

NTPC Limited

Khargone Super Thermal Power Station

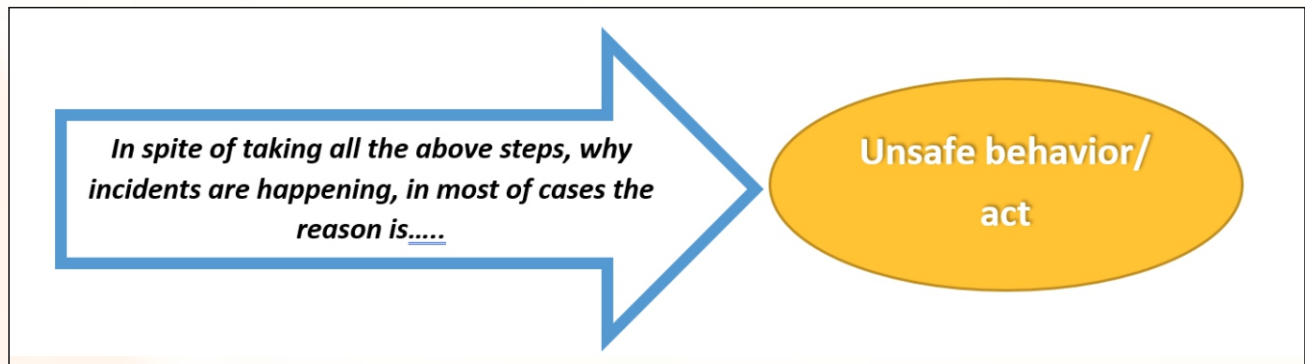
Safety Act Index (SAI)

– Chandan Shahi*

Introduction:

If any incident occurred in industries, management thinks that why this happened, in spite of us taking all the measures like:

- Following established safety rules
- Displaying visual cautions and SOPs (Standard Operating Procedures)
- Providing PPEs
- Providing trainings
- Providing proper supervision etc.



Safety Act Index (SAI) is a tool for capturing the unsafe act / unsafe behavior of workers & plotting the trend accordingly.

Unsafe act/behaviour can lead to injuries whether anyone is paying attention or not. As we know that over 95% of injuries and incidents are the result of the unsafe acts of people.

To do so, we have developed the Safety Act Index (SAI) method, in which safety act audit is being carried out on daily basis.

Methodology

The best way to compute Safety Act Index is to go to the workplace and observe what the people are doing at workplace. By going to the workplace, new useful information is created that enables people to pro-actively eliminate unsafe acts & injuries. Audit team of 2-3 people walk through operating area quickly looking at what people are doing.

*GM, Fire & Safety, NTPC, Khargone.

After noticing the unsafe act/ behavior of people, counselling is being done that how their unsafe act can lead to the incident. Once the unsafe act / behavior is noticed, it is important to know why the person is adopting that behavior through discussion with him/her in an open way without any threats.

As on the basis of daily safety act audit, we are plotting the values and preparing the trend of unsafe act/ behavior. Focus on areas of weakness that needs to be addressed.

Quantitative calculation of Safety Act Index (SAI)

Steps

1. During the audit each unsafe act/ behaviour is noted.
2. Number of persons involved in that unsafe acts are also being noted.
3. Each unsafe act / behaviour is rated from 1 to 3 (based on the severity level, i.e. 1 for unsafe act which has low potential to cause injury, 2 for serious potential injuries, 3 for life threatening potential injuries).
4. Based on severity level and involvement of persons, weighted average is being calculated:
Weightage average = (number of workers) X severity of unsafe act (i) X severity of unsafe act (ii) / number of workers in unsafe act (i) & (ii)
5. Then the value of Safety Act Index (SAI) is being calculated:
Safety Act Index = 1 / weightage average
6. The desired level of Safety Act Index for ensuring safe work culture is 1.
7. Based on different values of different audits, the plotting is being done to indicate the trend analysis.

