



Petrochemical Corporation of Singapore (Private) Limited



*SECURING THE HEALTH AND SAFETY
OF OUR WORKFORCE
SAFEGUARDING OUR COMMUNITY*

RESPONSIBLE CARE® OBJECTIVES & TARGETS 2021

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Annual PCS-Contractors HSE Meeting 2021
21 January 2021



Responsible Care®



1. global chemical industry's commitment
2. continuous improvement in health, safety and environmental performance
3. open and transparent communication

- signatory since October 1999
- PCS RC Policy* spells out **philosophy and principles**
 - ➔ governing all decisions related to health, safety and environment, in all business activities
- applies to all employees and contractors
- mindset of identifying and removing hazards at workplace

* *Responsible Care® Policy is PCS' manifestation of generic "Health, Safety & Environment Policy", as PCS is a signatory of Responsible Care®*

The image shows a screenshot of the PCS Responsible Care Policy document. At the top, it features the PCS logo and the full name of the Petrochemical Corporation of Singapore (Private) Limited, along with its address and contact information. The title "RESPONSIBLE CARE® POLICY" is prominently displayed. The document outlines the company's commitment to the Health, Safety, and Security of its employees, contractors, customers, distributors, suppliers, neighbours, the Public and protection of the Environment as the top priority in its operations. It lists five key areas of focus: Health, Safety, Security, Environment, and Products, each with a brief description of the commitment. Below this, it details the implementation process through a continual improvement cycle and lists specific actions such as resource allocation, openness to stakeholders, assurance of quality and safety, and sharing of HSES experience. The document is signed by Akira Yonemura, Managing Director, and includes the date 01 AUG 2020 and the revision date. At the bottom, there are logos for various industry and safety organizations, including bizSAFE, ISO 9001, ISO 14001, and Responsible Care.

Objectives & Targets 2021 - 1



1. Maintain a Healthy, Safe Workplace and best in class Environment

- Zero Lost Time Incident
- Total Recordable Case Frequency ≤ 1.4
(TRCF per million hours worked)
- Zero Environmental Incident
(RAM* Consequence > Rating of 3) ** see slide 4*
- Zero Hazardous Exposure leading to Occupational Diseases
- Zero Process Safety Incident
(RAM Consequence > Rating of 3)
- **Ensure compliance and adherence to COVID-19 Safe Management Measures (SMM); continued vigilance as key to keeping ourselves and communities healthy and safe**

Risk Assessment Matrix



Potential Consequence					Probability of Occurrence				
					A	B	C	D	E
Rating	People	Asset	Environment	Reputation	Very Unlikely Never heard of in our industry	Unlikely Heard of in our industry	Likely Has occurred in PCS	Occasional Occurred several times per year in PCS	Routine Occurred several times per year in PCS
0	No injury	No damage	No effect	No impact					
1	Slight injury	Slight damage	Slight effect	Slight impact					
2	Minor injury	Minor damage	Minor effect	Limited impact					
3	Major injury	Localised damage	Localised effect	Considerable impact					
4	Single fatality	Major damage	Major effect	Major national					
5	Multiple fatalities	Extensive damage	Massive effect	Major international					

ZONES - LOW RISK MEDIUM RISK HIGH RISK

HARM TO PEOPLE

RATING	DESCRIPTION
0	No injury or health effect.
1	Slight injury or health effect (including First Aid and Medical Treatment cases) - not affecting work performance or causing disability.
2	Minor injury or health effect - affecting work performance, such as restriction on activities (Restricted Workday Case). Limited health effect, which is reversible, eg. skin irritation, food poisoning.
3	Major injury or health effect - affecting work performance, such as Lost Time Injury, or a need to take a few days to recover. Irreversible health damage without loss of life, eg. noise induced deafness, chronic back injury.
4	Single fatality or Permanent Total Disability (including Permanent Partial Disability) - from an incident or occupational illness, eg. poisoning, cancer.
5	Multiple fatalities - from an incident or occupational illness, eg. poisoning, cancer.

Objectives & Targets 2021 – 2a

2. Maintain Good HSE Performance and Management System

- Maintain zero major non-conformity in external and internal HSE audits
- Enhance Contractor Companies bizSAFE capacity building through PCS Maintenance Contractors HSE Committee's (PCC) championship as bizSAFE Mentor
- Ensure Safety Case* written presentation as a live document
 - ✓ propagate its purpose as knowledge management and retention
 - ✓ competency development

**see slide 7*

Objectives & Targets 2021 – 2b

2. Maintain Good HSE Performance and Management System

- Promote technology-enabled HSE
 - ✓ create possibilities for workplace HSE management, and HSE training where it is shown effective
- Propagate Vision Zero*, centred on a belief that all work related injuries and ill health are preventable

