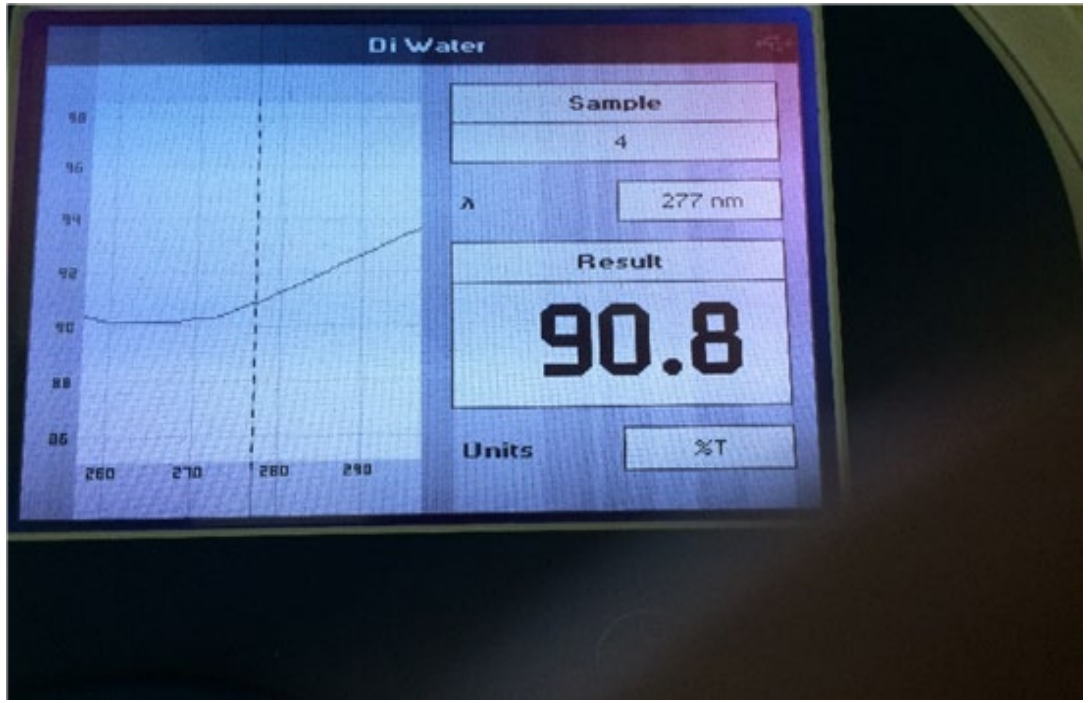
UV spectrometer

- **Purity of DI Water at 277nm**

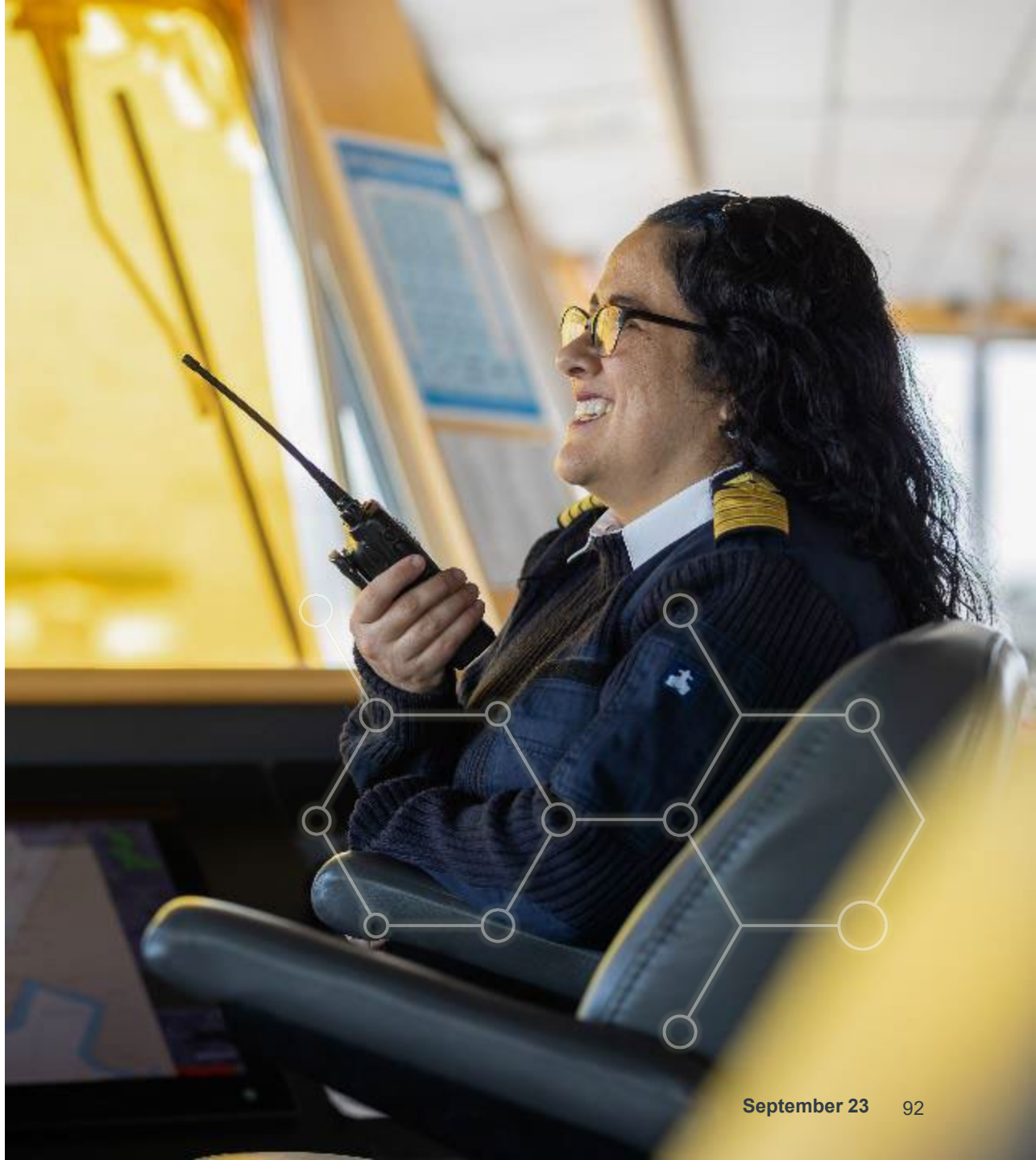
Reference the Unit using Di water



Test with contaminated Di water.



Thank you!



Questions?

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Lunch Buffet
Until 13:30

Full programme:

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International Energy Safety Conference 2023

Back to Basics Protocols

In partnership with: bp Chevron ExxonMobil

Back to Basics

AGENDA

1. Safe Access – Ship, Shore, and Railcar
2. IATA Samples Transport
3. PPE and Respiratory Protection Equipment
4. Confined or Enclosed Spaces
5. Lone Working

Safe Access

James Armstrong
Senior Vice President of Global Health, Safety & Training / ESG
AmSpec

Safe Access

- **Ships & Barges**
- **Shore Tanks**
- **Tank Trucks and Rail Cars**

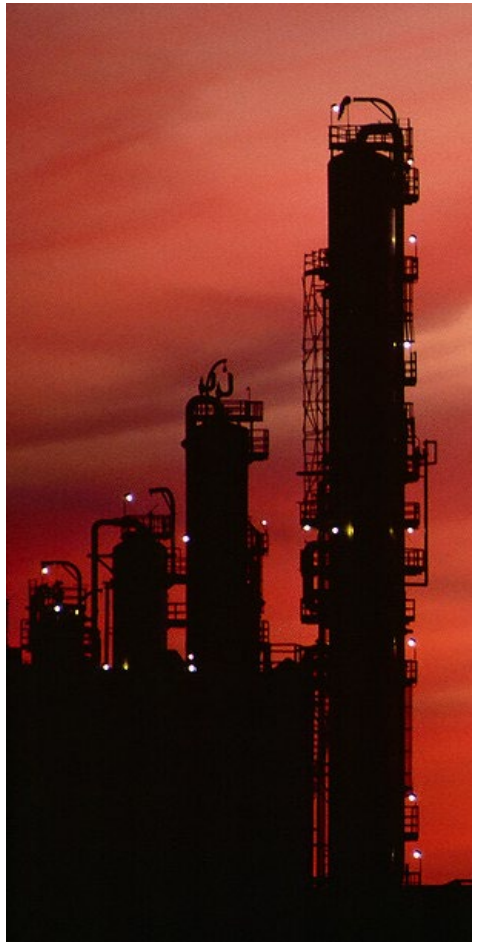
Introduction

Our Inspectors and Samplers spend most of their time;

- In a car driving to and from a job (or their home).
- Climbing up or down a shore tank to be gauged and/or sampled.
- On board a barge or vessel for sampling and gauging activities.

These activities all have their specific safety hazards that we are all aware of.

The activity of boarding a vessel or barge using a gangway, ladder, pilot ladder, basket etc. often carrying a multitude of equipment, sample bottles etc. has been associated with some specifically high risks.



Ships and barges

Boarding and disembarking of vessels offshore can be one of the most dangerous parts of being an inspector. Safe and proper access while boarding is critical because many fatalities have occurred from workers falling into the water or onto the surfaces below. Normal methods include:

- **Pilot ladder and accommodation ladder**
- **Helicopter**
- **Personnel Transfer Basket**

These transfers can all be made safely, as long as all the requirements and assessments have been met.

