



Independent PSM Verification at Chemours



Safety
Obsession

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PS Conference May 30, 2018, Dordrecht

What I want to share with you today

- About Chemours
 - One of our core values is safety obsession
- Our Four Points issue management plan
 - Safety – our number 1 priority
 - Independent safety studies part of the plan
 - External verification (DNV GL and W & B)
- How do we control risks?
- What are the lessons learned?

About Chemours

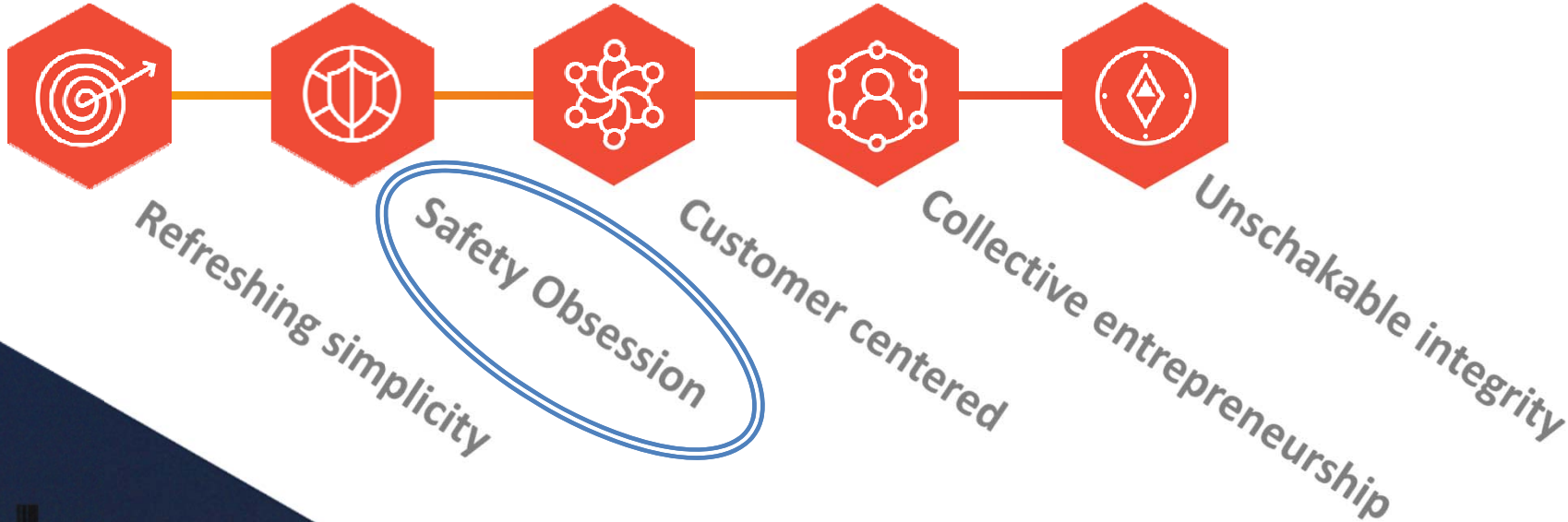
- Chemours fluoroproducts help give ordinary things extraordinary capabilities, from the cars we drive to the smartphones we carry
- An independently operating spin-off from DuPont
- Works well within current safety and environmental requirements and standards
- Actively contributes to communities dialogue and the public debate
- Applies core values and practice-oriented focus upon continuous improvement of safety, health and environmental impact



- Fluoropolymers are manufactured in Dordrecht since 1967
- Was spotlighted late 2015, when good relations with the neighborhood were lacking
- In 2016 Chemours launched a so-called Four Points Plan to restore trust among communities' citizens



Core values



Chemours

Our Four-Points Plan as of 2018

- 1. Continuous dialogue with the site surrounding communities*
- 2. A permit revision based on state of the art and best available production methods*
- 3. A CSR program to contribute to local social initiatives*
- 4. Contribute to SHE debate and to the development and application of relevant legislation and regulations*



Actions speak louder than words....

