

NIPPON STEEL Stainless Steel Corporation

Award: Safety
Category: Workplace Improvement

Activities to establish heatstroke-free workplaces

Challenge

Summer in Japan is very hot and humid, and it leads to a high risk of heatstroke which might cause serious symptoms including unconsciousness, organ failure and death. Recently, the number of heatstroke patients has increased as in Figure 1. Since 2009, we have strived to eliminate the occurrence of heatstroke for our employees in the workplaces by implementing several measures, as we reported in 2015.

Figure 1 also shows that most of recent heatstroke patients in our workplaces belonged to contractors, who engaged in non-routine works such as on-site troubleshooting. These works are often operated where the wet-bulb globe temperature (WBGT) meter is not installed, such as culverts and furnaces. The WBGT shows the estimate of the effect of temperature, humidity, wind speed (wind chill), and visible and infrared radiation on humans. It has been quite difficult to perceive the risk of heatstroke for operators in such places. Moreover, these operators couldn't have enough breaks during the worktime, because these non-routine works often should be done in limited time, and there were not enough places for taking breaks around the working area. It

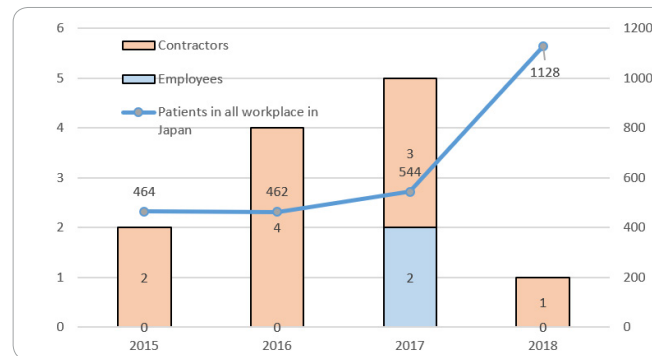


Figure 1: the number of heatstroke patients from 2015 to 2018

was an urgent task to solve these problems in order to establish a heatstroke-free workplace.

Action

Firstly, we thought we needed to establish a system to perceive the heat stress of every operator to eliminate the risk of heatstroke. Therefore, we provided portable WBGT meters for every operator so that they can be aware of the WBGT figure where they are exactly standing (photo 1). This WBGT meter

can also emit an audible alarm if it is in high heat stress condition.

Secondly, as each operator has been able to measure the WBGT values, we have established guidelines to limit the continuous work and how long they should rest corresponding not to judgement by their own experience but to the WBGT figure and work load. Thirdly, we provided operators who work in high



Photo 1: portable WBGT meter

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WBGT conditions with equipment to cool down as shown in photo 2. We have also installed 26 cool houses for contractors who work in severe conditions.

Moreover, as it is also quite important to take enough salt, we indicated the standard of intake corresponding to WBGT, and distributed enough isotonic drink which contains salt to all workplaces.

Outcome

Summer in 2018 was extremely hot and the number of heatstroke patients showed a sharp increase in Japan, more than double compared to 2017. However, only 1 operator from a contractor had a heatstroke in 2018 in our works.

We will continue to introduce measures including the installation of a cool house and cooling equipment. Moreover, we are considering to adopt IT tools to obtain biological information such as heart rate to detect the risk at an early stage. Our goal is to achieve zero heatstroke patients in our works.



Photo 2: cool down equipment