Access via Pilot Ladder

This is the most common means of accessing a vessel offshore, key points are:

- **Assistance should always be made available at either end of the transfer.**
- **While transferring, the inspector must wear the correct PPE, especially non-skid footwear, and personal floatation device with crotch strap and the right buoyancy and auto inflatable type.**
- **Three points of contact must be maintained while on the pilot ladder or accommodation ladder.**
- **Transfers should always be made at the peak of the rise, and not when the launch is falling.**
- **All equipment must be transferred by deck crane or heaving line.**
- **Ideally all transfers are made during daylight hours to increase safety.**
- **Follow the IMO guidance on the rigging structure.**

REQUIRED BOARDING ARRANGEMENTS FOR PILOT

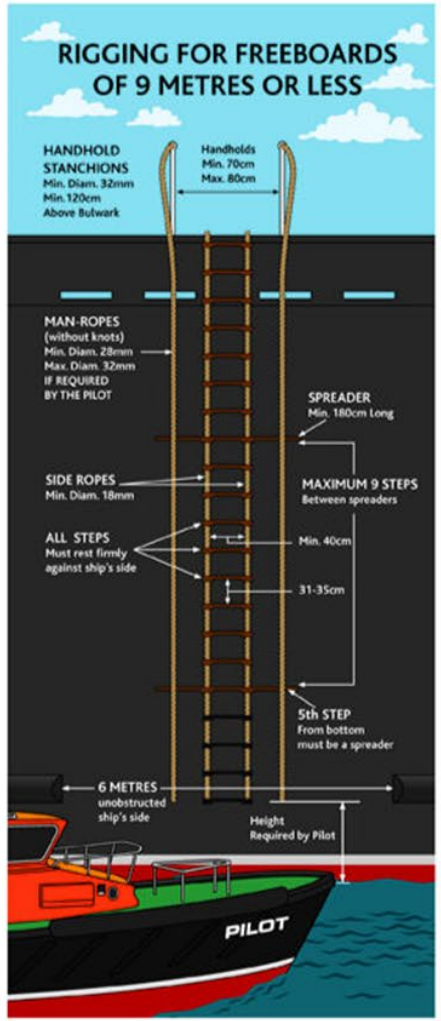
IMO INTERNATIONAL MARITIME ORGANIZATION

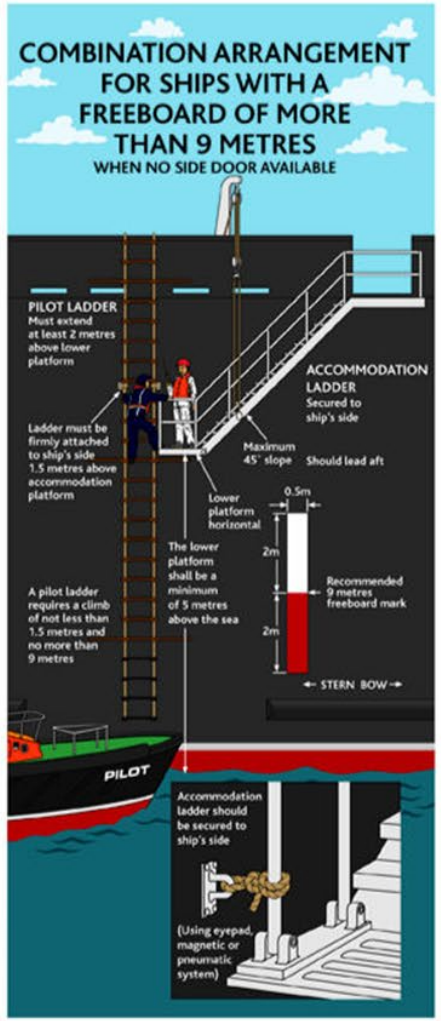
In accordance with SOLAS Regulation V/23 & IMO Resolution A.1045(27)

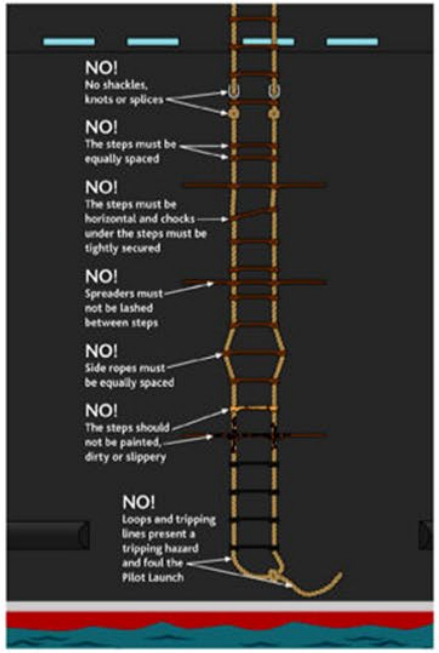
INTERNATIONAL MARITIME PILOTS' ASSOCIATION

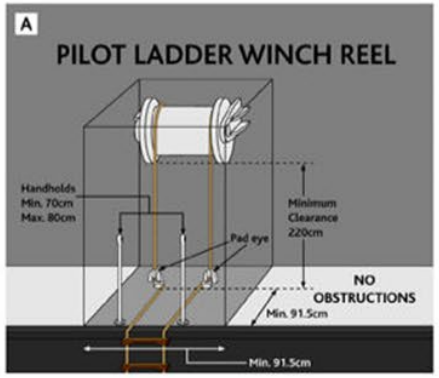
H.Q.S. "Wellington" Temple Stairs, Victoria Embankment, London WC2R 2PN Tel: +44 (0)20 7240 3973 Fax: +44 (0)20 7210 3518 Email: office@impahq.org

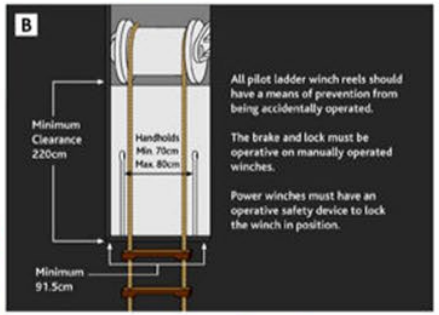
This document and all IMO Pilot-related documents are available for download at: http://www.impahq.org

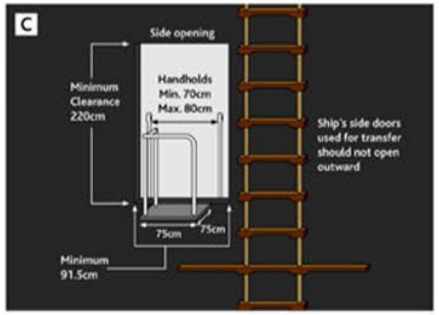












Access via Helicopter

When accessing a vessel by helicopter, the dispatcher at the heliport and the pilot of the helicopter are in command.

- HUET training is recommended for all inspectors
- Prior to takeoff, the inspector must attend a safety briefing to make sure they understand the expectations.
- When you get to the vessel for landing, exit the helicopter before taking off the personal flotation device, always stay where the pilot can see.
- If practical, walk around the front of the helicopter, and let the pilot know when you have gathered your belongings and it safe for him to depart.
- Check in with vessel security prior to beginning work.

Personnel Transfer Basket (PTB)

Personnel Transfer Baskets are regarded as least preferred means for transfer.

- This should only be used if a proper risk assessment has been made and it is the only, safe method, where the use of alternate means of transfer is less safe or impractical.
- The risk assessment should include as minimum if the basket has been certified, the crane has been certified, and crew has been certified for personnel transfers, together with weather conditions and weight distribution.
- The inspector's physical condition and their own JSA to assess the safety of the transfer.

Shore tanks

Working on top of shore tanks and in tank farms is no less dangerous than working on or transferring to a ship. When an inspector is driving through a tank farm, or working on top of tank, one small mistake can cause serious issues.

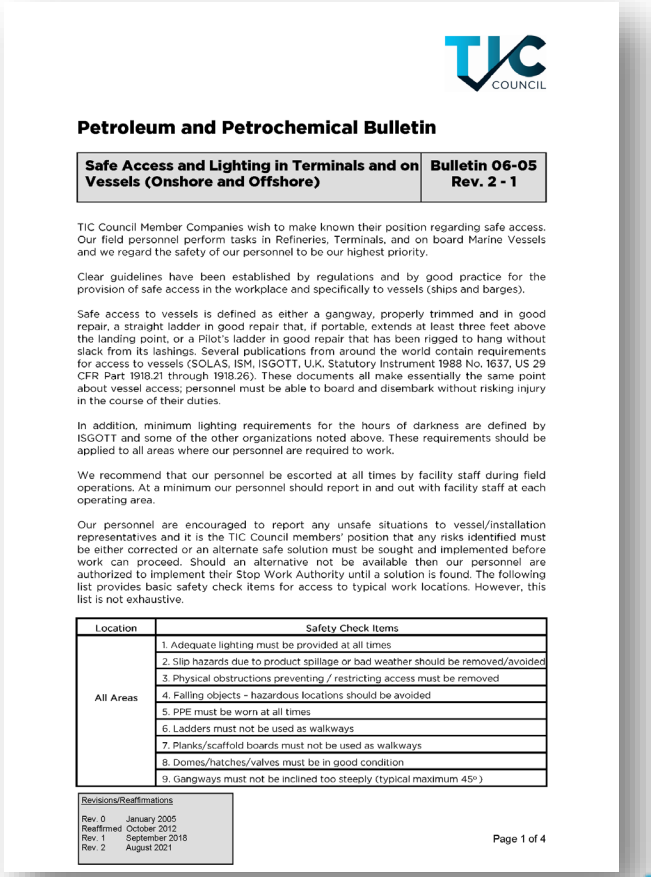
- Most tank farms have the same general rules, but it is important to be familiar with any specific rules.
- The first thing to remember is knowing the hazards you will encounter and how to protect yourself from them.
- No inspector should be alone in any shore facility without the correct safety measures in place.

Shore facilities

Refineries and terminals are involved in majority of the inspection activities. The risk associated with these facilities differ from one facility to another.

Most of these are included within Bulletin 06-05 which incorporates:

- **general safety across all work areas,**
- **jetties and berths,**
- **on-shore requirements,**
- **off-shore requirements.**



TIC COUNCIL

Petroleum and Petrochemical Bulletin

Safe Access and Lighting in Terminals and on Vessels (Onshore and Offshore)	Bulletin 06-05 Rev. 2 - 1

TIC Council Member Companies wish to make known their position regarding safe access. Our field personnel perform tasks in Refineries, Terminals, and on board Marine Vessels and we regard the safety of our personnel to be our highest priority.

Clear guidelines have been established by regulations and by good practice for the provision of safe access in the workplace and specifically to vessels (ships and barges).

Safe access to vessels is defined as either a gangway, properly trimmed and in good repair, a straight ladder in good repair that, if portable, extends at least three feet above the landing point, or a Pilot's ladder in good repair that has been rigged to hang without slack from its lashings. Several publications from around the world contain requirements for access to vessels (SOLAS, ISM, ISGOTT, U.K. Statutory Instrument 1988 No. 1637, US 29 CFR Part 1918.21 through 1918.26). These documents all make essentially the same point about vessel access; personnel must be able to board and disembark without risking injury in the course of their duties.