In addition to the standard internal company inspections and the external inspections because of BRZO (Decree Risks Major Accidents of the government) and other inspections by public authorities, Chemours in 2017 asked independent external parties Witteveen+Bos and DNV-GL to do additional assessment of the environmental and PSM systems



Safety

Our number 1 priority

- ◆ For many years investment are made in improving site safety
- ◆ Investment efforts confirmed in annual scheduled and unscheduled government audits - a.o. because of Seveso guideline (BZRO)
- ◆ Independent and reputable **DNV GL** agency classified a process safety audit carried out at Chemours in range **“Best in Class”** with an 83% score
- ◆ Witteveen+Bos assessment says ‘Chemours uses a studious and thorough method to ensure the process safety of the production site in Dordrecht’



Risk contour of the Baanhoekweg site is 10-6

- ◆ What does ‘risk contour’ 10-6 mean?
 - ◆ The chance of 1 in 1,000,000 years of a fatality
- ◆ Proud about our safety performance:
 - ◆ More than 5 years no LWC with employees
 - ◆ More than 15 years no LWC employees with contractors





Independent safety studies

Conclusions from random examination by Witteveen+Bos

- The method applied for systematically mapping and judging potential hazards to people and the environment fits the types of processes
- The PHA safety studies are executed conscientiously
 - Reporting on the studies requires improvement
 - in particular with respect to the readability of the reports and besides more care should be given to the references in the reports
 - We included this recommendation in our internal training program
- A comprehensive and well-working system is in place to properly judge changes in the plant on potential hazards to people and the environment, before these changes are actually implemented
- We adopted the proposals by Witteveen+Bos concerning improvement of the safety studies to further enhance site safety

Compliance with international ISRS requirements for process safety

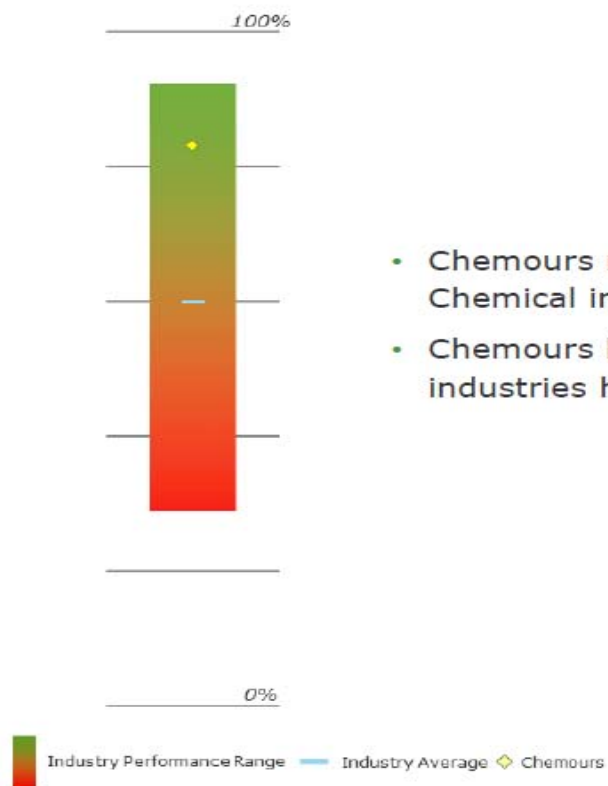
General introduction ISRS-8

- ISRS-8 allows to baseline your PSM systems in a flexible way
- ISRS-8 has a solid basis and has built in major PSM regulations and provides best practices
- PSM requirements based on:
 - Seveso-2 EU legislation 9 (Basis for local BRZO)
 - OSHA-1910-119 (USA legislative requirements)
 - Baker report learnings (best practices)
 - NTA-8620 (technical specification for PSMS)
 - PAS-55 (asset management)

In line with CCPS risk based process safety management, 4 pillars and 20 elements

