



SAFETY REPORT

FRANÇOIS BURMAN
Pr Eng, BSc (Eng) MSc (MedSc),
FSAIW & MSAIME

francois@hydra.org.za

Dealing with risky decisions

Whether we are discussing the hyperbaric environment or general working conditions, we often quote the 1986 *Challenger* launch disaster, together with the 1996 Mt. Everest disaster [1] as appropriate parallels for considering a poor safety culture – where the perception of risk was diminished through lack of incidents prior to the final catastrophic series of events. This has been referred to as the normalization of deviance [2].

It is perhaps pertinent for us to juxtapose a reporter's exposé [3] of Prof. Vaughan's book: *The Challenger Launch Decision: Risky Technology, Culture and Deviance at NASA* [2] with our own dilemma of safety or compliance in the hyperbaric center.

What Vaughan concluded was the process that NASA had established for making high-risk decisions had actually resulted in a mindset where conformity to the stated requirements clearly eclipsed the normal and perhaps even intuitive regard for safety. In the well-documented catastrophic event, the NASA management team's decision to launch *Challenger* actually did not violate the agency's procedures, as was initially proposed, but in actual fact it complied with all of them! In Vaughan's words, "The decision to launch *Challenger* was, incredibly and sadly, a mistake embedded in the banality of organizational life," adding, "No fundamental decision was made at NASA to do evil; rather, a series of seemingly harmless decisions were made that incrementally moved the space agency toward a catastrophic outcome."

We now know that the below-freezing ambient temperature conditions warped a rubber O-ring booster-rocket seal, which was then dislodged by the unanticipated wind shear as the shuttle gained altitude.

. . . understanding risk, applying appropriate awareness and mitigation steps rather than blind compliance or reliance on the rules help produce a culture of safety in our working environment.

The escaping heat ignited the shuttle's liquid fuel tank. What Vaughan ventured was that when faced with uncertainty, people often and perhaps instinctively "tend to fall back on rules". This results in the expanding of the boundaries of risk, which counterintuitively and, in this case, ends up causing the disaster.

Allied with Kamler's own proposition that where we deal with risk on a daily basis, but are not faced with any calamitous or even untoward events, we then accept the risks as normal. The risks themselves do not diminish, only our perception of them does. The same mindset apparently occurred at NASA, where as time passed by, their engineers and management team "accepted more and more problems, becoming blinded to the possible harmful results of their actions" [2].

We can never entirely eliminate risk in our hyperbaric centers, but we can certainly remain aware of them, especially as levels of potential danger increase with each decision to deviate from known processes, with the commonly observed drift toward complacency and with the inevitable changes in staff. It is understanding risk, applying appropriate awareness and mitigation steps rather than blind compliance or reliance on the rules that helps us to prevent the proverbial holes in the Swiss cheese [4] from lining up. Awareness of flaws in each layer of defense can help us avoid accidents.

*Francois Burman is a member of the UHMS
HBO₂ Safety Committee*

References

1. Kamler, Kenneth: Doctor on Everest, 2002.
2. Vaughan, Diane: The Challenger Launch Decision. Risky Technology, Culture, and Deviance at NASA, 1996.
3. Sandra Howe: Staff Writer: Boston College Chronicle, 1996.
4. Reason, James: The Swiss Cheese Model (1990).