**see slide 8*



Safety Case



- MOM announced on 9 March 2015 that Singapore would introduce a Safety Case Regime for Major Hazard Installations (MHIs)
 - While likelihood of major accident is low for MHIs, complex operating environment and large volumes of highly hazardous chemicals mean that any accident can potentially result in catastrophic consequences
 - Core feature of Workplace Safety and Health (MHI) Regulations is Safety Case Regime
 - Under Safety Case Regime, MHIs are expected to:
 - ✓ take on greater responsibilities
 - ✓ proactively identify and manage Health, Safety and Environment (HSE) risks through integration of all HSE protocols
 - ✓ demonstrate to regulators that their risks are as low as reasonably practicable (ALARP)
-

Vision Zero



“A movement that aims to inculcate a mindset that all injuries and ill health at work are preventable and a belief that zero harm is possible.”



Jurong Island Vision Zero Cluster

- Jurong Island Vision Zero Working Group formed in Jan 2018, under the Workplace Safety and Health Council (Chemical Industries) Committee; led by industry
 - target for companies on Jurong Island to have unified culture for Workplace Safety and Health (WSH)
 - leadership and commitment key to creating robust WSH culture
 - Jurong Island community first in Singapore to form Vision Zero cluster; launched on 23 Nov 2018
-

Objectives & Targets 2021 – 3



3. Ensure a HSE competent Workforce

- Refine framework for e-learning portal and knowledge retention
 - ✓ ensure seamless and easy access for competency development beyond HSE
- Strategise to increase human interaction with process to reduce **transient operations human error***
 - ✓ review competency-based training and knowledge transfer
- Emphasise empowerment and nurture ownership in health and safety, as an inherent value in workplace culture

**see slide 10*

Human Error in Process Safety



- Human error led to two of most significant incidents
- ✓ Piper Alpha (1988)
 - failure to fit blind correctly
 - shift changeover
 - contractor failed to report status of work
- ✓ BP Texas City (2005)
(underlying problems)
 - historical deviations of startup
 - lack of communication
 - fatigued operators

Classification

- ✓ Learning gap
[don't know]
- ✓ Memory gap
[know but don't remember]
- ✓ Inconsistency
[have knowledge but variability in method]
- ✓ Application
[know but incorrect action]
- ✓ Omission
[know but missing step or action]
- ✓ Decision
[wrong decision in a given situation]

Objectives & Targets 2021 – 4a

4. Strengthen Responsible Care[®] Practices

- *Continue outreach activities, sharing practical and sustainable approaches in Responsible Care[®] programmes as Responsible Care[®] Leader*
 - ✓ *embed Responsible Care[®] in marketing collateral and outreach programmes*
- *Active support and participation in national workplace health and safety initiatives*

Objectives & Targets 2021 – 4b

4. Strengthen Responsible Care[®] Practices

- Improve manufacturing efficiency through equipment and process enhancements to further reduce energy consumption
 - ✓ explore energy efficiency opportunities through assessment approach
- Active outreach / sharing of HSE experience / expertise, within Complex, and through SCIC / industry avenues

Objectives & Targets 2021 – 5



5. Ensure Compliance with Legal and Other Requirements

- Ensure workplace health and safety awareness and compliance through regular site inspection* **see slide 14*
 - ✓ identify and control potential risk situations to eliminate injuries
- Ensure alignment to WSH 2028 Vision; incorporate WSH 2028 strategies in programmes and activities
- Ensure Contractor Companies demonstrable commitment to, and competence in, the proper management of HSE
 - ✓ essential factor in selection and continued participation** ***see slide 15*

Formal inspections



- Monthly
 - √ Management Team
 - √ Safety & Health Working Committee
 - √ PCS Maintenance Contractors HSE Committee (PCC)
- Bi-weekly
 - √ HSE Officer, support functions (Technology & Optimisation, Maintenance, Contractor)

Evaluation, Selection, Audit



- Regulations for Evaluation & Selection of Contractors

- Procedure for conducting HSE Audits on Maintenance Contractors

PETROCHEMICAL CORPORATION OF SINGAPORE (PRIVATE) LIMITED RULES AND REGULATIONS (P-027) EVALUATION & SELECTION OF CONTRACTORS Effective Date : 16 August 2004			
03	01 Aug 2014		
02	20 Apr 2009		
01	5 Sep 2007		
REVISION	EFFECTIVE DATE	REVISION	EFFECTIVE DATE

Doc No. : MGP-36 PETROCHEMICAL CORPORATION OF SINGAPORE (PRIVATE) LIMITED PROCEDURE FOR CONDUCTING HSE AUDITS ON MAINTENANCE CONTRACTORS									
<2>	Feb 2013	Krishnan	---						
<1>	Feb 2009	Krishnan	---	Chew T H					
<0>	Sep 2007	Krishnan	---	Chew T H					
Rev.	Date	Prepared by	Reviewed by	Approved by	Rev.	Date	Prepared by	Reviewed by	Approved by