In addition, minimum lighting requirements for the hours of darkness are defined by ISGOTT and some of the other organizations noted above. These requirements should be applied to all areas where our personnel are required to work.

We recommend that our personnel be escorted at all times by facility staff during field operations. At a minimum our personnel should report in and out with facility staff at each operating area.

Our personnel are encouraged to report any unsafe situations to vessel/installation representatives and it is the TIC Council members' position that any risks identified must be either corrected or an alternate safe solution must be sought and implemented before work can proceed. Should an alternative not be available then our personnel are authorized to implement their Stop Work Authority until a solution is found. The following list provides basic safety check items for access to typical work locations. However, this list is not exhaustive.

Location	Safety Check Items
All Areas	1. Adequate lighting must be provided at all times
	2. Slip hazards due to product spillage or bad weather should be removed/avoided
	3. Physical obstructions preventing / restricting access must be removed
	4. Falling objects - hazardous locations should be avoided
	5. PPE must be worn at all times
	6. Ladders must not be used as walkways
	7. Planks/scaffold boards must not be used as walkways
	8. Domes/hatches/valves must be in good condition
	9. Gangways must not be inclined too steeply (typical maximum 45º)

Revisions/Reaffirmations

Rev. 0 January 2005
Reaffirmed October 2012
Rev. 1 September 2018
Rev. 2 August 2021

Page 1 of 4

Tank Truck and Rail Car

Working around rail cars and road tank trucks provide a unique set of risks not experienced in normal marine activities.

These activities increases the risks through:

- **working at Height**
- **working around live rail lines**
- **open sampling and measurements**
- **confined space potential**

IATA Sample Transportation

Toine van Moorsel
Global HSE-DG Manager
Saybolt

IATA Dangerous Goods Regulations

Basis

- The UN Subcommittee of Experts on the transport of Dangerous Goods develops recommended procedures
- IAEA develops procedures for radioactive materials
- International Civil Aviation Organization / Technical Instructions, considered to be the law
- The International Air Transport Association (IATA) is the trade association for the world's airlines, representing some 300 airlines or 83% of total air traffic. IATA supports many areas of aviation activity and help formulate industry policy on critical aviation issues. The IATA DG Regulations is an operational manual
- Industry send samples globally for analysis, hence compliance is a must

IATA Dangerous Goods Regulations

Responsibilities

- It is the shipper's responsibility to ensure that all of the applicable air transport requirements are met.
- Including classification, identification, packing, marking and labelling and documentation.
- The employer of personnel that perform functions aimed at ensuring that DG are transported in accordance with these regulations must establish and maintain a DG training program (recurrent)
- Courier companies must carry out acceptance checks. Do they have the manpower to do so, bearing in mind the millions of packages they carry on a daily basis?

IATA Dangerous Goods Regulations

Definition

- Dangerous Goods are articles or substances which are capable of posing a hazard to health, safety, property or the environment and which are shown in the list of DG in the Regulations, or which are classified accordingly by the shipper. (SDS!)
- Identified with a UN number. I.e.: UN 1268, Petroleum Distillates n.o.s. various FP and IBP, UN 1294 Toluene, UN 3481, Lithium batteries contained in equipment
- These are commonly referred to as “restricted”, or “regulated” articles or substances.
- All chemicals are dangerous. Not all chemicals are restricted

IATA Dangerous Goods Regulations

Restricted or Not?

- Bunker Fuel?
- Petroleum Crude Oil?
- UN 1202?
- A gas monitor?
- Laboratory chemicals?
- Renewable fuels?
- Samples?
- Flammable Liquids?

IATA Dangerous Goods Regulations

Main Risks

- Cargo not correctly prepared for air transportation (hidden dangerous goods).
- Critical samples delayed since they are not correctly identified and declared. (i.e.: “oil sample”, “bunker fuel”).
- Profile damage and heavy fines.
- Grounding of an airplane / Emergency landing.
- Cleaning of airplanes, equipment, airport facilities.
- https://www.faa.gov/hazmat/what_is_hazmat/when_things_go_wrong

IATA Dangerous Goods Regulations

Action Required

- Assume responsibilities
- Use only recent SDS and apply classification criteria
- Initiate IATA DGR training
- Use the appropriate packaging and Packing Instructions
- Document and photograph your shipments
- Develop safe operating procedures with freight forwarders (let them demonstrate and show proof they are approved to process shipments)
- Avoid compromising air transportation safety, ignorance is no defense

Personnel Protective Equipment

Clive Stallwood
HSE Director
Bureau Veritas

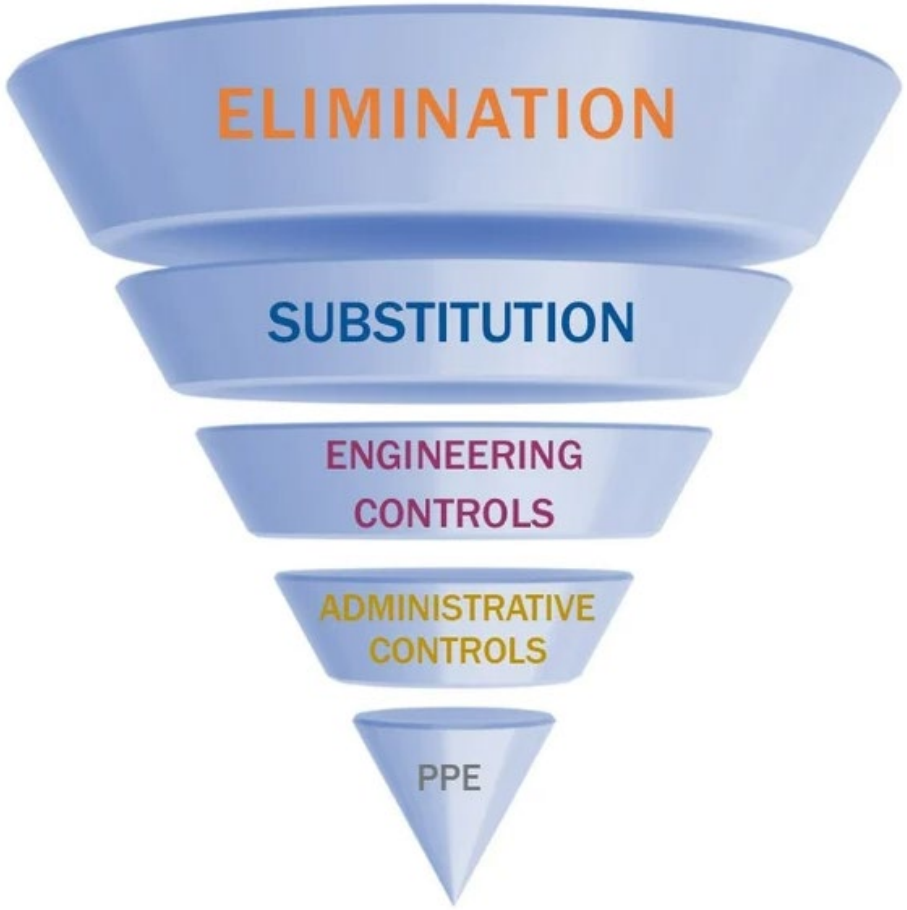
Personnel Protective Equipment (PPE)

The last resort: what does this mean?

Following the Risk Management Hierarchy, when all the other risk reduction measures have been taken and there is still a risk of harm, we need to use PPE.

The bottom line is that PPE must be capable of protecting the employee.

The employee then has to wear it and wear it properly!



Personnel Protective Equipment (PPE)

Personnel Protective Equipment (PPE)

Why wouldn’t an employee wear PPE?

- Not available
- They don’t like it
- Poor fitting
- No one else in the work area wears it
- Nobody checks the worker is wearing
- Willingness to wear (F**K the Management attitude)

Respiratory Protective Equipment (RPE)

- RPE is used to protect the wearer from the toxic gas and particulates-it truly is the last line of protection
- Two types-Respirators and Breathing Apparatus
- Respirators use filters to purify the air
- Breathing apparatus has an independent source (air cylinder or compressor)
- It is not easy to wear
- If it goes wrong .....

Respiratory Protective Equipment (RPE)

What is the most important factor which can affect the correct operation of the RPE?

- **Preventive Maintenance of the equipment by a competent person**
- **User training**
- **Drilling and practice**
- **Fit testing**
- **Pre-use inspection**
- **All of the above**

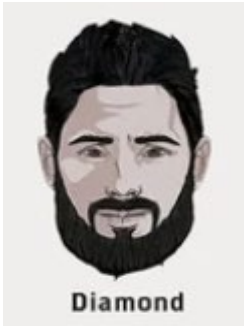
Respiratory Protective Equipment (RPE)

Let's assume that the respiratory equipment is fit for use (maintained, stored correctly etc.), the users are competent (trained and tested)

It is vitally important that the user behaves correctly: follows their training, checks their equipment and is fully prepared for the job

One issue that frequently crops up is Facial hair!

- Beard lovers…
- Any facial hair that lies along what is known as "the sealing area" of a respirator will interfere with its effectiveness.
- Which of these types of facial hair is acceptable?



Respiratory Protective Equipment (RPE)

- For the afore mentioned reasons We would NOT like to use SCBA.
- Although we are requested to sample cargoes with high levels of H2S by our clients.
- Working with Hydrogen Sulphide is currently under discussion at the TIC council.
- The RPE is used to protect the wearer from the toxic gas-it truly is the last line of protection.
- It is not pleasant to wear!
- If it goes wrong…

Confined or Enclosed Spaces

Mark Harrison
Global Inspection Lead – Caleb Brett
Intertek

Confined or Enclosed Spaces

A confined space can be defined as;

‘A place that is substantially (though not always entirely) enclosed where there is a reasonably foreseeable risk of serious injury from hazardous substances or conditions within the space or nearby’

Confined or Enclosed Spaces

There are sadly all too many examples of fatalities that occur in confined spaces. These are usually associated with asphyxiation from hazardous substances or Oxygen depletion, although other injuries are also common.

In each of these cases the individuals were either overcome by toxic fumes or they collapsed as a result of an Oxygen deficient atmosphere. Although there are other risks associated with confined spaces asphyxiation is the main cause of fatalities.

Around 60% of these fatalities involve would-be rescuers who act impulsively without appropriate training.