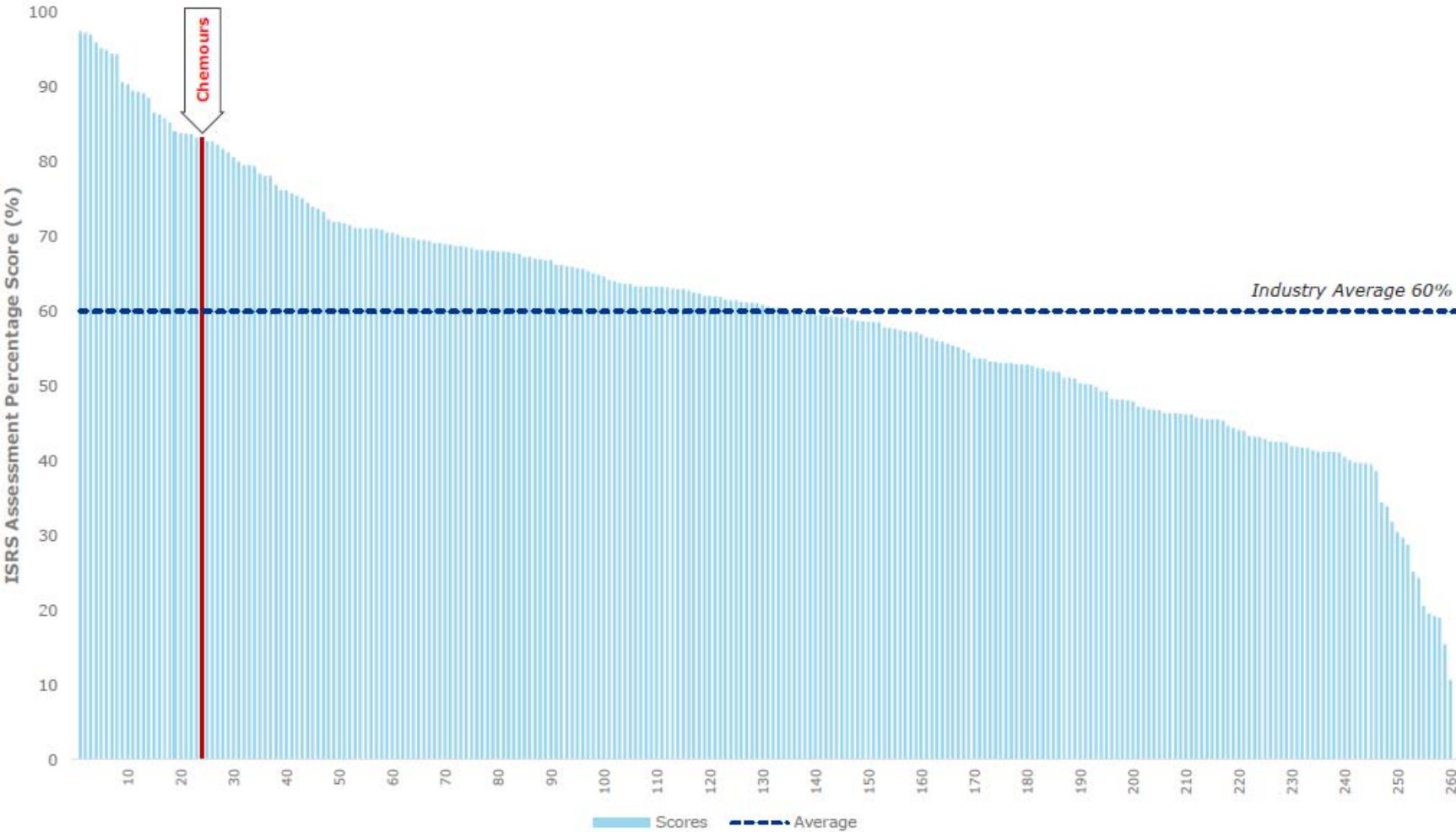
DNV-GL's Management System Benchmark applied to Chemours

Management System Benchmark



- Chemours management system is a **top performer** within the Oil & Gas and Chemical industries.
- Chemours has scored 83% overall. The best performer in Oil & Gas and Chemical industries has a score of 92% and the average performance level is at 60%.

