

# A Harmonized Safety Culture Model

## IAEA Working Document

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## Introduction

The IAEA definition of ‘safety’ is ‘the protection of people and the environment against radiation risks, and the safety of facilities and activities that give rise to radiation risks.’ Because both traditional safety approaches (e.g., industrial safety, design margins, radiological protection, chemical and process safety) and security have the goal of protecting people and the environment; the traits addressed in this document apply to security as well as the other areas of safety.

Safety culture has been defined as that assembly of characteristics and attitudes in organizations and individuals which establishes that, as an overriding priority, nuclear plant safety issues receive the attention warranted by their significance (INSAG-4, 1994).

WANO defines nuclear safety culture\* as the core values and behaviours resulting from a collective commitment by leaders and individuals to emphasize safety over competing goals to ensure protection of people and the environment. (PL 2013-01, 2013).

IAEA Member states and nuclear-related organizations were experiencing challenges in complying with safety culture guidelines that were similar in intent but different in structure. In response the IAEA together with WANO/INPO, the USNRC, and other regulatory bodies agreed in 2011/2012 to enhance the alignment of their safety culture models. This started the process of harmonizing the guidance issued by the IAEA, WANO, INPO, and the USNRC regarding safety culture but did not address the limitations of existing guidance resulting from its focus on nuclear power plants, western-centric concepts of safety culture and the translatability of the framework across language and culture.

Several workshops were conducted in 2016 to elicit global input. Participants from diverse nations and facilities discussed existing safety culture frameworks from institutions including the IAEA, WANO, and INPO, as well as government institutions from the United States, Japan, and Finland. Special attention was paid to the gap between existing frameworks and the scope limitations identified in the previous effort. In October 2016 a final consolidation workshop produced a draft of what is presented below. Additional workshops in 2017 addressed the needs of the medical fields. The resulting model was reviewed to ensure it aligned with the systemic understanding of culture for safety in different organizations. It is recommended that each of the industries will customize the model to fit their particular needs.

It should be noted that the model is not a behavioural code or checklist but represents overarching principles that provide traits and attributes that are present in organizations with a healthy culture for safety.

The resulting model closely resembles the existing WANO trait framework and includes the existing IAEA characteristics. The major changes are designed to:

- enhance translatability into languages other than English;
- increase applicability to fields of activity other than the nuclear power industry;
- eliminate unnecessary redundancy.

The following are qualities or traits of a healthy organization culture for safety and apply to all organizations that deal directly or indirectly with ionizing radiation. Because this document refers to all nuclear-related organizations and activities the word ‘nuclear’ is not repeated throughout the document.

\* All WANO documents specifically denote safety culture as ‘nuclear safety culture’, emphasizing the word ‘nuclear’ in recognition of the immense power in nuclear power plant cores, the containment of radioactive nuclides and the production of decay heat; INPO uses a similar approach.

## Safety culture traits

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## IR. Individual Responsibility

**All individuals are personally accountable for safety.** All individuals feel it is their duty to know the standards and expectations and rigorously fulfil those standards and expectations. There is personal ownership for safety. They have a commitment that promotes safety both individually and collectively.

### Attributes

- IR.1 **Adherence:** Individuals understand and accept the importance of standards, processes, procedures, expectations and work instructions. Individuals at all levels of the organization adhere to standards and expectations.
- IR.2 **Ownership:** Individuals demonstrate personal commitment to safety in their behaviours and work practices. They promote safe behaviours in all situations and coach others when necessary.
- IR.3 **Collaboration:** Individuals and work groups help each other achieve goals by communicating and coordinating their activities within and across organizational boundaries. Individuals understand and accept the value of diverse thinking in optimizing safety.

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## QA. Questioning Attitude

**Individuals remain vigilant for assumptions, anomalies, conditions, behaviours or activities that can adversely impact safety and then appropriately voice those concerns.** All employees are watchful for and avoid complacency. They recognize that minor issues may be warning signs of something more significant. Individuals are aware of conditions and alert to potential vulnerabilities and then report them.