Example:

Calculations:

Unsafe act: Worker working without using safety helmet (severity level: 2)

Weighted average : $1 \times 2 / 1 = 2$

Safety Index : $1 / 2 = 0.5$

3 Workers are working at height:

- At single plank platform (severity level: 2)
- Proper anchoring point is not available (severity level: 2)
- 1 worker was without reflective jacket (severity level: 1.5)

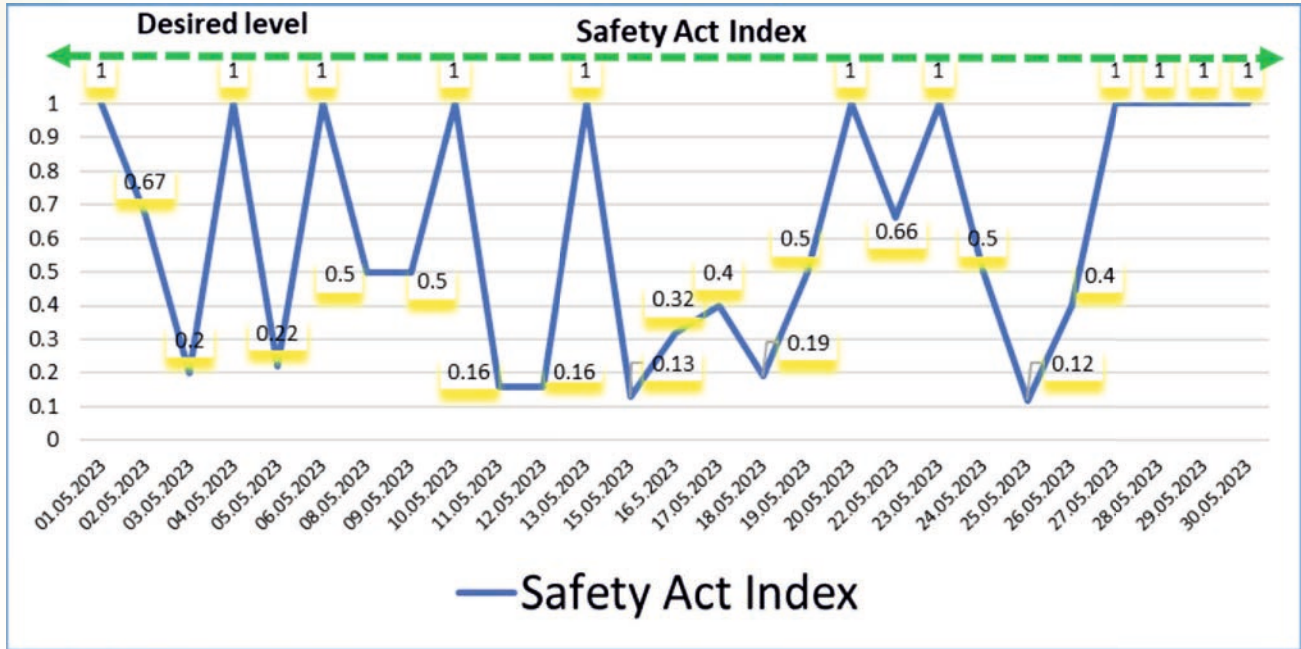
Weighted average : $(3 \times 2 + 3 \times 2 + 1 \times 1.5) / 3 = 13.5$

Safety Index : $1 / 13.5 = 0.07$

4 workers found without reflective jacket (severity level: 1.5) and one of them was not using helmet (severity level: 2).

Weighted average : $(4 \times 1.5 + 1 \times 2) / 4 = 2$

safety Index : $1 / 2 = 0.5$



When Safety Act Index (SAI) goes up, it represents the positive work culture is being maintained, when the trend is downwards, it represents the area of improvement and management need to address the workers in that area. It is a tool to pro-actively eliminate unsafe acts & injuries. By carrying out this auditing, we can identify the bad habits & can get inputs for imparting training in a focused manner.

Consideration:

1. Audit team requires a shared sense of judgement regarding severity rating of an unsafe act, as it can vary from person to person. Audit team members need to be replaced preferably at an interval of 6 months so that more members can be brought onboard.
2. Safety Act Index is not to be used as a disciplinary tool.

Conclusion

Majority of incidents taking place in India and worldwide, the underlying factor is the unsafe behaviour of the workers. Safety Act Index is a powerful tool to address the unsafe behaviour of the workers in a non-threatening manner. If someone refuses to live up to safety rules & safety standards after getting coaching & help, then he / she has to go into progressive discipline system.

Information developed in this audit is for learning about how to improve safety performance.

Excellence in Safety is a result of excellence in leadership