Chemours' Safety Management System ranks #24 out of 261 O&G and chemicals sites in 33 countries

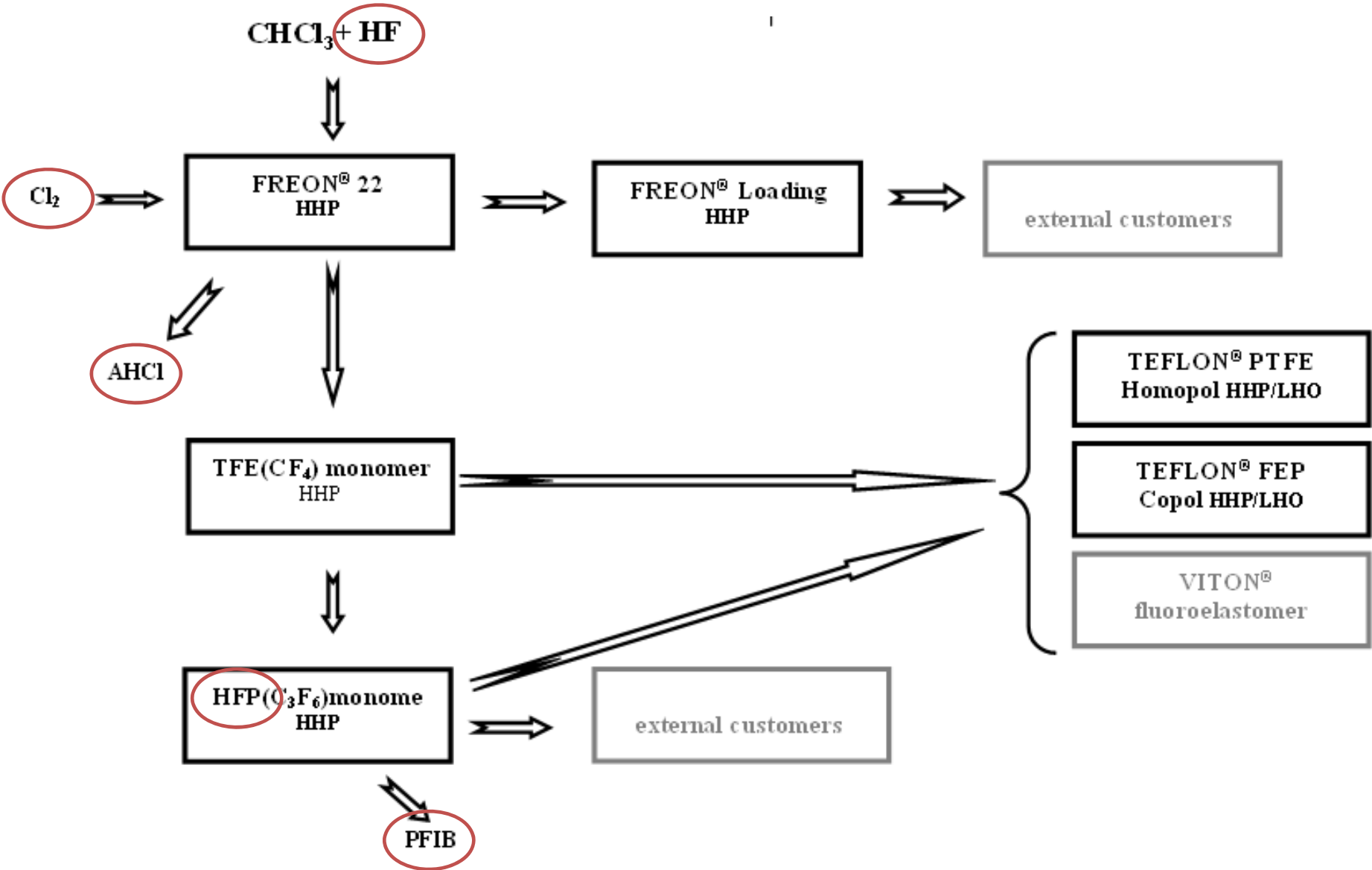


Based on ISRS assessment scores of the 82 sub processes selected in Chemours' assessment scope



How do we control risks?

Chemours Dordrecht



How do we Manage Risk?

