

# Root Cause Analysis using Tripod Beta Method

## INTRODUCTION

- Tripod Beta is a renowned method for incident analysis leading to proactive process control measures. It does not just focus on the immediate, human, causes of the incident, but identifies the structural flaws that allowed the incident in question to occur. The Investigation framework clarifies unknowns and uncertainties and thus leads to insights. Underlying causes are identified and lead to well considered conclusions and management actions, strengthening the organization's sustainability as well as business and safety performance.
- Scientific research at Leiden (NL) and Manchester (UK) Universities forms the backbone of the Tripod Theory. Many years of applied research and extensive practical use have made the matured Tripod theory the best solution for both proactive and reactive risk management. Many companies and other large organizations have gained the benefits of using the Tripod methodology, namely a considerable, measurable reduction in incident rates and a firm grip on risks.
- In the Tripod Beta methodology the investigation process goes hand-in-hand with the analysis process.

This training seminar will highlight:

- How to gather the adequate evidences to identify human and organizational failings
- Incident Investigation as per Tripod Beta Methodology
- Structured way of incident / accident investigation and analysis
- Benefits of using Tripod Beta method
- Software used as support for the Tripod Beta incident Investigation
- How to create actual incident / accident investigation database and use it for developing optimal mitigation measures

## OBJECTIVES

- Conduct a structured incident/accident investigation and analysis
- Create a effective Tripod Beta diagram-explaining the whole incident
- Determine Basic Risk Factors of your company
- Develop effective remedial actions
- Use the investigation findings for cost effective measures of improvement
- Use software support for developing Tripod Beta Diagram and Incident Report

## TRAINING METHODOLOGY

- Hands-on training rather than theoretic learning (examples based on real life industry cases)
- Active participation in the training-participants actually conduct the analysis of the incidents using the methodology
- Interactive training, using the video materials, simulations and re-enactments of actual incidents
- ORGANISATIONAL IMPACT
- Discover hidden causes of incidents in organization
- Determine effective ways of preventing incidents
- Create a structured and uniform method of investigation and analysis
- Reduce costs and time lost in incident investigation and analysis
- Provide beneficial improvement options without massive investments
- Become a part of the successful family of companies using Tripod Beta Analysis Method

## PERSONAL IMPACT

- Learn how to conduct effective incident investigation and analysis
- Gain knowledge in root cause analysis
- Become a part of the Tripod Beta community of practitioners
- Enhance their knowledge in behavioral theory
- Understand how to present a whole incident on two effective diagrams (STEP and Tripod Tree)

## WHO SHOULD ATTEND?

- Tripod Beta provides a structured way of thinking about why accidents happen and would be useful to anyone involved in managing risk, incident investigation auditing and preventing unwanted events. This is training course for all involved in Health, Safety, Environment and Security as well as process improvement.

This training course is suitable to a wide range of professionals but will greatly benefit:

- Safety Managers, Engineers and Specialist
- Process Safety Officers and Auditors
- Operations and Support Staffs and Production Managers
- HSE Advisers, Managers, and Incident Investigators
- Project, Finance, Supply Chain and Logistics Managers

- Financial Analysts
- Quality improvement personnel
- Petroleum, Mining and Drilling Engineers

## Course Outline

### Accident / Incident Investigation and Tripod Beta Principles

- Risk Management of Human Systems
- Organization's defenses between a source of harm and an undesirable outcome as a series of barriers, represented by layers of Swiss cheese
- What is Sequentially Timed Event Plotting (STEP)?
- Rules for Constructing a STEP
- The Four Key Stages in a Tripod Beta Investigation
- Defining Event, Agent and Object
- Telling the Story through the Core Diagram

### Barriers, Preconditions and Underlying Causes and Basic Risk Factors

- Barrier Identification and How they are associated with an Incident in a Systematic and Thorough Manner
- Four Possible States of a Barrier and their use within a Tripod Beta Tree
- Human Errors and their Link to the Immediate Causes
- Preconditions to Immediate Causes, Definition and Position within a Tripod Beta Tree
- Underlying Causes, Definition and Position within a Tripod Beta Tree
- Causation Path, Definition and Presentation within a Tripod Beta Tree
- Basic Risk Factors in Business Process

### Remedial Actions, Reporting, Tree Logic and Test

- Identify the Nodes on a Tripod Beta Tree where remedial action should be applied
- Haddon's Hierarchy of Barrier Effectiveness
- The Cost vs. Benefit of various types of Barriers
- Report Layout and Format
- The Ways in which Lessons Learnt may be communicated throughout the Company
- TEST