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THE SAFETY PROBLEM - Do We Have a Solution?

PART 3 OF 3 - FEB 2023



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by ARTHUR R. COLWELL

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PART 3: A New View and Making it Happen

In **Part 3**, the learnings, observations, and ideas discussed in [Parts 1](#) and [2](#) have been brought together under the umbrella of “A New View”. Subsequently, we offer some guidelines to leaders about how to “Make it Happen”.

▶ A New View

By combining the new insights and perspectives discussed previously, we realize the ability to see and understand safety management in a new way — one that doesn’t necessarily change how things are being done but rather enhances and shifts emphasis ([Figure 5](#)). This “New View” is summarized by Dr. Sidney Dekker⁵ in the following three basic principles.

- ▶ **People are the solution, they are not the problem:**
 - People create success far more often than they are involved in failure.
 - People recognize the difference between Work-As-Done and Work-As-Planned (or imagined).
 - People allow mature conversations to occur around risk.
 - People recognize that people are a source of innovation and insight.

“Multiple goals and opposing constraints can make it impossible for people to follow rules”

- ▶ **Safety is the presence of positives, not the absence of negatives:**
 - Absence of accidents does not indicate presence of safety.
 - Safety must be about capacity to adapt, tolerate change, and be resilient.
 - Serious incidents are preceded by long periods of accident-free operation.

“People can still make things go right because of their adaptive capacity – their ability to recognize, adapt to and absorb changes and disruptions, i.e., their resilience.”

- ▶ **Safety is an ethical responsibility and not a bureaucratic activity:**
 - Systems manage safety not liability.
 - Lean management systems enable effective risk management.
 - Systems are designed to promote relationships versus controls.

“We don’t have safety management systems – we have systems that manage liability. We have forgotten who the customers are... they are the people who work for us.” - Dr. John Green¹

The learning is not in what people aren’t doing, it’s in what they are doing...
- Dr. Sydney Dekker⁵

This “New View” is characterized by three, very similar main approaches, which were originated and largely driven by three key individuals:

- ▶ **Safety I and Safety II** – Dr. Erik Hollnagel⁸
- ▶ **Safety Differently** – Dr. Sidney Dekker⁵
- ▶ **HOP** (Human Organizational Performance) – Dr. Todd Conklin²⁰

References to their work are listed at the end of this article.

▶ Making It Happen

Today’s leaders in our industry are likely to find these types of new research and theories of great interest. However, at the end of the day, their time and efforts must generate true value for their organizations.

Leaders must grasp and confront the practical aspects of this “New View”. What key steps must leaders take to “Make It Happen”?

The key steps required to successfully transition to the “New View” are:

- 1. The transition must start with a fundamental shift in the definition of safety for the organization.**^{8,21} Begin to see safety as the presence of capacities (or potentials) to make things go well. This shift is critical – without it, effective long-lasting change will not occur.
- 2. The organization must accept the reality that Work-As-Done is different from Work-As-Imagined.**^{14,15,17,21} This difference is an opportunity for the organization to learn by consulting with the workers (e.g., via learning teams). These differences are the “Pain Points”⁹ that provide opportunities for improvement, thereby helping to prevent a “Drift into Failure”. They also highlight areas of innovation that can be further exploited.
- 3. Understand your capability for resilient performance.**^{8,14,17}
 - Begin monitoring and tracking the weak signals

from the four resilient potentials and their components (i.e., soft risks).