A few examples from around the world obtained from actual investigation reports:

Confined or Enclosed Spaces

- **Two men were painting inside an enclosed space on an offshore installation. The two men collapsed and a third man positioned on the outside with breathing apparatus tried to make entry. It is thought he removed the equipment to make entry easier and he also collapsed. All three men died.**

- **A man entered a water tank on an offshore installation and became incapacitated. A co-worker, in an attempt to rescue entered the tank and for the same reason, was followed by two other co-workers. One recovered following medical treatment, the other three all died.**

- **A seaman entered a vessels chain locker to secure a loose chain and collapsed. A second seaman raised the alarm but rather than waiting for help he also entered the chain locker and collapsed. On arrival a rescuer then entered the chain locker wearing just an EEBD (emergency escape breathing device). It is thought that the hood became dislodged and the rescuer also collapsed. All three men died.**

Confined or Enclosed Spaces

Confined space hazards obviously apply to tanks for storage and transport of chemicals or materials that are typically encountered during Cargo Inspection activities. However, many other physical situations may also constitute a confined space including;

Engine rooms, cofferdams, ballast tanks, forepeak, sample store, pipes, enclosed walkways, roof on external floating roof tanks, silos, ducts, tunnels, manholes, shafts, excavations etc.

It should be noted that these are not only encountered during Cargo Inspection activities.

Confined or Enclosed Spaces

The permit to work system must be managed by the terminal/vessel and must as a minimum include:

- **Risk Assessment for the activity, conducted by competent individuals in association with the inspection personnel concerned**
- **Atmosphere in the confined/enclosed space has been tested by a competent person immediately prior to, and during, the activity.**
- **Method of communication from the personnel on the tank to the terminal during the operation**
- **An immediate and validated method of escape / recovery in the event of an incident**
- **A minimum of two persons to perform the activity.**

Confined or Enclosed Spaces

We are however required at times to enter tanks for the purpose of either a visual cleanliness inspection, wall wash inspection or for calibration.

Tank entry areas could include:

- **Vessel / Barge tanks**
- **Shore tanks**
- **Rail cars**
- **Road tank wagons.**

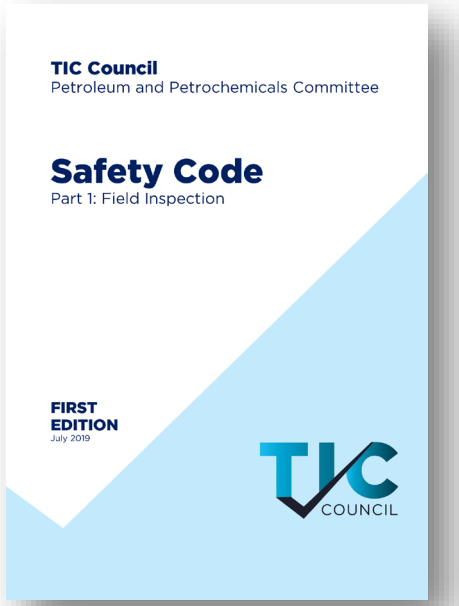
A cautionary note should be made that the headspace within the tank can extend out from the tank hatch forming a “bubble” that can potentially contain toxic/flammable vapours or be oxygen deficient.

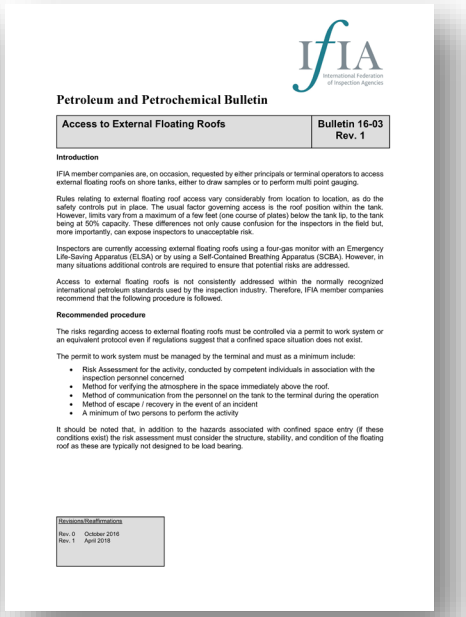
Confined or Enclosed Spaces

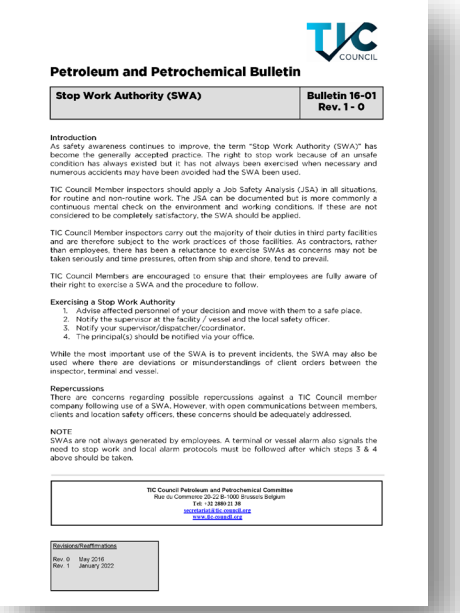
- **As stipulated within the TIC Safety code, floating roofs on shore tanks are Always considered a confined space, irrespective of the roof height.**

- **It should be noted that this is also irrespective of any local regulations which may permit access to certain levels.**

- **The code and bulletin can be located free of charge on the web site: https://www.tic-council.org/publications/bulletins**







Lone Working

Clive Stallwood
HSE Director
Bureau Veritas

Lone Working

Work carried out by people who work by themselves without close or direct supervision

Occurs frequently –it is the "Norm" particularly on terminals

We have a legal duty of care to our employees-to ensure the health and safety of our employees at their place of work

We rely on our workers being completely aware of all the risks and control measures within the work area, for example emergency plans & alarms, assembly points, speed limits etc.

Lone Working

- **The area in which we work is controlled by the company that manages the facility**
- **Although the risks are the same site the control procedures are different**
- **Our workers need to know the site controls and rules**
- **Is that the case in all the sites we visit? YES?NO?**
- **Best case scenario**
  - **Our workers are fully inducted at the site**
  - **The induction is repeated periodically**
  - **We have 2-way radio to keep in contact with the site control**
  - **The inspector is monitored whilst active**
- **“Man DOWN” devices can be used to provide a communications link and emergency response; majority still needs the inspector to activate it**

Lone Working

- **Form the two topics we have discussed there is a common theme.**
- **We rely on our workforce to behave in the right way.**
- **To work safely as soon as they punch the clock, from the journey to the work site, whilst working at the site, using their PPE correctly , following site rules and on the journey back.**
- **Not an easy thing to do!**
- **How can this be achieved?**
- **Organisations with a strong safety culture do this…**

Q & A

TIC COUNCIL

International Energy Safety Conference 2023

In partnership with:

TJC COUNCIL

Afternoon Break
Until 15:30

Full programme:

TIC COUNCIL

International Energy Safety Conference 2023

Human Behavioral Aspects of Safety

In partnership with: bp Chevron ExxonMobil

Behavioral Aspects of Safety

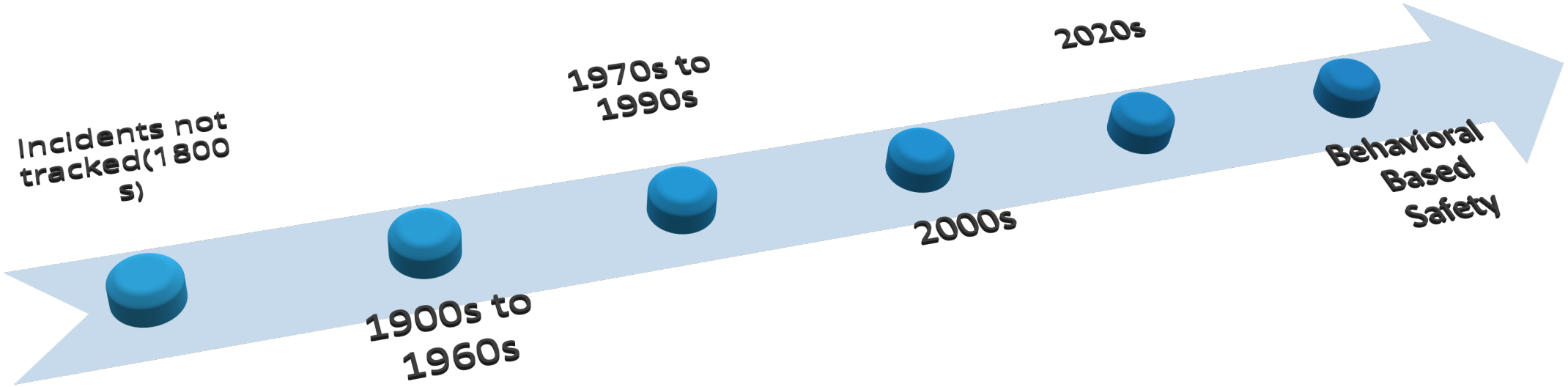
AGENDA

1. Introduction
2. Inspection Industry Progression
3. Petroleum Industry Perspective
4. Behavioral Safety Workshop
5. Questions and Answers

Introduction

Melanie Dill
Global Inspection Contract Holder
Shell

A Journey of a Thousand Miles Begins with a Single Step



Inspection Industry Progression

Mark Harrison
Global Inspection Lead – Caleb Brett
Intertek

Clive Stallwood
HSE Director
Bureau Veritas

Inspection Industry Progression

- TIC safety initiative started in 2010
- Members submitting data on an annual basis
- Benchmark statistics for the sector
- Comparison with other industry benchmarks, namely CONCAWE and IOGP
- Data has been submitted by all committee members since 2013
- Reports issued internally every year which forms the following statistics

Inspection Industry Progression

The data allows calculation of the following rates as used by OSHA and based on 200,000 hours:

- TRIR (Total Recordable Incident Rate).
- LTIR (Lost Time Incident Rate).
- DART (Days Away, Restricted or Transferred rate).

