

Occupational Health & Safety

Occupational Health, Safety and Security are the most important aspects of the petroleum business and its stakeholders, particularly employees, suppliers/contractors, and communities and society. Because of this, Bangchak has set in place a Safety, Security, Occupational Health, Environment, and Energy (SHEE) Policy which requires employees and contractors to perform safety

duties and responsibilities for themselves and their colleagues in compliance with safety regulations and standards. For safety management, the company has SHEE management structure and safety management system - ISO 45001. In addition, Process Safety Management (PSM) has been implemented as the foundation of safety management system (Disclosure 403-1)

Target:



Full compliance with safety-related laws and regulations



Zero Work-Related Illness of employees and workers



No significant oil and chemical spills to the environment



Zero occurrence of leakage of Tier 1 flammable substances or chemicals from main containers or production processes leading to serious impacts in accordance with API 754.

Occupational Health and Safety Management Guidelines

The implementation of SHEE management systems, ISO 45001 and the PSM has brought improvement in the safety performance of Bangchak. The company continuously facilitates activities that promote safety both inside and outside the work area, which is known as Safety 24 hours. The Safety 24 hours programs encourages employees in all levels, including contractors to increase safety awareness and knowledge on safety practices and develop personal accountability. Below are a number of initiatives to promote internal safety:

- ✔ Safety Culture Transformation instills the safety mindset among employees through several activities, such as Line Walk of executives in operating areas to show the importance of safety awareness for workers, and Field Risk Assessment (FRA) which assigns employees to seek for hazards and risks in order to conduct proactive prevention.
- ✔ Securely fastened the safety helmet strap promotion
- ✔ Regular monthly meeting and inspection with safety officers of suppliers.

For external safety promotion, activities, which has been conducted continuously are safe driving promotion of employees by encouraging the use of helmet when riding a motorcycle and by promoting the use of safety belt before driving.

From conducting safety operations and activities continuously, Bangchak achieved safety target of 2,350,000 safety hours-person without Lost Time Injury and Occupational Illness.

Work-related Hazards Identification, Risk Assessment, and Incident Investigation (Disclosure 403-2)

For Routine activities, Bangchak has procedures of hazard identification and risk assessment include improvement opportunity identification through "What if" and "HAZOP" measures covering activities operated by employees and contractors. These measures determined hazard, risk, and improvement opportunity identifications and assessments for all procedures to eliminate hazard and minimize risks by using "The Hierarchy of Control" method at acceptable levels and to review this process at least one time a year or any changes occur and to review this process at least one time a year or any changes occur. For Non-Routine activities, such as changes in operating procedures or equipment, changes in workers or work flow, results of surveillance of work environment and worker health including exposure monitoring hazardous situation and comprehensive risk assessment using the JSA (Job Safety Analysis) in all work process is strictly required. Covered in the control and preventive measures are compliance on work permit, requirement to have a regular Safety Talk among employees before the start

of a work day and the compliance checks on safety rules at work to enhance effectiveness of the process. Engineers and supervisor and above go through development programs on risk assessment procedures relevant to their work. After assessing risks and controlling measures, level up all results and recommendation must be compiled for the management team to review and sign off to. Everyone has a duty to review and monitor implementation of the recommendations to control risks continuously.

The risk assessment results showed that work-related hazards causing or contributed to high-consequence work related injuries and work-related incidents with low probability of causing high-consequence injuries including fire, chemical spills, equipment falling. The company has determined appropriate preventive and control measures on these incidents including levels of control. A safety design process was set in place which includes risk assessments, a safety management system and simplicity. In addition, the company providing Personal Protective Equipment (PPE) to employees and contractors.

As an additional precautionary measure, there is a reporting mechanism where employees and the workers can notify a Safety Observation Report. Its report showing unsafe acts and unsafe conditions. Unsafe act and conditions are those behaviors and conditions that can disrupt effective workflow

of operations. Unsafe act is a violation by omission of your duty as an employee or partner. Work-related hazard and hazardous condition should be reported to the Supervisor of the work area without any reprisal or punishment. Also, there is the right of workers to refuse or stop unsafe or unhealthy work until all issues have been resolved and resume operation safely. The aforementioned practices were established in order to develop employees to be proactive on safety issues, minimize safety risk and ultimately promote a safety culture of the company.

Investigation Process of Work-related risk and incident

The report and investigation process of work-related risks and incidents are very vital in safety management system. The objective of such the process is to find the root cause and set up measures to control or prevent the incidents to reoccur. Bangchak has set the systematic mechanism reporting to record unsafe act, unsafe condition incident and near-miss incident. When an incident happens, the person involved or a witness writes a report to the area manager within 24 hours. A working team will be formed to investigate the incident in order to find root causes of the incident and determine Corrective actions by using the “Why Tree Analysis” as a tool. There are periodic checks to confirm alignment with the measures in place. The lessons learned from the incident will be captured and shared to the employees in different channels of communication.