Step 1

Apply **Inherently Safer:**

What is not there cannot escape

Step 2:

Apply generic **Process Safety Management™** Model

On remaining equipment and process

Step 3:

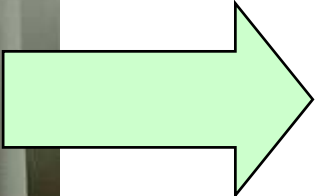
Apply specific **Highly Toxic Material Management System**



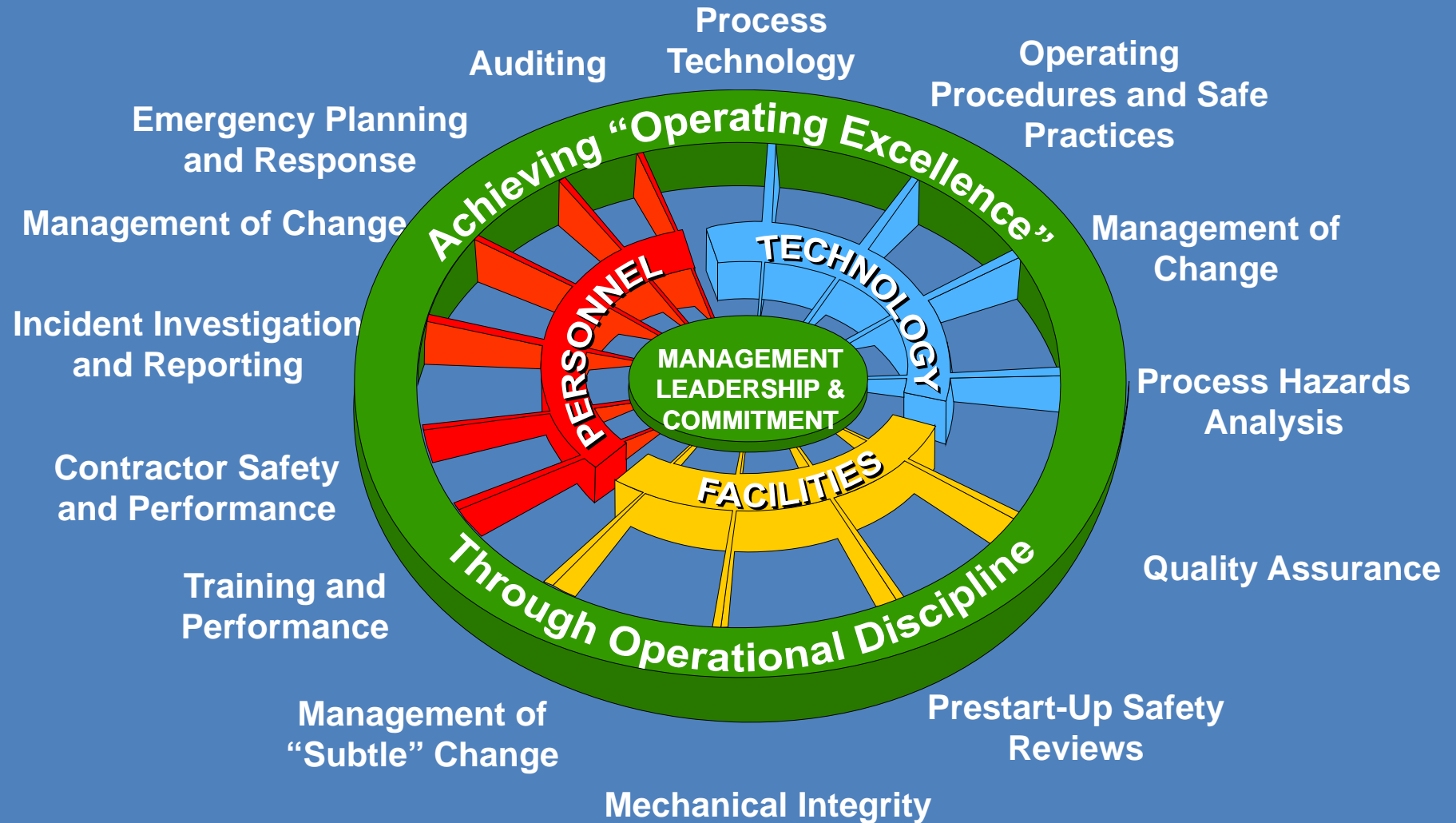
Inherently Safer



Feed directly from HF railcar



Step 2: Process Safety Management



Step 3: Apply Highly Toxic Materials Mgt Syst

Applicable when ERPG-3
concentration can travel off-site

For: HF – HCL – Cl – HFP - PFIB

1. Safety Guardian Committee
2. Design manual per material
3. Periodic Audits





What are the lessons learned?