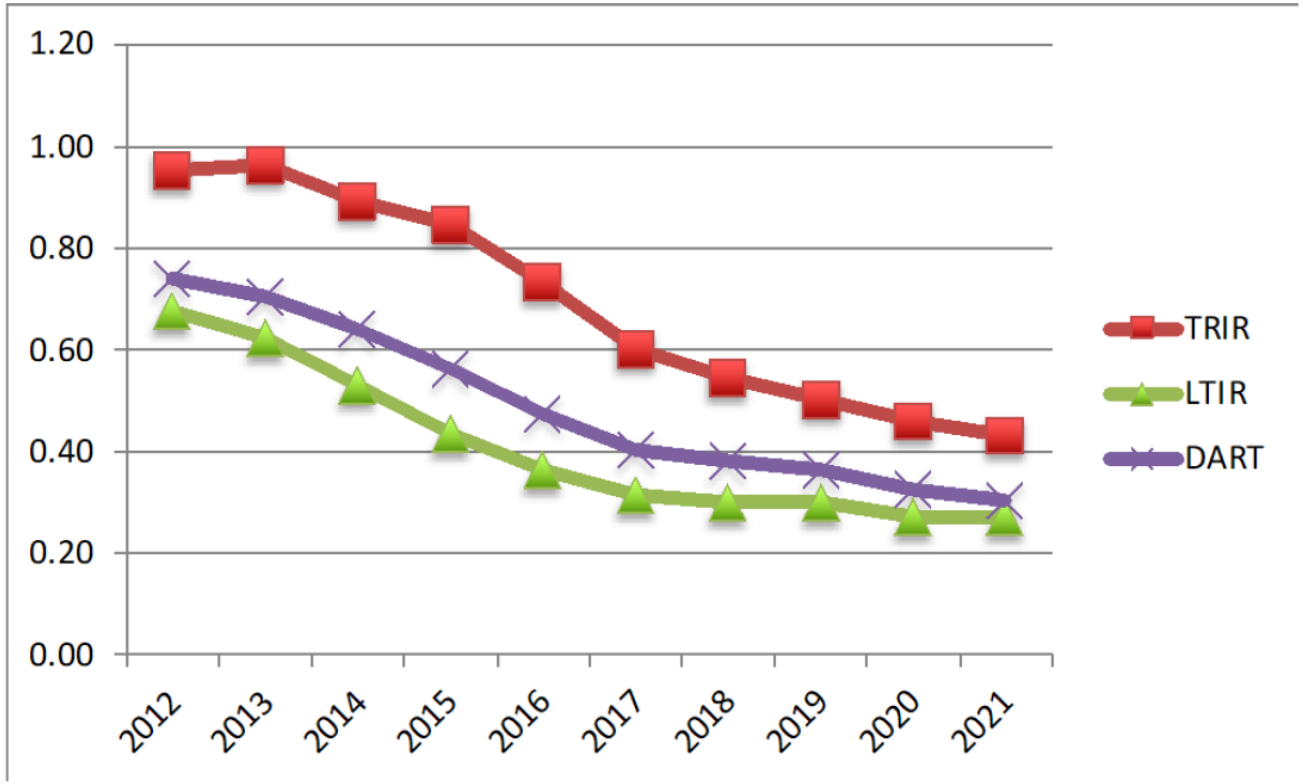


Figure 1: TIC 3-year Rolling averages – TRIR, LTIR, DART

Inspection Industry Progression

There was one fatality for TIC Council (TIC) in 2021. With the fatality in 2018 now excluded, the 3-year mean fatality rate remains below 1 per 100 million manhours.

- FAR (Fatal Accident Rate).
- LWIF (Lost Workday Injury Frequency) per 1 million hours.
- AIF (All Injury Frequency) per 1 million Hours.

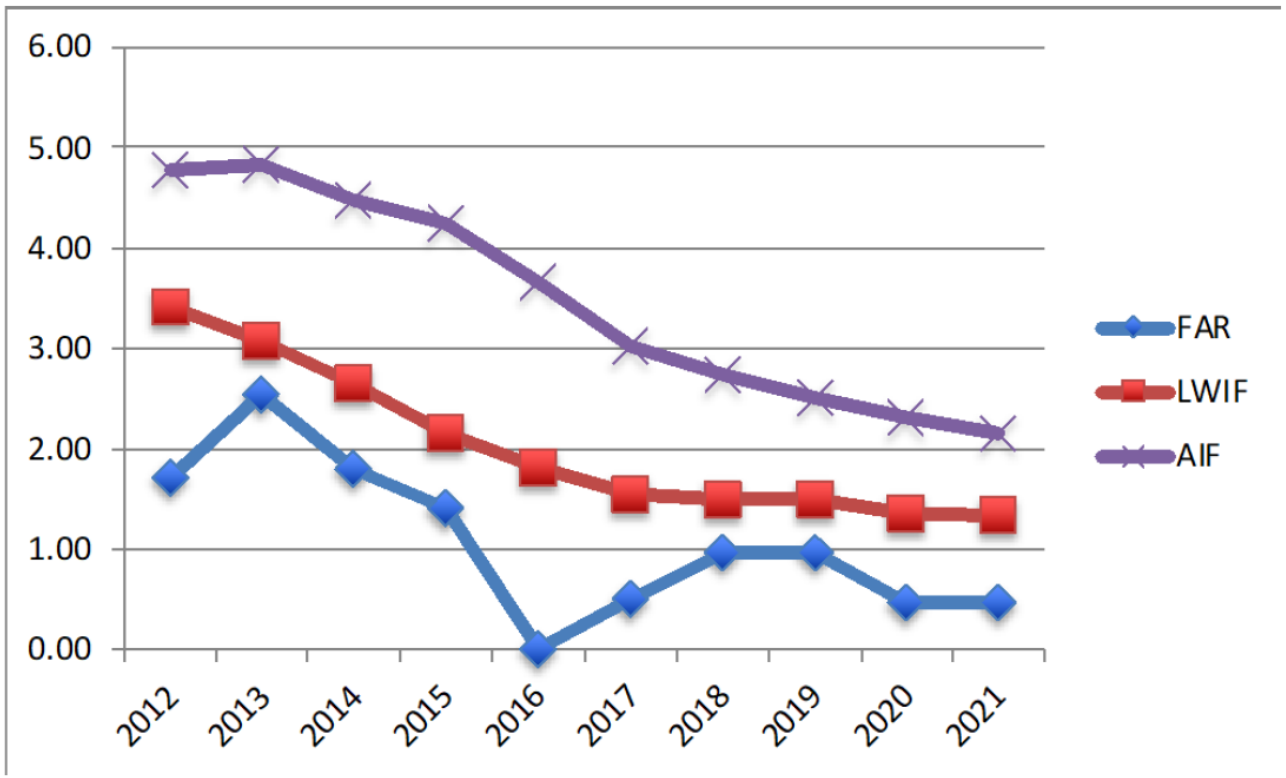


Figure 2: TIC 3-year Rolling averages – FAR, LWIF, AIF

Inspection Industry Progression

CONCAWE use LWIF (Lost Workday Injury Frequency) based on 1,000,000 hours. IOGP use the same base but call this indicator LTIF (Lost Time Injury Frequency).

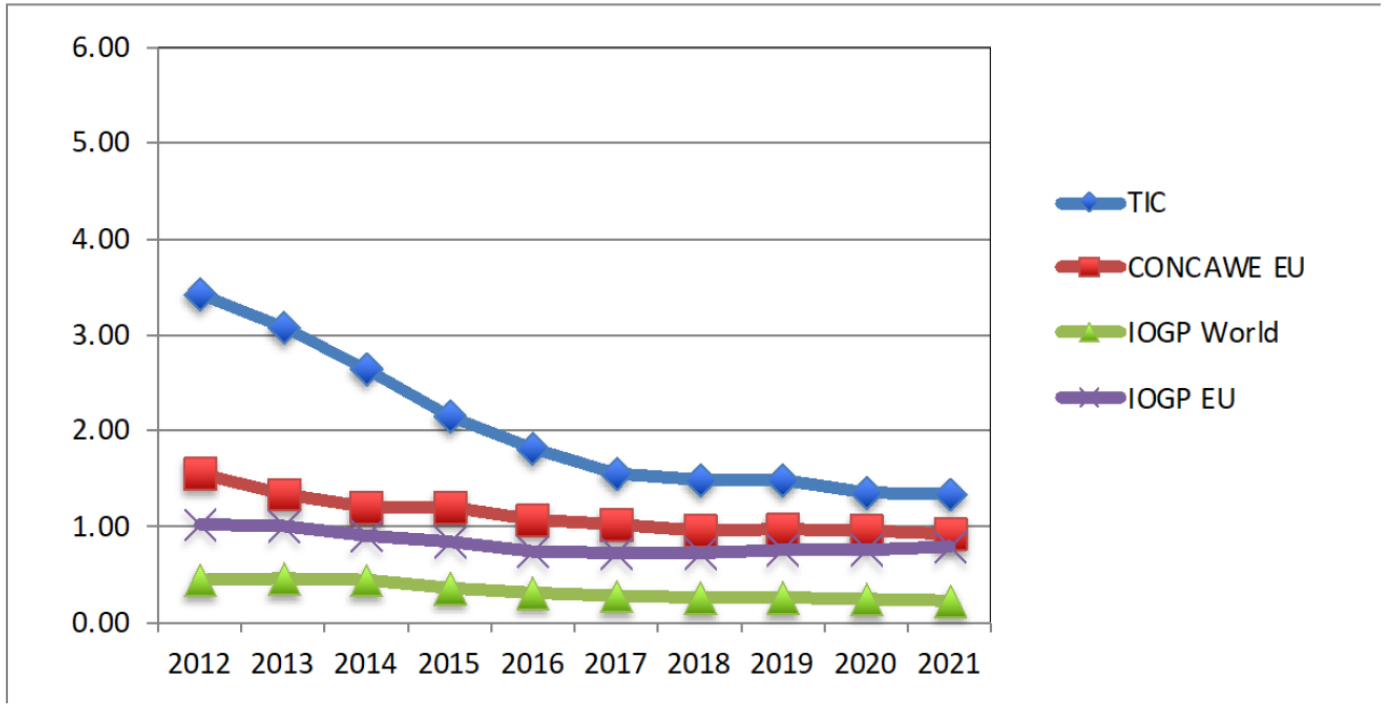
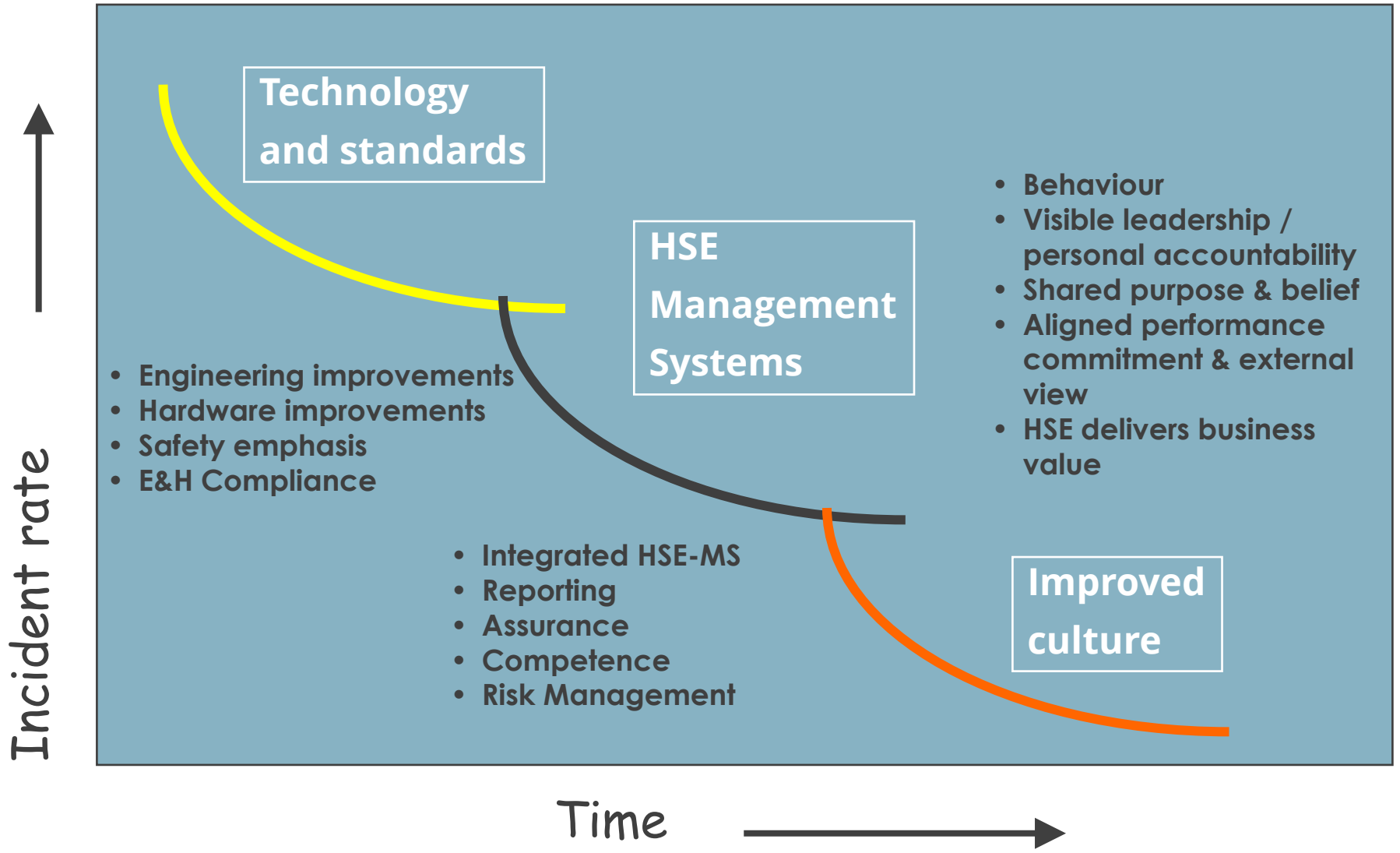


