CULTURE FOR SAFETY

Nuclear Safety and Security Programme

International Conference on Human and Organizational Aspects of Assuring Nuclear Safety, Vienna

The IAEA strives to assist member states in strengthening their culture for safety through a variety of activities.

> " **Culture for Safety' is a concept describing the priority and value put on safety by the members of an organization's overall culture.** "

Laguna Verde NPP SCCIP

All organizations involved in nuclear activities have a common concern to sustain and improve safety. However, there is substantial diversity among organizations in their understanding of how to work with the organizational culture to influence safety in a positive way. This brochure provides the reader with a fundamental understanding of a strong culture for safety and how IAEA can assist Member States in strengthening it.

What is Culture for Safety?

'Culture for Safety' refers to how an organization's culture prioritizes and values safety. In some circumstances when a severe event happens, analysis indicates that the safety margins had been eroding steadily for years. This can result from people gradually accepting declining conditions: ignoring risks brought on by the decline in safe work practices that may have unnoticeably drifted towards prioritizing other concerns over safety. Risks might have been played down, because "nothing has happened", which can eventually lead to the occurence of a severe event.

Assessing and analysing an organization's culture for safety helps us understand the anatomy of accidents and events, and thereby comprehend why safety performance can gradually decline. The basic assumptions, shared among people, can be found on the deepest level of safety culture. A group's shared basic assumptions can be about how work should be done, e.g. "work procedures should always be followed because they are paramount to safety" or "we are not accountable for safety because that is the duty of the managers". Some basic assumptions can jeopardize safety. This was identified through the IAEA Director General's Report on the Fukushima Daiichi accident, which explained that:

> A major factor that contributed to the accident was the widespread assumption in Japan that its nuclear power plants were so safe that an accident of this magnitude was simply unthinkable. This assumption was accepted by

nuclear plant operators and was not challenged by regulators or by the government. As a result, Japan was not sufficiently prepared for a severe nuclear accident in March 2011.

Unfortunately, a group is seldom aware of its shared basic assumptions because they are not directly visible. Although basic assumptions within an organization's culture can take several years to develop, we usually don't think about what basic assumptions we hold because we typically only reflect on the behaviours we see. Just like the tip of an iceberg only shows a small part of the entire iceberg, we can only directly observe a small part of a culture. What we can see is the superficial level of the culture, which is shown through actual behaviours of people, i.e. "the way we do things around here". This does not mean we cannot identify shared basic assumptions at all. We can identify these by interpreting the behaviours and expressed norms of people in the organization. Investigating the shared basic assumptions to understand their impact on day-to-day safety will allow organizations to work effectively with improving their culture for safety.

Evolving terminology: From safety culture to culture for safety

The IAEA has traditionally applied the concept 'safety culture', defined as "the assembly of characteristics and attitudes in organizations and individuals which establishes that, as an overriding priority, protection and safety issues receive the attention warranted by their significance". A central outcome of the International Conference on Human and Organizational Aspects of Assuring Nuclear Safety - Exploring 30 Years of Safety Culture held in February 2016, was a call to "evolve from the theoretical concept of safety culture through the more practical concept of culture for safety" (Closing Statement by Juan Carlos Lentijo, DDG-NS). Practitioners argue that by moving towards 'culture for safety' we are reminded that 'safety culture' is not a discrete entity that can be 'implemented' or 'removed' from an organizational culture. Rather, safety is an outcome of an organization's culture as its culture influences every aspect of how the organization's members behave, from how the management system is developed to how defence-in-depth principles are manifested. As such, the goal for any organization is to create an organizational culture that is working to achieve safety day by day – in short: a culture for safety.
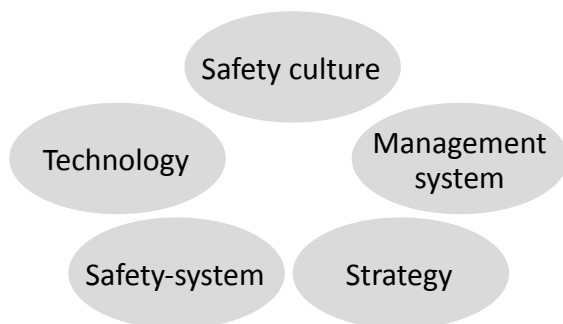
Safety Culture is one variable amongst others
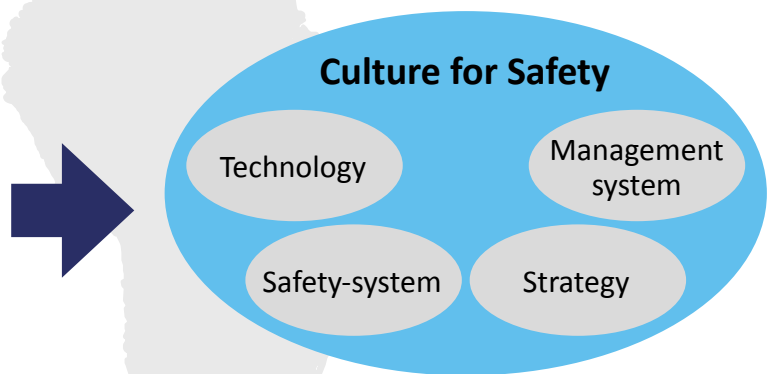
Culture as something inherent in all aspects of the organization

COMPARTMENTALIZED APPROACH

❝ **Organizations have a safety culture.** ❞

SYSTEMIC APPROACH

❝ **Organizations are cultures that differ in their capabilities to fulfil safety requirements.** ❞

The IAEA's Approach to Culture for Safety

The IAEA has developed an international framework consisting of five overarching cultural characteristics describing a strong safety culture:

1. Safety is a clearly recognized value;
2. Leadership for safety is clear;
3. Accountability for safety is clear;
4. Safety is integrated into all activities; and
5. Safety is learning-driven (IAEA Safety Standards Series No. GS-G-3.1)

Each of these high level characteristics is described by a number of attributes that have been identified as essential for achieving a strong safety culture. For example, the characteristic "accountability for safety is clear" is described by attributes such as "there is a high level of compliance with regulations and procedures" and "'ownership' for safety is evident at all organizational levels and for all personnel". These attributes serve as international references of what 'good' looks like when assessing and improving culture for safety.