- Work to strengthen the soft risks in the organization — remember these soft risks can modify both the impact and likelihood of a hard risk.¹⁹
- 4. Do investigations differently.**²¹
 - Begin to see accidents as the unexpected combination of normal performance variability.⁸
 - Strive to understand the entire context of the work environment.
 - Focus on those accidents and near misses that caused or had the potential to cause serious harm and/or damage.
 - Accept that the purpose of an investigation is to learn about the organization’s:²¹
 - ▶ Work processes and practices
 - ▶ Systems and incentives
 - ▶ Environment and equipment
 - ▶ Leadership and followership
 - Incorporate human factor learnings into the investigative process.²¹
 - ▶ Accept that human error is not so much bad as inevitable.
 - ▶ Understand that failure to apply human factors is a key aspect of adverse events.
 - Investigate why human errors occur – look for what failed, not who failed.
 - ▶ Understand that workers do not cause accidents – they trigger them.
 - ▶ Build trust and improve the learning from the investigation.
 - Eliminate the misleading quest to uncover the “Root Cause”.²¹
 - ▶ Rarely is there one root cause that must be identified and fixed.
 - ▶ Many small contextual factors combine in complex ways to create bad outcomes.

- ▶ Focusing the organization on a single root cause inhibits what the organization can learn from the accident.
- Begin to see successes as the unexpected combination of normal performance variability.⁸
- ▶ Investigate successes — learn what happens when “nothing” happens.¹⁵
- ▶ Look for “Pain Points.”⁹

5. Do corrective actions differently.^{21,22}

- Accept that the purpose of corrective actions is to fix. If not, why do them?²¹
- Understand the various quality levels of corrective actions and use them appropriately.²²
- If corrective actions are not obvious, it is a sure sign that the investigation is not complete. “A good investigation writes its own corrective actions.”²¹
- Understand the total cost of the corrective actions. Safety at all costs is not practicable nor required.
- Always follow-up to ensure the corrective action works as intended. **Remove those that do not!**

6. Declutter the organization’s safety bureaucracy.²¹

- Eliminate “performance drag” (i.e., safety clutter).
- Simplify everything.
- Remember the customer is “the people who work for us.”

7. Educate the leaders of the organization in the new concepts of the “New View”.²¹

- The group that needs the earliest and most education on these new ideas is not the workforce, it’s the leaders of the workforce.

▶ Summary

This three-part series reviewed the problems and paradoxes of today’s safety management approach. Recent advances in human factors, neuroscience, and resilient engineering have opened a door to a New Perspective on safety management. Now, the question for our industry is *do we wish to pass through that door?*

The consequence of this new perspective is the need to approach safety management in a new way. To be clear, organizations must still investigate things that go wrong and consider risks.

Many existing practices will continue to be performed, but new ones will need to be added. The main difference lies in what leaders emphasize.

This “New View” represents:

- A new way of looking at and defining safety
- A new definition of an accident
- A new perspective on “human error”
- A different way of applying ***known*** methods and techniques
- The implementation of ***new*** methods and techniques

Safety is in a crisis, so is it time to try something different in safety management?

- Are you frustrated with your current safety performance, i.e., not seeing the improvements you expect from your safety investments?
- Do you feel it’s under control or are you worried about the next big event that comes out of nowhere with little or no warning?
- Does your organization have the capacity to effectively handle the variable conditions it faces every day?

Is it Resilient? Could this “New View” be your solution?

ABOUT THE AUTHOR:



Art Colwell has spent over 30 years in the chemical industry. At Pilko & Associates, he has been able to leverage that experience to help companies improve overall EHS performance. Working directly with senior corporate executives, Art has advised and provided guidance on EHS risk assessment, risk mitigation and governance.

Prior to his retirement in 2010, Art was responsible for BASF's largest North American manufacturing facility located in Freeport, Texas. In this role, Art oversaw the daily operation of 24 plants that manufacture 23 different products, including acrylic acid used in textiles, adhesives, and plastics; superabsorbent polymers used in baby diapers; caprolactam used in nylons and solvents; and intermediate chemicals like oxo alcohols (N-Butanol, Iso-Butanol, 2-Ethylhexanol) used to produce polyesters, surface coatings and plasticizers. During Art's tenure, the Freeport site was recognized by the Texas Chemical Council with its two highest honors – the Best in Texas Safety Award (4 of the last 6 years) and the Sustained Excellence in Caring for Texas Award (last 4 years).