Figure 5 – LWIF 3-year rolling average

HSE Performance over time



energy INSTITUTE

Hearts AND Minds

Petroleum Industry Perspective

Chad Gasper
HSE Manager
Chevron

Caroline Gormley
OE / HSSE Strategist
Chevron

the human energy company™

Chevron

OE Journey

Presenter:
Chad Gasper- OE/HSE Manager
Caroline Gormley- HOP Advisor

The journey

A critical shift in culture

Marissa Badenhorst

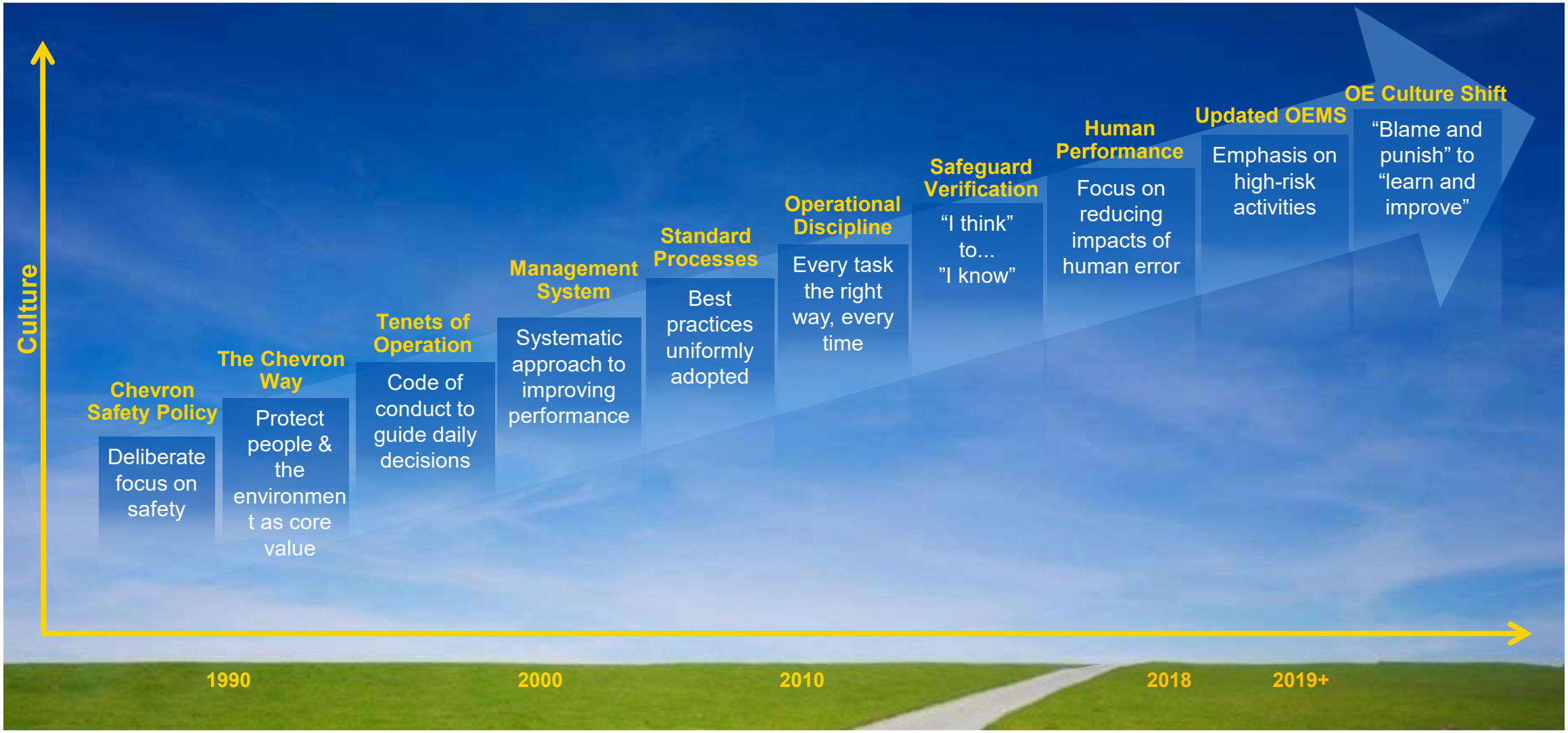
VP Health, Safety & Environment

click here to watch video

"…it's a different way of approaching our work, ultimately we all want the same thing, that's incident-free operations and efficient operations and HOP is key to us achieving those results."

