

ASSP TR-31010-2020

Technical Report: Risk Management –
Techniques for Safety Practitioners

A Technical Report prepared by ASSP and registered with ANSI



AMERICAN SOCIETY OF
SAFETY PROFESSIONALS

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ASSP Technical Report

**Risk Management –
Techniques for Safety Practitioners**

A Technical Report prepared
by the American Society of Safety Professionals

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Foreword

(This Foreword is not a part of American National Standard TR-31010-2020 Technical Report.)

This Technical Report was developed by an American National Standards Committee, the United States Technical Advisory Group (US TAG) to American National Standards Institute (ANSI) known as ISO/TC262. The report is national in scope, functioning under the Essential Requirements Document of ANSI with the American Society of Safety Professionals (ASSP) as Secretariat. It provides additional guidance and information in the practice of assessing, treating and managing risk according to the principles, framework and process outlined in ISO 31000:2018, Risk Management and is designed to supplement ISO 31010:2019, Risk Management – Risk Assessment Standard. This Technical Report is intended to be used by organizations in all industries for a wide range of situations that present risk and uncertainty that may affect objectives and decision making.

History

In November 2009, IEC/ISO 31010:2009, Risk Assessment Techniques was approved as an international standard. In addition, ISO Guide 73:2009, Risk Management – Vocabulary and ISO 31000:2009, Risk Management: Principles and Guidelines were also approved as international standards. In May 2010 the US TAG to ANSI for risk management reached consensus to adopt these three documents as American National Standards. Due to the ongoing significant interest being focused on risk management at the international level, additional consensus was reached that there should also be a committee looking at risk management standards for the United States. Such a committee would function under accreditation of ASSP as a *standards developing organization* (SDO).

In May 2019, ISO/IEC 31010:2019, Risk Management – Risk Assessment Techniques was approved as an international standard. In August 2019, the US TAG to ANSI for risk management reached consensus that this document should be adopted as an American National Standard.

Need for a Technical Report

As new risk sources emerge, and new information, methods and technologies are developed, there is an ongoing need for additional guidance and resources to meet those needs in the assessment and management of risk. Such guidance should not only consider current needs, but look towards the future, and add to the body of knowledge. ISO 31010:2019 provides information on risk assessment and a number of techniques from an international perspective. However, certain risk assessment methods used by risk professionals in the United States are not included or sufficiently explained in ISO 31010:2019. Therefore, the US TAG to ANSI for risk management felt it necessary to develop a *Technical Report on Risk Management for Safety Practitioners* that:

- aligns with the principles, framework and process found in ANSI/ASSP/ISO 31000 Risk Management;
- complements and supports ANSI/ASSP/ISO 31010 Risk Management – Risk Assessment;
- aligns and harmonizes with other risk standards such as:

- ISO Guide 73
- ANSI/ASIS/RIMS RA.1 Risk Assessment
- ANSI/ASSP Z590.3 Prevention through Design
- ANSI/ASSP/ISO 45001 Occupational Health and Safety Management Systems
- ANSI/ASSP Z10.0 Occupational Health and Safety Management Systems
- includes practical guidance in selecting, modifying, and combining methods, and
- includes additional risk assessment techniques and examples.

The purpose of this technical report is to assist safety practitioners, decision makers and stakeholders in the management of risk and the application of risk management and assessment techniques that reduce uncertainty and risk and enable an organization to achieve its objectives.

This technical report was processed and registered with ANSI by the U.S. TAG for TC262. Approval of the technical report does not necessarily imply (nor is it required) that all members voted for its approval. At the time ANSI registered this technical report, the U.S. TAG for TC262 had the following members:

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Introduction

This document provides guidance on the selection, modification, combination and application of various techniques used to help improve the way uncertainty and risk are managed. It is designed to supplement ISO 31010 and provide guidance on its implementation. The document includes additional information on techniques used in assessment, treatment and management of risk; fundamentals of assessing risk; options for treating risk; prevention through design and risk assessment throughout the life-cycle of a system; and the dynamic nature of the risk.

Risk management techniques are used by an organization within all steps of the risk management process - establishing context; identifying risk; analyzing risk; evaluating risk; treating risk; monitoring and reviewing risk; recording and reporting risk; and communicating risk. The process, which applies to a wide range of situations, is designed to:

- identify risks and uncertainties that are important to the organization;
- understand the nature and level of risks that exist;
- reduce uncertainty associated with identified risks;
- develop risk-based information needed by an organization's decision makers to determine proper actions;
- decide which option is best suited to treat risk for the situation;
- take appropriate action for the treatment of risk and verify its effectiveness;
- monitor, record and communicate risk to stakeholders and decision makers throughout the process.

Some techniques are similar in concept but have different names and methodologies that reflect the history of their development in different sectors. Techniques have evolved over time and continue to evolve, and many can be used in a broad range of situations outside their original application.

Techniques can be adapted, combined and applied in new ways or extended to satisfy current and future needs. This technical report provides an introduction to selected techniques, their possible applications, inputs and outputs, benefits and limitations, and references to sources of more detailed information.

The potential audience for this document is:

- anyone involved in assessing or managing risk;
- people who are involved in developing guidance that sets out how risk is to be assessed in specific contexts;
- people who need to make decisions where there is uncertainty including:
 - those who commission or evaluate risk assessments,
 - those who need to understand the outcomes of assessments, and
 - those who have to choose assessment techniques to meet particular needs.

Organizations that are required to conduct risk assessments for compliance or conformance purposes would benefit from using appropriate formal and standardized risk assessment techniques.

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1. Scope and Purpose

This technical report provides guidance on the selection and application of techniques for assessing and managing risk within the risk management process. The techniques can be applied to a range of occupational settings, situations and operational stages as part of the risk management process.

The purpose of this technical report is to assist decision makers and stakeholders in applying risk assessment techniques in an effort to gain an understanding of risk, reduce related uncertainty, and obtain risk-based information that will enable the organization to achieve its objectives.

The technical report is designed to align with the principles, framework and process found in ANSI/ASSP/ISO 31000 Risk Management, and complement ANSI/ASSP/ISO 31010 Risk Management – Risk Assessment, ISO 31070 Core Concepts of Risk, ANSI/ASIS/RIMS RA.1 Risk Assessment, ANSI/ASSP/ISO 45001 Occupational Health and Safety Management Systems, ANSI/ASSP Z10.0 Occupational Health and Safety Management Systems and ANSI/ASSP Z590.3 Prevention through Design standards.

2. Terms and Definitions

For the purposes of this document, the terms and definitions given in the aforementioned standards and ISO Guide 73:2009 apply. In addition, the following terms are defined:

Pure Risk

Risk sources that can only produce negative outcomes (R-). These include hazard-related risks which are generally insurable such as property, liability or personnel loss exposures; and operational-related risks that are derived from human error or failures in processes or systems such as technology related exposures, system breakdowns, or process control failures. Also known as absolute risk.

Speculative Risk

Risk sources that can produce positive and/or negative outcomes (R+/-). These include financial-related risks derived from the effect of market forces, financial assets, acquisitions, divestitures, and liabilities such as market risk, credit risk, liquidity risk and price risk; and strategic-related risk that are derived from trends in the economy and society such as changes in political, economic or competitive environments and demographic shifts. Also known as opportunity risk.