### Attributes

- QA.1 **Recognize Unique Risks:** Individuals understand the unique risks associated with nuclear and radiation technology. They understand that the technologies are complex and may fail in unforeseen ways with significant consequences.
- QA.2 **Avoid Complacency:** Individuals recognize and plan for the possibility of mistakes, unforeseen problems and unlikely events, even when past outcomes were successful. Individuals recognize that complacency often comes with success and continually strive to avoid it in themselves and others.
- QA.3 **Question Uncertainty:** Individuals stop when uncertain and seek advice. The situation and risks are evaluated and managed before proceeding.
- QA.4 **Recognize and Question Assumptions:** Individuals question assumptions and are prepared to offer different perspectives when they believe something is not correct.

## CO. Communication

**Communications support a focus on safety.** Leaders use formal and informal communication to frequently convey the importance of safety. The organization maintains a variety of communication channels including direct interaction between managers and workers. Effective dialogue is encouraged. Effective communication in support of safety is broad and includes workplace communication, reasons for decisions and expectations.

### Attributes

- CO.1 **Free flow of information:** Individuals communicate openly and candidly, both up, down, and across the organization. The flow of information up the organization is considered to be as important as the flow of information down the organization.
- CO.2 **Transparency:** Communication with oversight, audit, regulatory organizations and the public is appropriate, professional and accurate.
- CO.3 **Reasons for Decisions:** Leaders ensure that the reasons for technical and administrative decisions are communicated to the appropriate individuals in a timely manner.
- CO.4 **Expectations:** Leaders frequently communicate and reinforce the expectation that safety is emphasized over competing goals.
- CO.5 **Workplace Communication:** Communication about safety is included in all work activities so that everyone has the information necessary to work safely and effectively

## LR. Leader Responsibility

**Leaders demonstrate a commitment to safety in their decisions and behaviours.**

**Leaders are role models for safety.**

Executive and senior managers are the leading advocates of safety and demonstrate their commitment both in word and action. Leaders throughout the organization set an example for safety. Corporate policies emphasize the overriding importance of safety.

### Attributes

- LR.1 **Strategic Alignment:** Leaders establish and promote organizational priorities that place safety above competing goals. Leaders take a long-term approach to the business and align policies and actions. They emphasize that high levels of safety are necessary to sustain high levels of production.
- LR.2 **Leader Behaviour:** Leaders throughout the organization set an example for safety.
- LR.3 **Employee Engagement:** Leaders develop an aligned and engaged workforce that creates a positive environment in support of safety. Leaders seek the active involvement of individuals at all levels in identifying and resolving issues. Factors affecting work motivation and job satisfaction are considered when making decisions.
- LR.4 **Resources:** Leaders ensure that personnel, equipment, procedures, and other resources are available and adequate to support safety. Human resources policies, including recruitment, succession planning, and promotions, place a high priority on behaviour and decisions aligned with safety.
- LR.5 **Field Presence:** Leaders are frequently present in all areas of the organization observing work and material conditions. They ask questions, communicate, coach, and reinforce standards and expectations. Leaders listen to and act upon the concerns and feedback from the workforce.
- LR.6 **Rewards and Sanctions:** Leaders ensure rewards and sanctions encourage attitudes and behaviours that promote safety. People are answerable not only for results but also how they achieve the results.
- LR.7 **Change Management:** Leaders use a systematic process for communicating and implementing change so that safety is not compromised. The rationale for the change is clearly communicated. The impact of the change on safety is assessed before, during and after the change.
- LR.8 **Authorities, Roles, and Responsibilities:** Leaders ensure that authorities, roles, and responsibilities are clearly defined and understood.

## DM. Decision-Making

**Decisions are systematic, rigorous, thorough, and prudent.** Leaders support conservative decisions and the ability to recover quickly from unforeseen circumstances. Leaders follow the decision-making process. Responsibility for decision-making is clear.

### Attributes

- DM.1 **Systematic Approach:** Individuals use a consistent, systematic approach to evaluate relevant factors, including risk, when making decisions. Using a systemic approach, high-quality information is collected from all relevant sources.
- DM.2 **Conservative Approach:** Individuals make prudent choices over those that are simply allowable. Actions are determined to be safe before proceeding, rather than proceeding until proven unsafe.
- DM.3 **Clear Responsibility:** Authority and responsibility for decisions is specific and well defined.
- DM.4 **Resilience:** Prudent decision-making is always used, but in anticipation of unforeseen situations when no procedure or plan applies, organizations develop the ability to adapt.

