Safety Bulletin
Assess the Error Type to Prevent Future Human Error

NEBULA
SAFETY & ENVIRONMENTAL

Introduction

Human error may seem to be random at your facility. Perhaps human error has led to some incidents with significant safety consequences. Maybe your programs and processes are adequate, but workers don't always make the best decisions when carrying-out their job duties.

If this describes your organization, you may want to take a deeper look at how you are responding to incidents caused by human error. Perhaps the organizational response to these human error incidents can be more focused on organizational learning and improvement.

Sidney Dekker states in his book Field Guide to Understanding Human Error that there is an old view and a new view pertaining to human error and safety performance.

Old View Perspective on Human Error
- Says what people failed to do
- Says what people should have done to prevent the outcome

New View Perspective on Human Error
- Tries to understand why people did what they did
- Asks why it made sense for people to do what they did

The Old View Perspective on Human Error focuses on "fixing the worker." However, this Old View Perspective on Human Error can be detrimental to the safety culture. Workers may feel that the leadership is always casting blame or finding fault with the workers. This can lead to the workers resenting leadership or not wanting to share information with leadership.

The New View Perspective on Human Error instead focuses on organizational improvements. These organizational improvements will make it more likely that the worker is able to perform their work without human error. Adopting this strategy takes restraint after human errors occur, as we all have emotions and can get frustrated with others. However, in the end, it will help to build an atmosphere of teamwork between workers and leadership that is beneficial to preventing human errors.

You can't tackle human errors at surface level and expect to improve. This is because human errors are generally more indicative of organizational weakness than poor worker performance. These organizational weaknesses need to be addressed to minimize the number of human errors in the future to achieve improved performance.

In This Issue

This Safety Bulletin provides a simple approach for categorizing human error based on the error type. This approach is applicable for categorizing a wide range of errors and can help to expediently identify effective solutions to prevent human error.

Safety Bulletins are published monthly and can be located on the Nebula Safety & Environmental LinkedIn page or website.

https://www.NebulaSafety.com

The Old View Perspective on Human Error focuses on "fixing the worker." However, this Old View Perspective on Human Error can be detrimental to the safety culture. Workers may feel that the leadership is always casting blame or finding fault with the workers. This can lead to the workers resenting leadership or not wanting to share information with leadership.

The New View Perspective on Human Error instead focuses on organizational improvements. These organizational improvements will make it more likely that the worker is able to perform their work without human error. Adopting this strategy takes restraint after human errors occur, as we all have emotions and can get frustrated with others. However, in the end, it will help to build an atmosphere of teamwork between workers and leadership that is beneficial to preventing human errors.

You can't tackle human errors at surface level and expect to improve. This is because human errors are generally more indicative of organizational weakness than poor worker performance. These organizational weaknesses need to be addressed to minimize the number of human errors in the future to achieve improved performance.

What is Human Error Type?

To better understand the organizational opportunities from human error you have to get "inside the mind" of the worker that made the error.

- What was their thought process prior to the error and when the error was made?
- What was the background or context in which the error was made?
- Why did they commit the error? What were the reasons?
- Or, why did they decide not to commit an action that would have prevented the error?

Understanding the answers to these questions can help the organization identify improvement opportunities, such that the likelihood of the error occurring (in a similar situation in the future) is minimized.

Additionally, identifying the error type can be beneficial. In his book entitled Human Error, James Reason (the creator of the Swiss Cheese Model) lists three error types:

1. Mistake- the worker does what they meant to do, but should have done something different
2. Slip- the worker does something, but not what they wanted to do
3. Lapse- the worker forgets to do something they meant to do

Mistakes and Slips are generally errors of commission in that the worker took an action, but it wasn't the correct or desired action, hence an error occurred. Mistakes and Slips are differentiated by the knowledge or lack of knowledge of the worker. For a Mistake the worker lacks knowledge of what to do or what should be done. For a Slip, a lack of knowledge wasn't the primary factor the error occurred. The workers had adequate knowledge and the intent was good, but an error still occurs. A Lapse is typically an error of omission in that the error is that an action was not taken, when action should have been taken.

But wait, isn't there a missing error type? What if the worker takes a shortcut or violates the company policy or processes? You are correct, a Violation is an error type pertaining to the organization's frame of reference. However, from the worker's frame of reference, only Mistake, Slip, and Lapse are truly human error types. A Violation is not an error type, but rather in its own category as a Violation. Therefore, it's been listed in the table below as an Organizational Error Type.

Organizational Error Type	*Description*	*Example*	*Possible Mitigations*
Slip	Person does something, but not what they meant to do	Grind-off too much material when finishing a weld	Improved engineering controls, job planning, or signage
Lapse	Person forgets to do something they meant to do	Miss a step in a procedure after getting interrupted	Improved procedure clarity and job planning
Mistake	Person does what they meant to do, but should have done something else	Over-tighten a flange to stop a leak rather than replacing a gasket	Improved training and mentoring
Violation	Person decides to act without complying with a known rule, procedure, or good practice	Open a bypass valve to fill a tank more quickly, but results in an overfill	Improved accountability and possible punishment

Human Error Type Assessment Benefits

The goal of evaluating human error type is to determine what can be done to best prevent a future error. Classifying the human error type is very quick and can determine whether the continuous improvement plans for the worksite are generally aligned with best preventing human error.

Also, human errors can be evaluated in aggregate at a worksite. For instance, if most of the human errors that have occurred at a worksite are classified as Mistake error type, it would be beneficial to look at how to boost worker knowledge. If training is determined to the adequate, perhaps mentoring can be improved.

Not correctly classifying the human error type can have a negative impact on safety performance. For instance, if a worker gets fired for slipping on wet pavement, other workers may resent leadership's "unfair' action and near miss/ incident reporting could suffer. Before implementing any corrective actions, leadership should ensure that the proposed actions will not negatively impact the safety culture.

With that said, many worksites underutilize mitigations that may be very beneficial. Two examples are listed below:

1. For Violation error types, many organizations frequently implement punishment for the worker. It would be better to look at other ways to improve accountability prior to implementing punishment. Instead, there may be work practices that could improve peer-to-peer accountability or supervisor engagement prior to and during the work.

2. For Mistake error types, many organizations spend most of their effort ensuring that training covers the necessary specifics to prevent a future human error. While this is important, they would further benefit by improving other aspects of the training to improve worker knowledge retention. Additionally, mentoring can often be strengthened to create deeper learning opportunities.

Conclusion

Assessing the human error type is a quick approach to better understanding the underlying reasons for why a human error occurred. This approach can be used to classify errors so that corrective actions can be tailored to address the underlying reasons for the error. New opportunities can be uncovered for minimizing human error that also promote a strong safety culture.

References:

- Dekker, Sidney (2014). Field Guide to Understanding 'Human Error'. CRC Press. Third Edition.
- Reason, James (1990). Human Error. Cambridge University Press. First Edition