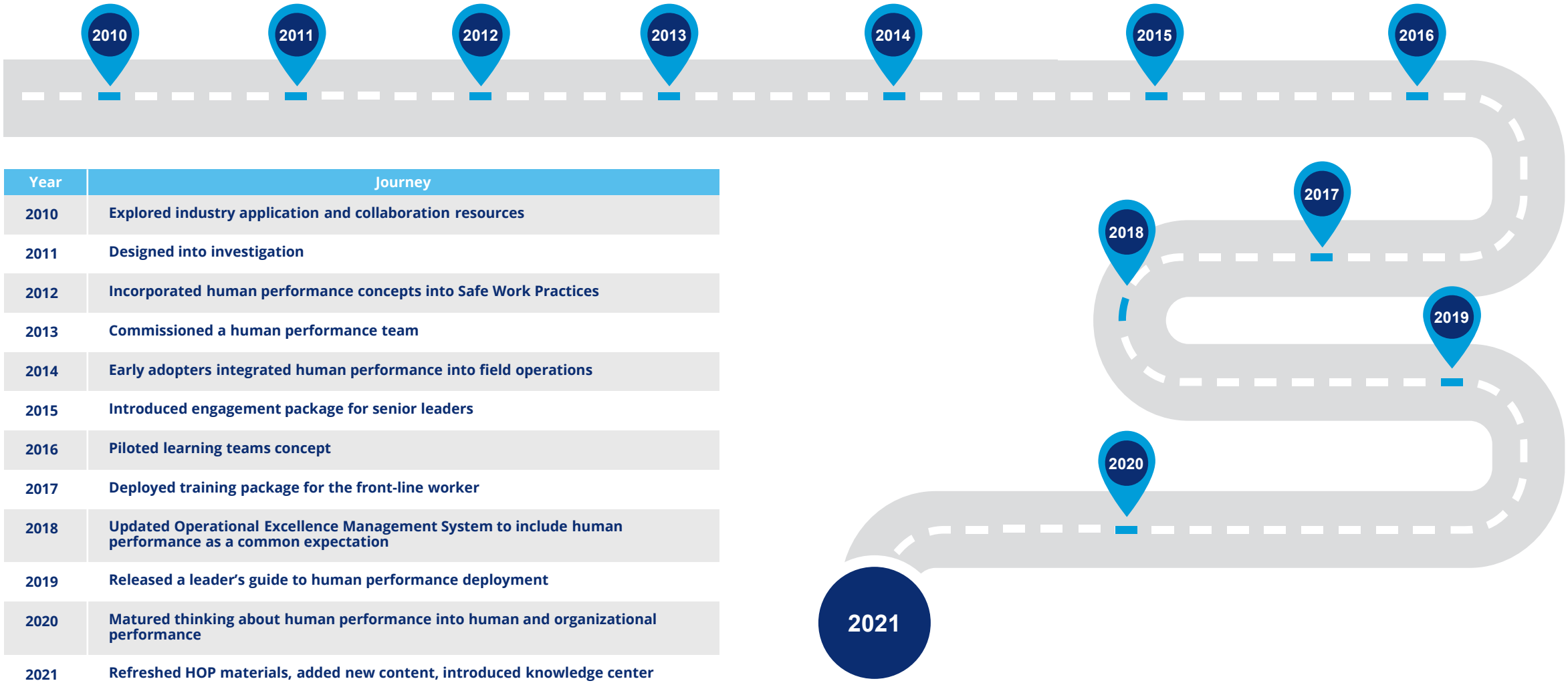
key milestones in our OE journey

Watch 'Our OE Journey' in 3 minutes



Chevron HOP

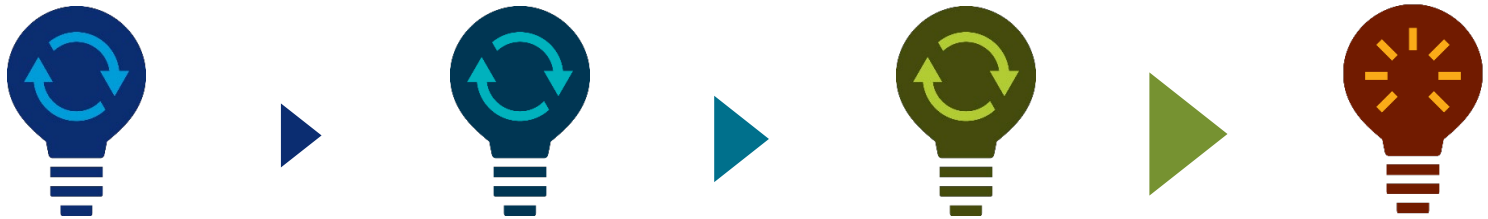
Journey



Year	Journey
2010	Explored industry application and collaboration resources
2011	Designed into investigation
2012	Incorporated human performance concepts into Safe Work Practices
2013	Commissioned a human performance team
2014	Early adopters integrated human performance into field operations
2015	Introduced engagement package for senior leaders
2016	Piloted learning teams concept
2017	Deployed training package for the front-line worker
2018	Updated Operational Excellence Management System to include human performance as a common expectation
2019	Released a leader's guide to human performance deployment
2020	Matured thinking about human performance into human and organizational performance
2021	Refreshed HOP materials, added new content, introduced knowledge center

Fuels learning and improving

empowering people to power performance



applying HOP principles …

- Error is normal
- Systems influence behavior
- Blame fixes nothing
- Learning and improving is essential
- Response matters

builds trust that …

- We will be heard
- There are no negative repercussions for speaking up
- Leaders assume positive intent

creates psychological safety, so we can ...

- Challenge without fear
- Say “I don’t know” or “I made a mistake”
- Report how work is really done
- Hold each other accountable without blame

foster a learning culture

Improvement is the result of the intentional cultivation of trust, psychological safety and feedback.

Effective application of HOP principles provides the basis for learning quickly and improving effectively.


Continue the journey

Behavioral Safety Workshop

Julian Wilson
Senior HSSE Strategist
Shell

Behavioral Safety Workshop

Webpage of the interactive workshop:
https://www.trainingportal.co.uk/ShellGlobal

Instructions to gain access to the workshop can be found in the following slides.

Instructions in word format here:

Microsoft Word Document

For technical support, please reach out to: Email: support@mintra.com

Shell Waterside Safety course registration via the Mintra Portal.

Completing the Shell Waterside Safety training via the Mintra portal is for contractors and Non-Operated Venture staff where Shell is a shareholder. Any individuals working in SOVs with access via GID to Workday Learning and this course, should always complete their training through Workday Learning. This is to ensure mandatory requirements monitored through Workday Learning can be tracked.

If engagements held between Shell Shareholder Representative and Board of Directors/JV Management have determined that contractor workforce will take the training, it is up to JV organisations to manage the training for their staff. This can be done by accessing Mintra.

The training experience compliments the needed engagements and conversations in teams on how training should be applied in the context of day-to-day work.

Behavioral Safety Workshop

MINTRA

MINTRA

TJC COUNCIL

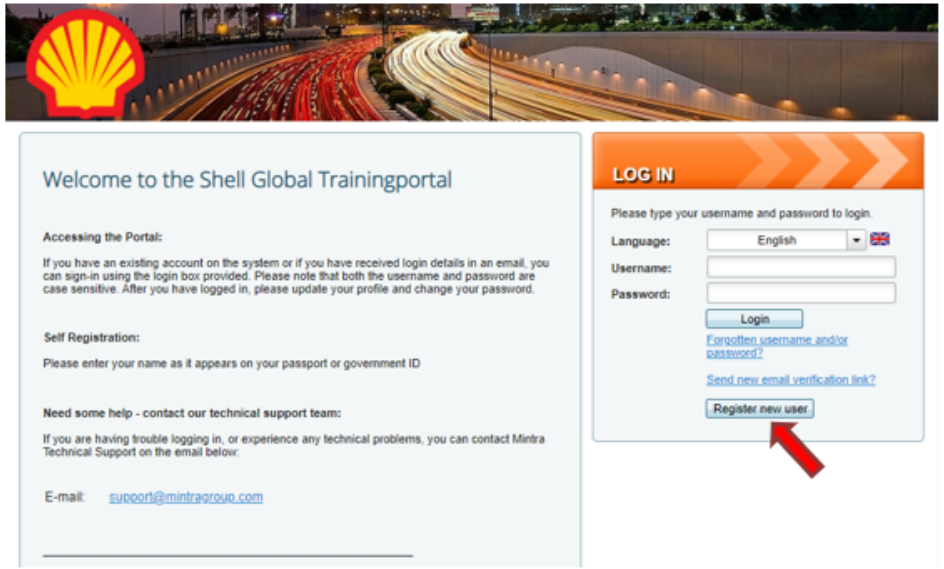
How To:

Self-Register for the portal and start the Shell Waterside Safety Training and generate a certificate of completion if required

1. On your (smart) device like computer, tablet, phone, etc. open a browser and navigate to:

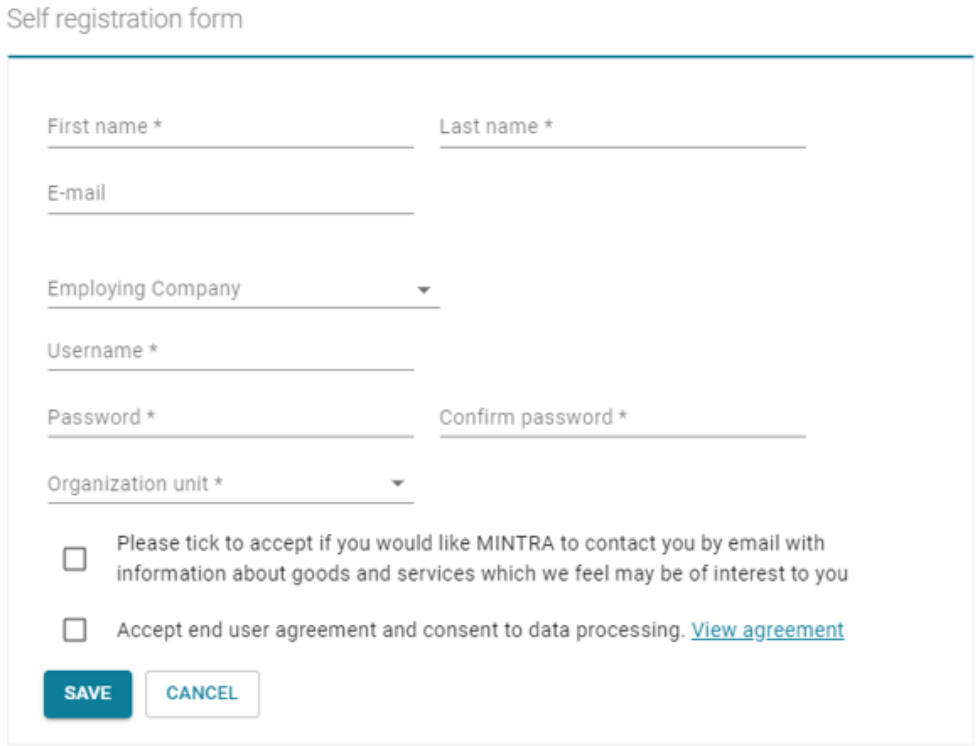
https://www.trainingportal.co.uk/ShellGlobal

SCAN ME



2. You should be presented with the login page as seen above.
3. To register a new account, click the **Register new user** button and you should see the screen below:

Behavioral Safety Workshop

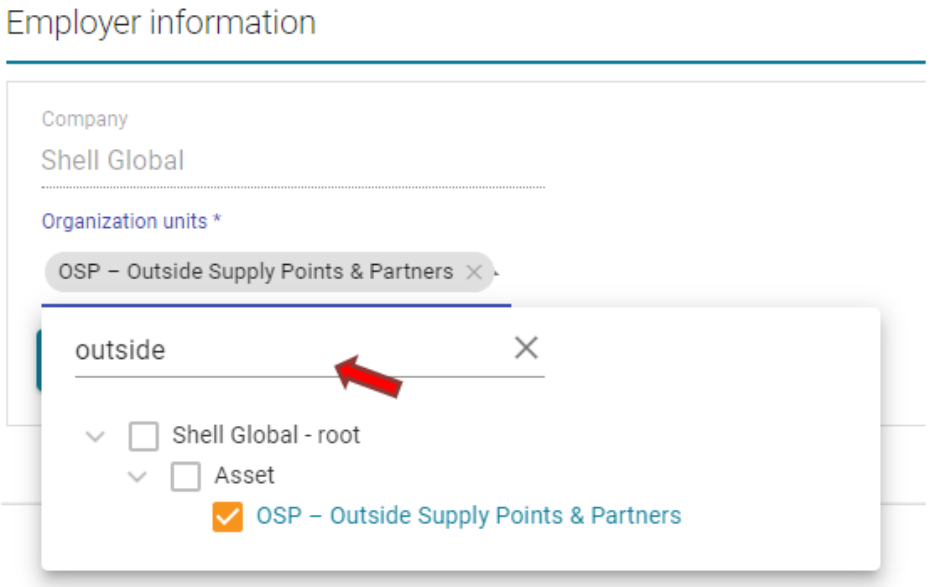


4. Please enter your name as it is written on your Passport or Government ID
5. Please provide your email address
6. Please select your employing company from the drop-down list called **EMPLOYING COMPANY.** If your company does not show; leave blank
7. Please type in a **USERNAME**
8. Now follow the guide and create a **PASSWORD**

   Note, the password must contain at least 8 characters, 1 lowercase letter, 1 uppercase letter and 1 digit.