Art also served as Chairman for BASF's North American Manufacturing Community (2005-2008). In this role Art was responsible for the development and implementation of operational excellence programs across all North American manufacturing facilities.

An active supporter of the industry, Art served on the Board of Directors for the Texas Chemical Council for 9 years. He held a variety of offices, culminating in his selection as TCC Chairman for 2009 – 2010.

Prior to his role as Senior Vice-President and General Manager of the Freeport Site, Art served as Operations Director for Caprolactam, Cyclohexanone, and

Hydroxylamine Production (BASF's Freeport, Texas site), Ethylene Oxide Production (BASF's Geismar, Louisiana site), and Pharmaceutical Production (as Director of Operations for BASF's Knoll Pharmaceuticals in the United Kingdom).

A native of Huntsville, Alabama, Art Colwell earned both a bachelor's degree and a Master of Science degree in Chemistry from the University of Alabama in Huntsville.

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BIBLIOGRAPHY

1. Green, John, Change, Challenge and Stay Curious, Task Force Zero - YouTube, 2017.
2. Brown, Jeff, Nearly 50 Years of Occupations Safety and Health Data, U.S. Bureau of Labor Statistics, Beyond the Numbers, Vol. 9/No.9, July 2020.
3. Monty, Rick, Risk Control by Aligning Organizations Board Room to Control Room: The 8ight Drivers® Process, Pilko & Associates, 2018.
4. Work Injury Source, Workplace Injury Statistics – 2021 Update: Data for Workplace Accidents, Injuries, and Death, 2021.
5. Dekker, Sydney, Safety Differently, CRC Press, Boca Raton, Florida, 2015.
6. Saloniemi, A., and Oksanen, H., Accidents and Fatal Accidents: Some Paradoxes, Safety Science 29, 59–66, 1998.
7. Dekker, Sidney, Employees: A Problem to Control or Solution to Harness, Newswires, Insurance Newsnet, 22 August 2014.
8. Hollnagel, Erik, Safety-I and Safety-II – The Past and Future of Safety Management, CRC Press, Boca Raton, Florida, 2014.
9. Acosta, Martha, Systems Safety and Pain, Todd Conklin PreAccident Podcast Episode 2, 12 April 2015.
10. Johnson, Bill Chief Scientific & Technical Advisor, Human Factors in Aircraft Maintenance Systems, FAA - YouTube, 2012.
11. Dekker, Sydney, The Field Guide to Understanding Human Error, CRC Press, Boca Raton, Florida, 2014.
12. Koen, Susan L., Brain-Centered Hazards: Risk & Remedies, Mary Kay O'Connor Process Safety Center, 19th Annual International Symposium, 25–27 October 2016.
13. Grover, Dan and Walia, Rajni, Enhance Human Performance by Mitigating Brain-Centered Hazards, Webinar-YouTube, DEKRA, 26 September 2019.
14. Hollnagel, Erik, Safety-II in Practice – Developing the Resilience Potentials, Routledge, New York, New York, 2018.
15. Conklin, Todd, The New View of Safety, USW HSE Conference – YouTube, 2018.
16. Conklin, Todd, Failure Redefined – Miracle on the Hudson, Pre-Accident Podcast Episode 4, April 12, 2015.
17. Hollnagel, Erik, The Secret of Safety, Task Force Zero – YouTube, 2021.
18. Hollnagel, Erik, Leonhardt, Jorg, and Licu, Tony, The Systemic Potentials Management: Building a Basis for Resilient Performance – a White Paper, Eurocontrol, 2021.
19. Colwell, Arthur R., Understanding Soft Risks, Pilko& Associates Grey Paper – pending, 2022.
20. Conklin, Todd, The 5 Principles of Human Performance, Pre-Accident Media, Santa Fe, New Mexico, 2019.
21. Dekker, Sidney and Conklin, Todd, Do Safety Differently, Pre-Accident Media, Santa Fe, New Mexico, 2022.
22. Colwell, Arthur R., Developing Quality Corrective Actions, Pilko & Associates Grey Paper, December 14, 2020.