Furthermore, the IAEA has established an integrated approach which promotes a seamless integration between the management system and its culture for safety. The safe operations of nuclear organizations are formalized through management systems. However, safe performance depends on the actions of individuals and groups; these actions are influenced by the culture for safety of the organization. Following this, the IAEA safety standard on Leadership and Management for Safety (IAEA Safety Standards Series No. GSR Part 2) requires the management system to promote and support a strong culture for safety by: "ensuring a common understanding of the key aspects of safety culture within the organization; providing the means by which the organization supports individuals and teams in carrying out their tasks safely and successfully, taking into account the interaction between individuals, technology and the organization; reinforcing a "learning and questioning" attitude at all levels of the organization; and, by providing the means by which the organization continually seeks to develop and improve its safety culture."

Contributors to a Strong Culture for Safety

A strong culture for safety is part of the defence-in-depth (i.e., denotes the practice of having multiple, redundant, and independent layers of safety systems in place to protect against a single, critical point of failure), and therefore needs to be integrated into everyday activities; it should involve all levels of the organization from the top down. Striving for a strong culture for safety is a continuous journey, as culture is continuously evolving and requiring continuous attention to successfully improve over time.

As explained, shared basic assumptions are key drivers within culture. To take a closer look at how these are created, group dynamics and the way people interact with each other, need to be reviewed. In a strong culture for safety, people feel respected and can freely share their thoughts and worries with regard to safety. Managers and leaders play a central role in creating this environment. In a strong culture for safety, everyone feels accountable for safety and is sensitive to minor deviations that could lead to larger safety problems. Therefore, it is important that trust and openness are engendered and strengthened in such a way that they permeate the organization.

Another aspect of a strong culture for safety is to be alert to those influences that can impact the culture. One example is the influence of local culture. Over the past several years, many studies have been conducted on the influence of local culture in the workplace. These studies focused on a number of dimensions, but primarily sought to answer whether people will first act in the interest of what their local culture expects of them, or first act in the interest of maintaining a safe work environment.

When cultures collide, especially in high risk industries such as aviation, mining, nuclear power, oil and gas, accidents can and do happen. For example, by the end of the 1990s, Korean Air had more plane crashes than almost any other airline in the world. It was identified by researchers that Korea's hierarchical culture affected cockpit communications that in turn led to plane crashes. The interactions among the crew were not supporting effective communication, as the co-pilots did not find it appropriate to question the captains' actions. Only when Korean Air determined that their safety problem was "cultural", they were able to identify the specific cultural issues causing problems and could apply effective measures to resolve them.

According to the latest aviation safety data reports, Korean Air now has one of the safest records worldwide.

Cultural influences like these shape people's understandings, interpretations, perceptions and common expectations with regard to safety in their daily work; and, culture for safety — whether it is actively strengthened or left to chance — can be an asset to performing work safely or a liability resulting in serious accidents. Therefore, it is important to identify the strengths and weaknesses before things go wrong and implement improvement activities proactively.

IAEA Assistance for Continuous Improvement of Culture for Safety

The improvement of culture for safety is an on-going endeavour that requires long term commitment to succeed. The IAEA offers comprehensive support to licensees and regulatory bodies wishing to systematically improve culture for safety. An effective way of doing this is to conduct safety culture assessments and implement improvement activities based upon their findings. The assessments can be conducted by either internal or external teams. The IAEA offers both external safety culture assessments as an optional module of peer review missions, e.g. OSART as well as training courses for developing internal culture for safety improvement teams for licensees and regulatory bodies. The culture for safety improvement teams are trained to both conduct safety culture self-assessments and implement improvement activities.

Whichever assessment method is chosen, it is of key importance that the organization, including the senior management, is committed to a long term effort, and that the organization develops process ownership.

The IAEA secretariat further offers tailored support missions, i.e. workshops and trainings in the area of safety culture, leadership and management for safety. Services and assistance in which the IAEA provides to Member States upon request are:

– Independent Safety Culture Assessment (ISCA): Separately or in the scope of a peer review, e.g. OSART ;
– Safety Culture Continuous Improvement Process (SCCIP): Comprehensive training support package on safety culture self-assessment for both licensees and regulatory bodies;
– Workshop for Senior Managers on Leadership and Culture for Safety;
– Workshop for Middle Managers on a Systemic Approach to Safety — Pragmatic Solutions;
– Train-the-trainer training on Safety Culture Oversight;
– Tailored training on Culture for Safety Improvement Techniques, i.e. safety coaching, mindful communication;
– Workshop on Culture, Leadership and Management for Safety – tailored for the needs of the organization;
– Workshop on Integrated Management System – Implementation and continuous improvements; and
– Workshop on Culture for Safety and Security – arranged in cooperation with IAEA Division of Nuclear Security.

Nuclear Security Culture

Assistance through the IAEA's nuclear security culture programme is also provided, upon request, by the Division of Nuclear Security to Member States, to promote and sustain a strong nuclear security culture.

PNRA SCCIP, Pakistan

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MORE INFORMATION & POINT OF CONTACT

Further information on Culture for Safety, please visit:
https://www-ns.iaea.org/tech-areas/operational-safety/safety-culture-home.asp

Or contact: Operational-Safety.Contact-Point@iaea.org

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