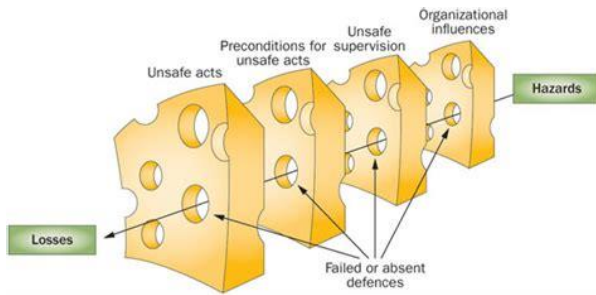


What is NASAHFACS?

It is an acronym of NASA Human Factors Analysis and Classifications System. As the name implies it is simply looking at the Human events of Mishaps or Close Calls. In essence, this bridges the gap between theory and practice of the Swiss cheese model of accident causation, and from that, we can improve the quality and quantity of information gathered and ensure the corrective actions that are recommended are more effective.



In Reason's Swiss Cheese model, there are 4 "slices" or tiers of human error potential, and they are divided into two sections, an "active" layer **Acts**, and "Latent Factors": **Preconditions, Supervision, and Organization**. The goal of **NASAHFACS** is to understand human factors through the entire system rather than stopping at the operator.

Why do we do this?

The majority of NASA mishaps can be connected to human events. From 2010-2015 human events and conditions totaled 79% of causal factors identified in NASA mishaps and close calls. Consequently, NASA now requires the participation of a Human Factors Investigator in Type A & B mishaps and High Visibility Close Calls.

Acts

These are Influences or Factors closely tied to the mishap and described as actions, or inactions, that results in a mishap. There are four areas in this active layer, and these are:

Decision / Judgement Errors AKA "An honest mistake."

They also can be in the form of **Skill Based Errors** which are events that occur when a specific action is performed in a manner that leads to a mishap.

Additionally: **Perception Errors** are influences or factors when misperception of an object, threat or situation, results in a human event.

Finally, although we don't like to admit it, **Violations** are those factors when the individual *intentionally* breaks the rules and instructions.

This is just the first area an analysis or investigation should look at. BUT, how did we get here? What performance shaping factors were present? We must get beyond the operator level, and to do that, we need to look at the Latent Factors.



Preconditions

This first section of the Latent Factors is by far the largest and concerns the **ENVIRONMENTAL FACTORS**: which are factors that affect the practices, conditions and actions or inactions of an individual or team. There are three of these environs; **Physical, Technological** and **Space**.



Also in this section is **PERSONNEL FACTORS**, this is when teamwork or self-imposed stress affect practices, conditions, or actions of performance. Two sub categories reside here: **Communication**: and **Self-Imposed Stress**: which are factors that affects the Team or the individual's readiness or ability to perform.

Lastly Five **INDIVIDUAL FACTORS**: which are factors if cognitive, psycho-behavioral, adverse physical state, or physical/mental limitations affect practices, conditions or actions of individuals. These are divided into **Awareness Cognitive Factors, Adverse Psychological, Adverse Physiological, Medical / Mental** and **Perception**.

But how did these conditions come to be?

Supervision

This second part of Latent Factors is when the methods, decisions or policies of the supervisory chain of command directly affect practices, conditions, or individual actions and result in human events or an unsafe situation.



In this section, there are four categories or buckets: **Failure to Correct a Known Problem**, **Inadequate Supervision**, **Planned Inappropriate Operations**, and **Violations**.

Yes, Supervisors are people too and can make mistakes. These can stem from inadequate training, pressure from above or below, doing too much with too little, or knowingly bending the rules to accomplish the mission.

What Organizational influences were present to affect Supervision in this way?

Organization

This final piece of the Latent Factors is Organizational. This is Center Management; Policy, Processes, Resources and Facilities ...its Culture. This level describes the methods, decisions or policies of an organization and how they affect both supervisory and individual task and mission accomplishment.



This level is divided into three buckets:

Culture / Climate; Attitudes, beliefs or values that are shared, or the perception of stress and or morale within an organization. **Processes**; Are factors when organizational processes, procedures, risk management and oversight negatively impact operations. And of course **Resources**; are factors when the staffing, facilities or products an organization needs to accomplish a mission are inadequate or improper and this condition reduces system safety or increases operational risk.

For more information, see your Centers NASAHFACS Specialist, or contact the Safety Culture Manager at HQ.



OSMA

NASA Human Factors Analysis and Classification System (NASAHFACS)



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