Occupational Health Services (Disclosure 403-3)

Prevention and management of occupational health of employees and contractors is extremely important in the operations of Bangchak. The area of refinery of the company needs the most attention since the work environment may cause harm to health of employees and workers. Because of this, the company uses proactive occupational health processes by providing a Health Risk Assessment covering all areas of the refinery. This process is initiated to determine the proper measures for risk management including assessments and action steps to mitigate risks and to protect the health of employees and workers. The risk assessment includes the regular surveillance of the work environment covering light, noise, heat and chemicals. The assessment results are compared against the safety standards. If the assessment result exceed safety standards, the company will design and improve working areas to have safe working conditions, and the company will conduct improvement plan and systematic

monitoring of the implementation. The company also provides safety officers and occupational health doctors to provide pieces of advice and recommendations to employees and contractors on occupational health issues.

Bangchak has provided employees and contractors health services as follows:

- ✔ Employee health check from the start, during and when finishing employment
- ✔ Employees undergo annual general check-up, including occupational risk factors. Occupational health experts are hired to determine check-up with special focus on risk factors. The team analyzes the test results based on internal and external factors in the workplace. If employees are found to be ill, they are advised to visit a doctor and receive ongoing health care. The company will also provide additional health checks recommended according to age. Some of these are prostate, pancreatic and gastrointestinal cancer examination as part of the employee health program.
- ✔ Monitoring of operational procedures in line with international standards and set clear criteria of people at occupational risk within 3 levels - low, medium and large.
- ✔ Providing contractor occupational health measures, such as preparing work areas, procedures, prevention equipment, and promoting knowledge
- ✔ Providing medical emergency drills for the company's support team. The hospital supports to staff are in an agreement on flexible yet efficient practices.
- ✔ Hiring a medical professional in health assessment and improving the general health examination as well as the special program for employees with high-risk health.
- ✔ Initiating "Exercising Idol Project" to drive health awareness among employees. The program highlights 3 important areas that employees should work on to achieve health and be illness-free - physical body, nutrition and mind.

From contractors, the company requires all contractors to undergo health check based on identified risk factors. This includes health examination, analysis, follow-up and consultation. Those who have abnormal results must immediately visit a doctor and receive ongoing care. After the diagnosis and treatment, reports are submitted to Bangchak supervisor and safety representative



Participation, Consultation and Communication on Occupational Health and Safety (Disclosure 403-4)

The company has appointed the Safety and Occupational Health Committee as the official working group in accordance with the regulation to facilitate the collaboration between management representatives and employee representatives on safety, occupational health and work environment operations. The committee members should have members at least 50% coming from representatives of operations staff. The operations staff group elects the representative from each department. The team will have a regular monthly meeting each representative to share the information they get from their departments, updates on progress or operations and presentation of future plans. In 2019, the company revised their safety manual. There was a review on the procurement process and standards of Personal Protective Equipment, specifically PPE in relation with the job risk level. That year, the senior management also had a review of the company's safety performance.

In working with the contractors, Bangchak conducts regular communication sessions and monthly inspections of work areas together with safety officers. These monthly activities are a venue to exchange information on safety and occupational health operations. In 2019, the requirements for the contractors were revised to achieve better level of hygiene and occupational safety compliance. As an example, contractors who repeatedly violate safety rules will receive a warning. They will have an opportunity to propose corrective solutions and solve the problem together with the team. Further violations will lead to statutory offense. Contractors are included in the activities that promote safety inside and outside work; example is the 24-hour Safety. Together with the other employees, the company aims for the contractors to develop the same level of sense of responsibility and knowledge about safety practices. (OGSS : Emergency Preparedness)

Internal safety promotion activities

- ✔ SHEE Excellence Day activities exhibits multimedia of knowledge instructional materials on safety issues, practices and information. Examples include videos on using PPE, Q & A sessions and games on safety practices.
- ✔ Continuously driving safety awareness through various communication channels like Microsoft Outlook, Safety Radio Channel creatively broadcasting information and reminders for the employees to strictly apply rules of safety. They sometimes feature games to reinforce information.



Occupational Health and Safety Training (Disclosure 403-5)

Bangchak arranges safety and occupational health training for all employees and contractors before starting work. In addition, there are guidelines for the identification of training in occupational health and safety, prevention and fire prevention including the level of necessity for employees and contractors according to their job position. With the objective to develop knowledge, ability and behavior on safety practices, the company includes these in the training plan which covers delivery, evaluation of the results and documentation of training records. Part of the agenda is the prevention and management of hazards in the workplace.

Promoting health among workers (Disclosure 403-6)

Bangchak provides health services and supports workers to access medical services even for cases which are not related to work.

- ✔ Providing primary care to employees and contractors who get sick. Medical staff are available during working hours. There is a full time staff nurse available during the work week and part time doctors visiting on a regular basis. This service is free of charge.
- ✔ Providing annual health check-up service and flu vaccine for employees.