- 7.2 Contractors failing to achieve the minimum score of 75% may be subjected to one or more actions as given below, as decided by the Maintenance Manager –
- Re-audit within three months (only if there is reason to believe that the failure was due to administrative discrepancies and not due to inadequacy of their HSE Management System)
 - Eviction from PCS facilities (land, office or store)
 - Not considered for any new work under PCS Maintenance
 - Termination of contract and/or removal from the 'Approved contractor list' (this shall be on consultation with the Purchasing Manager)

Score in previous audit	Status	Audit
Score ≥ 85%	Star	4 years
85% > Score ≥ 75%	Passed	3 years
Score < 75% (Failed in 1 st attempt)	Failed	1 year

Objectives & Targets 2021 – 6



6. Achieve Safe and Successful Execution of Projects and SDM 2021

- Ensure safe execution and completion of rejuvenation projects, including small Capex projects
- Execute Shutdown Maintenance (SDM) 2021 safely and successfully
 - ✓ maintain “**one-stop SDM Centre**” communication despite COVID-19 SMM
 - ✓ **Total Recordable Case ≤ 1 for SDM 2021**
- Ensure ongoing communication on HSE issues, coordination of activities and proper work interface
- Ensure contractors / subcontractors possess adequate knowledge and competency levels through training and mentoring system*
 - ✓ requirement of **bizSAFE Level 3** (minimum) for sub-contractors

**see slide 17*

Knowledge & Competency



- Apply Workplace Safety & Health in Process Plant (AWSHPP) #
- Complex Safety Induction Training (CSIT) [site specific safety and health awareness] #
- basic language/communication (conversational English)
- where applicable
 - ✓ Work-at-Height Course for Workers
 - ✓ Perform Work in Confined Space Operation #
- trade/skill-based training
- behavioural / culture assimilation
 - ✓ BBS, SOS, STAR

appeal to all Contractors to send their workers (esp. those working in Complex) for courses at PCS ATO (administered by PCCA) – all fees collected channelled back for workforce HSE promotion and well-being

In-situ Risk Assessment



13. IN-SITU RISK ASSESSMENT (iRA)

Kiken Yochi Training (KYT) (Japanese 危険予知訓練)

Hazard prediction training

K: kiken – hazard

Y: yochi – prediction

T: training

1. Prior to performing work, discuss in small group, hazardous factors in workplace and work conditions (unsafe conditions and unsafe behaviour that may lead to incidents)
2. Discuss, think about, and understand (or ask yourself) type of incidents that may arise
3. Determine danger points and kind of action to take, confirming these with pointing and calling

KYT 4-Round Method (“Finger Pointing”)

Round 1: What are the hidden hazards? (understand the situation)

Round 2: These are the danger points (investigate the reality)

Round 3: What would you do? (establish countermeasures)

Round 4: These are the danger points (set targets)



Recent news and concerns



Serious traffic accident on Jurong Island on 6 Dec 2020

22 people taken to hospital after accident between bus and car on Jurong Island Highway



A screengrab of a video circulating on social media showing a bus toppled on its side and the front of the car crushed after an accident on Jurong Island Highway. (Photo: Facebook/Adrian Tan)

❖ strongly encourage companies to remind employees and contractors

- ✓ observe speed limit, safety measures
- ✓ vigilance
- ✓ defensive driving
- ✓ PATIENCE

SINGAPORE: Twenty-two people were taken to the hospital after a car and a bus collided on Jurong Island Highway on Sunday (Dec 6) morning.

Recent news and concerns



- Despite much publicity, there are still violations of speed limit observed, for example
 - 16 Dec 2020 (Wed), ~1250 h, around SRC to JI checkpoint
 - “My vehicle was on cruise control at 68~69 km/h, a mini-bus sped all the way, slowed down at speed camera, continued speeding again.”
 - Purely violation of traffic rules; thinking no one was watching
- √ Similar weight and focus in managing process operations towards achieving zero incidents; mindful of road safety
 - √ frequent and mass transportation of workers, chemicals and hazardous substances



6 Dec 2020 incident

WHAT IF
involve vehicle
transporting
hazardous /
flammable
material ?



On-going HSE Initiatives



Open Communication/ Sharing

Speak Out for Safety (SOS) programme
Promote open communication channel on occupational safety and process safety issues



Empowerment/ Intervention

STop And Report (STAR) programme
Intervene / Report on unsafe situation

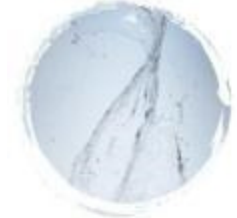


Peer-to-Peer

Behaviour Based Safety (BBS) programme
Peer observation and feedback;
cultivate safe work behaviour



THANK YOU



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