Iwatani Safety Information

Iwatani Group

January 2023 issue vol.16

Safety Information provides info about safety manage of gas & gas facility.
Please make use of it to prevent accident and for safety operation.

《 Method of manage gas equipment by gas personnel 》

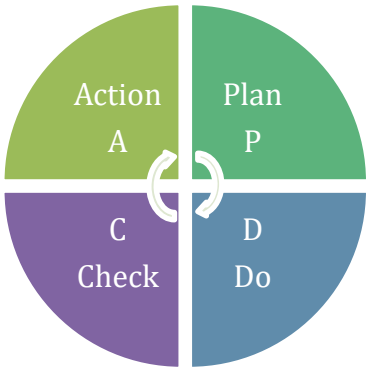
□Trouble may occur during the process of using gas equipment. Parts deterioration also can be the cause of accidents and explosion that resulting in human injury. In order to prevent accidents, it is important for both gas suppliers and gas users to choose gas supply equipment with high-quality valves, review operating procedures, improve daily inspections of equipment and etc.

□Most accidents and troubles can be prevented if proper safety management is implemented, but many accidents and troubles happen due to lack implementation of equipment management. In addition, there are cases in company where safety responsible personnel (such as general managers) and safety management personnel have insufficient safety awareness and do not understand management methods.

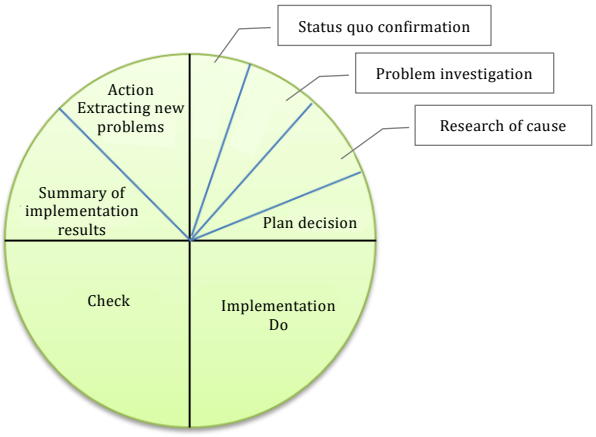
□In this issue, we will introduce the management method of gas equipment by using "PDCA cycle", and its application to the daily management of equipment.

【PDCA cycle】

The PDCA cycle, also known as the Deming Wheel, is a method proposed by American quality control expert Edwards Deming and others to smoothly carry out management tasks such as production control and quality control in business activities. The 4-stages: Plan, Do, Check, and Action consist of 8 steps.



4 stages of PDCA cycle



8 steps of PDCA cycle

【Application of PDCA cycle in gas equipment management (reference)】

As shown below, the PDCA cycle management method can be applied to the management of gas equipment. Furthermore, we will introduce with detail by using actual trouble examples on the next page.

gas equipment Safety management

【Plan】 Gas equipment management method Creating an implementation plan

1) Check the current status of gas equipment and accessories.
2) Look for potential problems. (equipment, people, etc.)
3) Look for the cause.
4) Develop management methods to prevent trouble.
① Create work procedures and manuals. (operation, inspection, maintenance, etc.)
② Create recording forms such as daily inspection sheets.
③Establishment of internal reporting/emergency contact system.
④ Create safety education implementation plan for employees.
⑤ Create emergency response plans and training plans for hazardous chemical accidents.

【Do】 plan execution

The department and person in charge will be specifically determined, and that department and in charge person will set the target , action plans and execution.

【Check】 Evaluation of management methods and implementation plans

Check implementation effectiveness and equipment management status through internal inspections, self-checks, etc.

【Action】 Response to management methods and implementation plans

Based on the results of checking the management plan and management method, if the management method is appropriate, it will be established into the facility safety management standards as a standard for daily management. For new issues, create another improvement plan.

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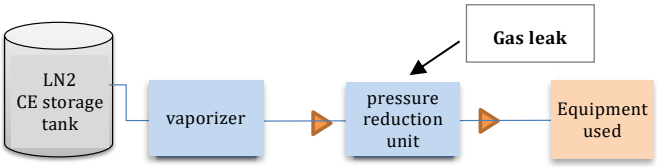
Example of applying management method by using PDCA cycle during trouble occurrence (reference)

Example of accident:

Before the long holiday, equipment workers conducted a daily inspection of the liquefied nitrogen CE equipment and no abnormality was found. After the holiday, when they started using the gas, they found that the pressure in the secondary piping increased and gas was leaking from the piping. When the pressure reducing valve was disassembled, the internal diaphragm was found deteriorated.