Furthermore, the company provides a variety of health promotion programs that help employees improve their health. These programs are non-direct work related, purely for health purposes and voluntary as the following:



- ✔ “Fit Your Fat Off” project,” as a mechanism for employees to be aware of health care issues. A campaign that drives 3 important areas of health - physical, nutrition and mind was initiated with the purpose is to reduce sickness among employees and promote good mindset about healthcare to reduce NCD's.
- ✔ “235 Days - 2,235 million steps” project - "This step for children" is a health promotion initiative where in every 10,000 steps participant get to walk can be exchanged to 4 THB donation to schools nationwide.
- ✔ Fight for Fit: Do it yourself "DIY" project for employees to decide their own activities according to their personal preferences and abilities. The goal was to reduce body fat and increase muscle mass.
- ✔ Providing healthy food supply for dinner to employees everyday throughout the year.

In addition, the company provides support for places and exercise equipment such as fitness centers at the Bangchak Refinery Office Building and M Tower Headquarters Building.



Performance

From safety management for employees and contractors, Bangchak monitored the following safety indicators: Injury Frequency Rate (IFR), Injury Severity Rate (ISR), Total Recordable Injury Rate (TRIR) and High-consequence work-related injuries rate of employees and contractors.

Occupational Illness Frequency Rate (OIFR) of workers is zero

Safety Performance	2017		2018		2019	
	Male	Female	Male	Female	Male	Female
Injury Frequency Rate (IFR)						
• Employees	0	0	0.55	0	0	0
• Contractors	0	0	0.71	0	0.42	0
Injury Severity Rate (ISR)						
• Employees	0	0	7.75	0	0	0
• Contractors	0	0	9.18	0	1.27	0
Total Recordable Injury Rate (TRIR)						
• Employees	0.74	0	1.66	0	0	0
• Contractors	0	0	1.41	0	1.06	0
High-consequence work-related injuries rate*						
• Employees	N/A	N/A	N/A	N/A	0	0
• Contractors	N/A	N/A	N/A	N/A	0	0

* High compensation to employees who got injured because of work accidents and not allowed to go back to work for 6 months.

As a result of all the safety initiatives, the company has improved its performance significantly for Injury Frequency Rate (IFR), Injury Severity Rate (ISR), Total Recordable Injury Rate (TRIR) and High-consequence work-related injury rate of employees and workers. For the incidents reported, the company did its part in investigating root causes and brought lesson learned to prevent the same occurrence. In addition, the company set long-term and short-term improvement plans, conducted monitoring process, and communicate result and progresses to related parties. Also the company has conducted personal safety activities to facilitate sustainable

safety culture. In 2019, the main type of work-related injury were material crash and cutting by sharp objects



Safety in the Production Process

Bangchak has operated safety management in accordance with the Process Safety Management (PSM) system and has established the PSM Governance Committee (PSM GC) with continuous work plans since 2015 and set safety values such as the 3E referring to:

- ✔ **E**veryone goes home safely everyday
- ✔ **E**nvironment and Asset are protected
- ✔ **E**fficient and Reliable Operation



On-going Projects since 2015 include:

- ✔ Felt Leadership (FL) program, presence and acting as a leader in safety
- ✔ Field Risk Assessment (FRA) raising awareness and understanding of workers about potential hazards In order to bring appropriate prevention before the incident
- ✔ Establishment of safety standards including LOTO (Lock Out Tag Out), LB (Line Break), HW (Hot Work) standards
- ✔ Produce Process Safety Information (PSI) as a collection of basic knowledge and necessary for hazard identification in the production process
- ✔ Process Hazard Analysis (PHA) is a tool to analyze hazards that exist in the production process. It also helps in finding solution and prevention.
- ✔ Incident Investigation (II) is a procedure to analyze what really happened in an incident and use the information to define protection measures in a systematic way.

- ✔ Management of Change Technology-Facilities: MOC-T, F is a process for managing change in production processes to be safe through an efficient management system. To ensure that the changes occurred are evaluated, professionals in those area will review, analyze and communicate with operators to help prevent recurrence.
- ✔ A Pre-Startup Safety Review (PSSR) is a review of equipment and operations related to the production process to ensure safely before starting the production process, after a production shutdown and during major maintenance. This will help reduce the effects of the dangers that may occur from the beginning of the production process.

In 2019, Bangchak initiated two new elements of PSM and provided trainings for responsible persons to conduct the operation. The two new element included:

- ✔ Emergency Planning & Response (EP & R)
- ✔ Management of Change Personnel (MOC-P)

By year 2021, Bangchak has a plan to conduct additional elements of PSM to complete 14 element as the followings:

- ✔ Mechanical Integrity (MI) is the inspection of equipment to check effectiveness and control hazards which may occur during the use of equipment. The MI include the maintenance of equipment and tools following designed objectives on its readiness for use.
- ✔ Quality Assurance (QA) is the inspection to confirm that equipment and machines in production processes are installed in accordance with the design and readiness for use.
- ✔ Contractor Safety Management (CSM)
- ✔ Training and Performance (T&P)
- ✔ Safety Auditing (SA)

2019 Performance

Bangchak was able to achieve the set Process Safety goals. The leak of flammable substances from the container or production process with serious impacts (Tier 1 and 2) in accordance with the requirements of API 754 was reported to be zero.