Lessons learned from Four Points plan

- PSM assessments give confidence among citizens, employees and other stakeholders, including media
- PSM focused dialogues are key to restore trust among stakeholders
 - Citizens' summer afternoons walks in 2017
 - Visit of municipalities and Members of Dutch Parliament to our site in 2017
 - Regular PSM and environmental Dordrecht website updates
 - Open Gate Days in 2018 with PSM information provided to local citizens and authorities
 - CSR reporting in 2015 and 2016

A screenshot of a website page from Chemours. The page has a white background with a red header bar containing the Chemours logo. The main title is 'Informatie over Brzo Inspectierapporten' with a date '29 maart 2017'. The text discusses BRZO inspections in the Netherlands, mentioning that Chemours is regularly inspected. It includes sections for 'Controle' (Control), 'Brzo inspecties (2007 - 2017)' (BRZO inspections), and a list of findings from 2007 to 2015. A link is provided at the bottom for more information.

Chemours™

Informatie over Brzo Inspectierapporten

29 maart 2017

Chemours wordt als een van de BRZO-bedrijven in Nederland regelmatig gecontroleerd door de overheid. Doelstelling is het voorkomen en beheersen van zware ongevallen waarbij gevaarlijke stoffen betrokken zijn. De resultaten van de BZRO- inspecties worden vanaf 2014 bekend gemaakt via openbare samenvattingen.

Controle
BRZO staat voor Besluit risico's zware ongevallen (1999). Daaronder vallen ruim 400 bedrijven in Nederland die met grote hoeveelheden gevaarlijke stoffen werken. Zij worden minstens één keer per jaar gecontroleerd door gespecialiseerde inspecteurs van de brandweer, Inspectie SZW, omgevingsdiensten en/of Staatstoezicht op de Mijnen en een waterschap of Rijkswaterstaat.

In 2015 voert het BRZO (Besluit risico's zware ongevallen) de Europese Seveso III-richtlijn in Nederland in. Het besluit integreert wet- en regelgeving op het gebied van arbeidsveiligheid, omgevingsveiligheid en rampbestrijding in één juridisch kader.

Brzo inspecties (2007 - 2017)
De BRZO-inspecties worden vanaf 2007 uitgevoerd. De toezichhouders controleren tijdens de inspectie de veiligheidssystemen. Bij dergelijke controles is het normaal dat verbeterpunten worden vastgesteld. In 2014 was dat bij 53% van de bedrijven het geval.

Hieronder een overzicht van de BZRO-inspectieresultaten bij DuPont sinds 2007 en bij Chemours vanaf 2015:

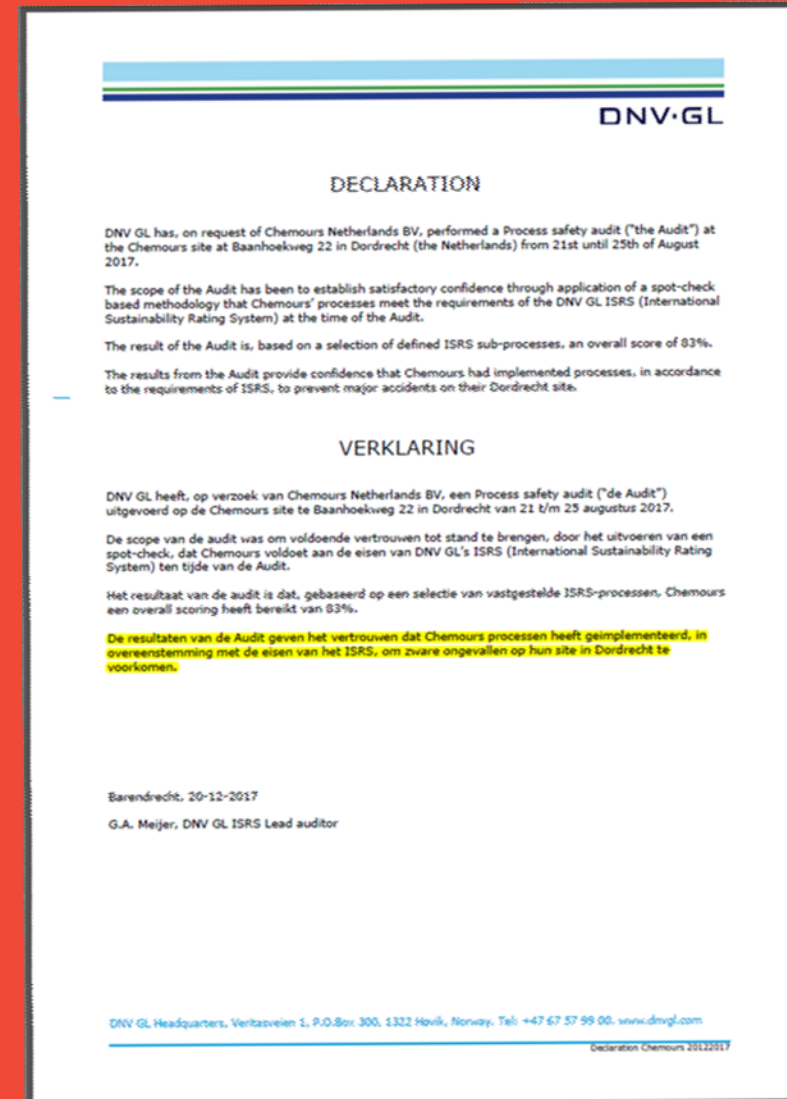
- In 2007 was de ATEX (explosieveiligheid)-documentatie niet volledig, wat snel gecorrigeerd is.
- Bij de inspecties van 2008 en 2009 zijn geen afwijkingen geconstateerd.
- Bij de BRZO-inspecties van 2010 en 2011 werden verbeterpunten vastgesteld. Dit betrof deels aanbevelingen gebaseerd op nieuwe wet- en regelgeving en deels onderdelen die aangepast moesten worden. Wij hebben de aanbevelingen zeer serieus genomen en meteen opgevolgd en verholpen. Dit is destijds ook gecontroleerd door de overheden en zij bevestigden dat de genomen maatregelen afdoende waren.
- Bij de BRZO-controles van 2013 en 2014 is geen enkele overtreding geconstateerd.
- In 2015 is er bij DuPont en Chemours één procedurele overtreding vastgesteld. Deze is verholpen en inmiddels goedgekeurd door Inspectie SZW.

Hieronder de link naar openbare samenvattingen van de BRZO-inspecties.
http://brzoplus.nl/inspecties-0/kies-regio/zuidhollandzld/?pager_page=3

Information provided to site surrounding communities
About Brzo inspections held at the website of
Chemours Dordrecht

Lessons learned from assessments

- Do not wait with an assessment until after an accident
- Independent confirmation of smooth running PSM process
- Witteveen & Bos: details of C4 levels
- Providing explanations with policy gives authorities and environment insights
- Confirms BZRO audits in 2017 and 2018 without violations
- Set the tone for follow-up actions in 2018
- Prevent us from having to deal with an accident like in Gumi, Korea



The DNV-GL's ISRS accidents standard assessment declaration issued to Chemours Dordrecht

Ahead of a potential crises we acted

Hydrofluoric acid is highly corrosive and an acute poison, exposure can cause death and serious damage to the skin, lungs, heart, bones and nervous system

*The leak killed five workers at the plant
and severely injured at least 18 others*

Ahead of a potential crisis at Chemours Dordrecht our Process Safety Management way of working was successfully assessed by independent third party consultants to be better safe than sorry and to contribute to restoring trust among citizens of site surrounding communities



THANK YOU
FOR
YOUR
ATTENTION!
ANY QUESTIONS?