Understand the risks through trouble analysis：

·Deterioration of the pressure reducing valve diaphragm is difficult to detect.

·There was irregular work before and after long holidays, and there was high possibility that inspection and operation errors will be done by workers.

·No equipment management standards.

Improvement measures：

Plan
Improvement measures/plans

1) Indicate the normal pressure control range on the pressure gauges before and after the pressure reducing valve.
2) Create a daily inspection list and determine the inspection frequency. (At the start of use, at the end of use, while using)
3) Clarify what to do if abnormalities such as pressure abnormalities or gas leaks are detected. (Without affecting the production, do the pressure reducing valves switching, check the leaking area and etc.)
4) Make clear on how to repair equipment and contact gas suppliers.
5) Create work standards for long holiday, emergency response and etc.
6) Create safety education plan and training for workers.
7) Create operation and inspection status periodic check plan for worker.

Do
Implementation of improvement plan

Execute according to the plan.

Check
Checking the improvement status

Check the improvement status.

Action
Implement new improvement plan

Review deficiencies and issues in countermeasures and create new improvement plans.

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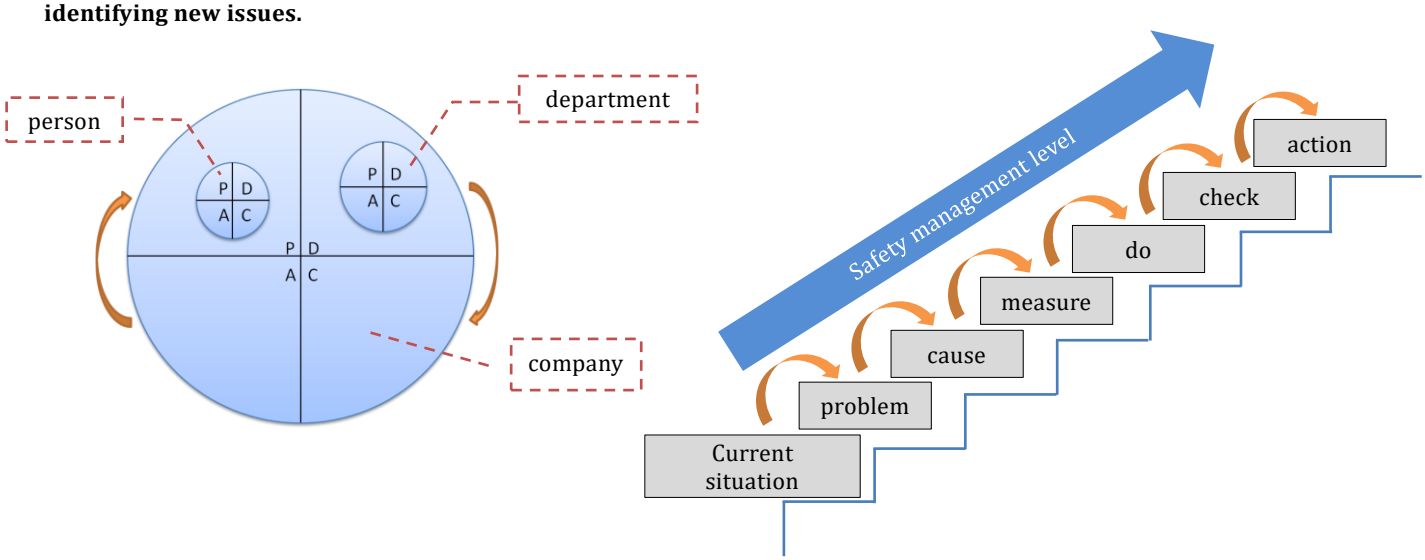
【Advantage of using PDCA cycle in safety management】

Actually, the using of PDCA cycle in management is not a single cycle; not only cycles that relate with safety management policy of the entire company, but also cycles for managing departments, teams, and employees (persons in charge), and they are closely relate to each other. By reliably implementing management using the PDCA cycle in each situation, you can improve your safety management level by discovering potential problems, improving them, and identifying new issues.



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