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## WE. Respectful Work Environment

**Trust and respect permeate the organization.** A high level of trust is cultivated in the organization. Differing opinions are encouraged, discussed, and thoughtfully considered. Employees are informed of steps taken in response to their concerns.

### Attributes

- WE.1 **Respect is Evident:** All individuals are treated with dignity, respect, and openness and their contributions are recognized.
- WE.2 **Opinions are Valued:** Individuals are encouraged to ask questions, voice concerns, and provide suggestions. Differing opinions are solicited and respected.
- WE.3 **Trust is Cultivated:** Trust is fostered among individuals and work groups throughout the organization. Openness and honesty are fostered between individuals, between work groups, and throughout the entire organization.
- WE.4 **Conflicts are Resolved:** Fair and transparent methods are used to resolve conflicts. Conflicts are resolved in a timely manner.
- WE.5 **Facilities Reflect Respect:** Housekeeping and material conditions reflect respect for both people and equipment. Facilities are conducive to a productive work environment and housekeeping is maintained.

## CL. Continuous Learning

**Learning is highly valued.** The organizational capacity to learn is well developed. The organization employs a variety of approaches to stimulate learning and improve performance, including human, technical and organizational aspects. Individuals and teams are highly competent and seek opportunities for improvement.

### Attributes

- CL.1 **Constant Examination:** Safety is regularly monitored and assessed through a variety of techniques, including independent and self-assessments of its programs and practices. Safety culture is regularly assessed and enhanced.
- CL.2 **Learning from Experience:** The organization systematically and effectively collects, evaluates, and implements relevant internal and external lessons learned in a timely manner. Lessons learned are also shared with relevant organizations.
- CL.3 **Training:** The organization provides effective training and ensures knowledge transfer to maintain a knowledgeable and competent workforce.
- CL.4 **Leadership Development:** Competent leaders are developed through the leadership training and succession management processes.
- CL.5 **Benchmarking:** The organization learns from other organization's practices, including other industries.

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## PI. Problem Identification and Resolution

**Issues potentially impacting safety are systematically identified, fully evaluated, and promptly resolved according to their significance.** Identification and resolution of a broad spectrum of issues, including human performance and organizational issues, are used to strengthen safety and improve performance.

### Attributes

- PI.1 **Identification:** A method for collecting issues is implemented. The issues collected are not only major issues but also minor issues as they may become major issues. Individuals identify issues in a timely manner. Self-reporting is expected and valued by the organization.
- PI.2 **Evaluation:** Issues are thoroughly evaluated to determine underlying causes and whether the issue exists in other areas. Issues are evaluated in an appropriate time frame.
- PI.3 **Resolution:** Identified issues are corrected as appropriate. The effectiveness of the actions is assessed to ensure issues are adequately addressed. Important lessons are shared.
- PI.4 **Trending:** Issues are analysed to identify possible patterns and trends. A broad range of information is evaluated to obtain a holistic view of causes and results.



## RC. Raising Concerns

**Personnel feel free to raise safety concerns without fear of retaliation, intimidation, harassment, or discrimination.** The site creates, maintains, and evaluates policies and processes that allow personnel to raise concerns freely.

### Attributes

- RC.1 Supportive Policies are Implemented:** The organization clearly states and effectively implements a policy that supports an individual's rights and responsibilities to raise safety concerns. The organization does not tolerate harassment, intimidation, retaliation or discrimination for raising concerns.
- RC.2 Confidentiality is Possible:** The organization implements at least one method for raising and resolving concerns that is confidential and independent of line management influence. Timely feedback is provided to the concerned individual.

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## WP. Work Planning

**The process of planning and controlling work activities is implemented so that safety is maintained.** Work is managed in a deliberate process in which work is identified, selected, planned, scheduled, executed, and critiqued. The entire organization is involved in and fully supports the process. All relevant parts of the organization work together to support the process of controlling work.

### Attributes

- WP.1 Work Management:** There is a systematic approach of selecting, scheduling, coordinating, and completing work activities such that safety is emphasized. The work process considers the identification and management of relevant factors, including risk.
- WP.2 Safety Margins:** Work is planned and conducted such that safety margins are preserved. Safety margins are understood, carefully maintained and changed only through a systematic and rigorous process.
- WP.3 Documentation and Procedures:** Documentation, including procedures, is complete, accurate, accessible, user-friendly, understandable, and up-to-date. Changes are tracked.

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