Behavioral Safety Workshop

9. Select **ORGANIZATION UNIT** and, from the drop-down list, select your **ASSET**



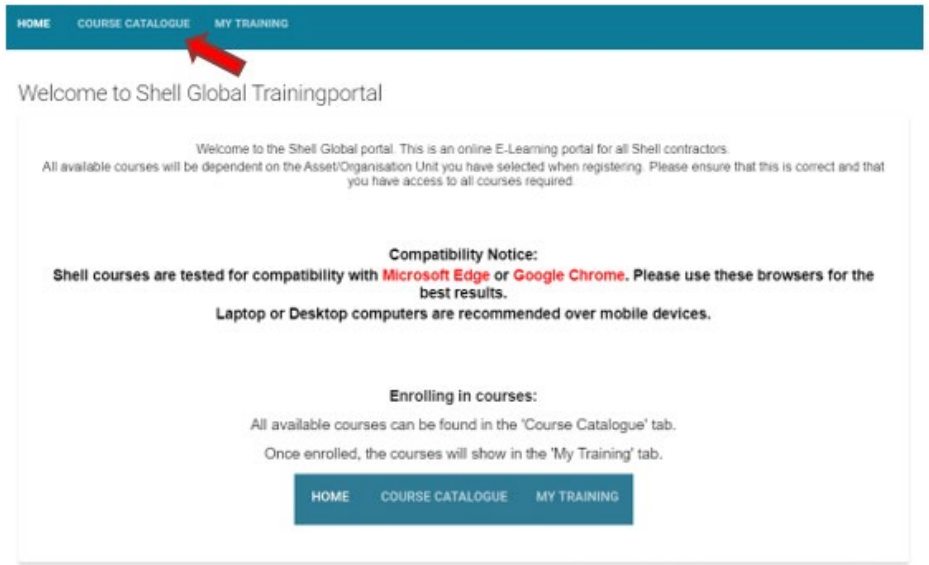
Note: Please search by typing OSP or Outside, and select Outside Supply Points & Partners

By following these on-screen steps, you will be able to register an account.

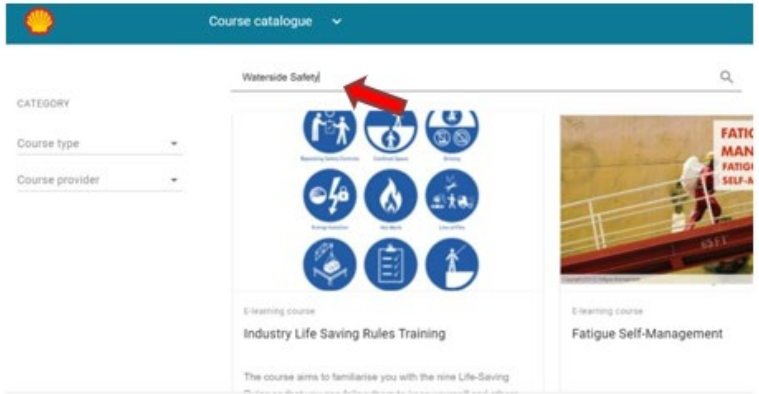
Note, the final step will automatically sign you into the new account.

10. Once logged in you will see the home welcome page.

To search for your required course, go to the Course Catalogue tab at the top.

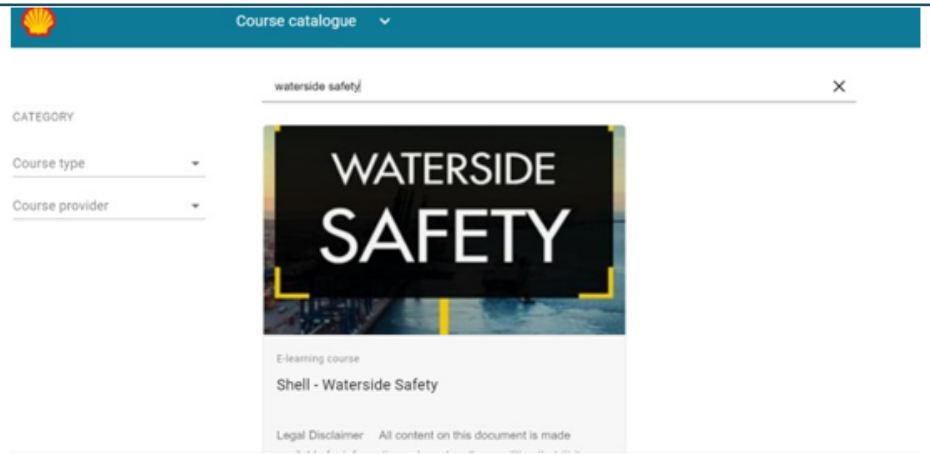


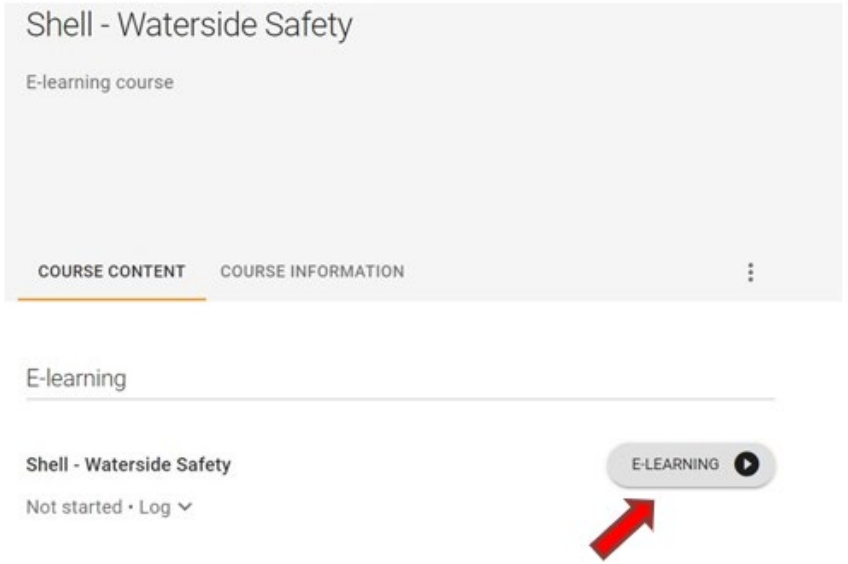
11. Use the search field to find your course.



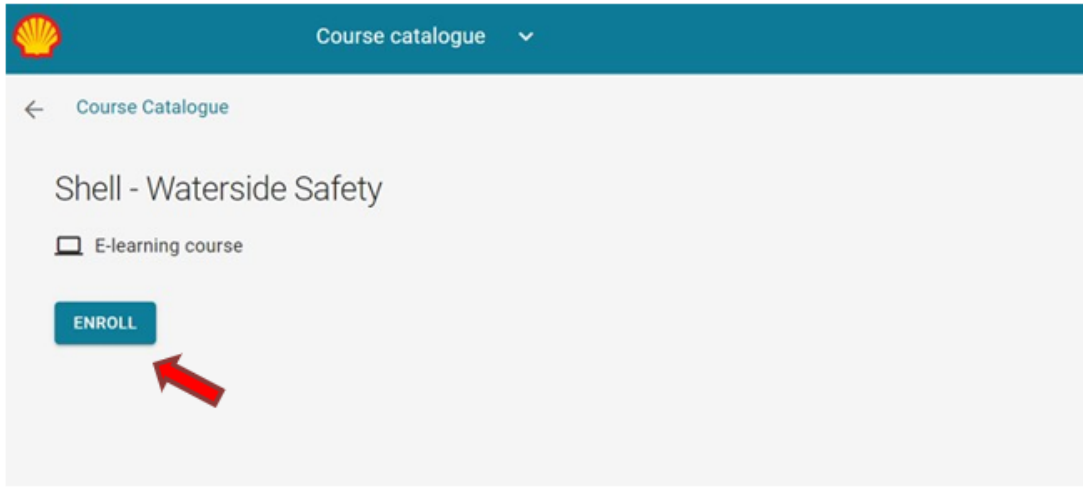
12. You will get search result:

Behavioral Safety Workshop

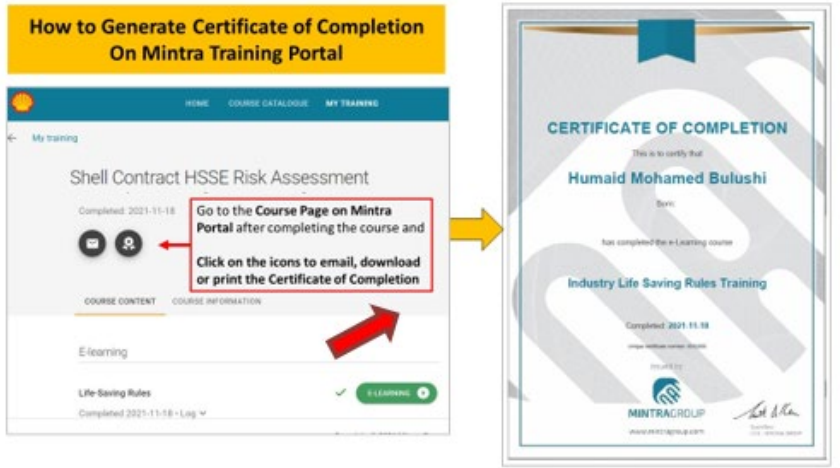




13. You can then enroll into the course by clicking onto it, then selecting "Go to Course":



<u>You can also generate a certificate of completion. Go to My Training for that. Example:</u>



14. To launch the course, select the play button as pictured.

Questions?

Key Takeaways

We are all part of the solution – clients, third parties, TIC Council Member Companies. But it is crucial that company leadership recognizes the key human elements of safety:

- Safety is all about people. Humans are not machines and will make mistakes. Understanding and empathy are fundamental

- Focus should be in the processes and safeguards on how to do things correctly and to minimize the consequences of mistakes.

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A Moment to say
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Evening Networking Dinner

At

The Grand Ballroom