Human Factor and Human Error in Maintenance

Overview

Human error plays a significant role in contributing to many mishaps. Approximately 70%-90% of accidents under complex and high technology system are caused by human error such as Chernobyl, King Cross undergrounds fire, Challenger accidents, Tenerife runway collision, and many more. Understanding and preventing human error can improve system safety and reduce safety risk caused by human error. The training course provide human error reduction practices combine with a comprehensive set of tools and techniques required to prevent and reduce human errors that occur in your maintenance environment. The interactive training workshop is intentionally designed for those who responsible for or concerned with maintenance management that aims to prevent maintenance error, increase safety level, improve maintenance quality and reduce maintenance cost. This training workshop is targeted at various industries, not a specific one. Our training course is full pack of industrial cases, hand-on exercises and various examples.

Objectives

The 2 days interactive training workshop will enable you to learn how to

- Understand and apply human factor and human error concept approach to prevent accidents/incidents in plant maintenance operations
- Determine key contributing factors that caused maintenance error in your plant maintenance operations
- Understand the human performance and limitations
- Develop a structured approach to investigate maintenance error in plant maintenance operations
- Build an effective Plant Safety Defence against maintenance error
- Develop a proactive approach to manage maintenance error in the plant maintenance operations
- Apply and utilize a comprehensive set of tools and techniques required to prevent and reduce maintenance error, reduce safety risks in plant and improve plant safety

Course Outlines

1. Human Error in Maintenance Safety
   - Safety cases of Maintenance error contribution to many accidents in complex and hazardous systems
   - Human Error concepts (Person and Systems Approach)
   - Types of Human Error in maintenance
     - Skill-based, Rule-based and Knowledge-based Behavior
     - Reason Model of Unsafe Acts
     - Task-based errors
     - Human information processing error
2. Human Performance and Limitations in maintenance
   - Human Information Processing
   - Sensory/Vision/Hearing
   - Perception
   - Attention
   - Memory
   - Decision Making
   - Response execution
   - Situation Awareness
   - Workload
   - Stress
   - Fatigue

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3. The SHELL Model
   - Liveware : Physical Factors, Physiological Factors, Psychological Factors, Psychosocial Factors
   - Liveware-Liveware
   - Liveware-Software
   - Liveware-Hardware
   - Liveware-Environment
4. Human system approach to maintenance error analysis
   - ICAM
   - HFACS-ME
   - MEDA
5. List key contributing factors to maintenance error
   - Personnel Factors/fitness for duty/health
   - Teamwork
   - Information/Documentation/Manual
   - Communication
   - Supervision
   - Job and Task
   - Tools and Equipments
   - Working environment
6. Safety Culture and Organizational Factors in maintenance environment
7. A proactive approach for managing maintenance error
   - Building and inspecting safety defense against maintenance error
   - Safety health check of maintenance (MESH)
   - Maintenance error management
8. Maintenance error reduction techniques
9. Hand-on exercises
10. Practical Case Study

Who should attend

Maintenance engineer, maintenance supervisor/manager, reliability engineer, and safety engineer/ manager, quality engineer, investigators

Duration

2 days

Key Points about This Course

- You will learn how to understand the application of human factor and human error concept
- You will learn how to understand the human capability and limitations and apply them to prevent maintenance error and accidents/incidents
- You will learn how to understand and apply the application of SHELL model
- You will learn how to inspect and check your safety defence
- You will learn how to identify and classify key contributing factors to maintenance error
- You will learn how to understand the human factor approach to maintenance error analysis
- You will learn how to set up a structured investigation process to maintenance error
- You will learn how to develop a systematic and proactive system to manage human error in maintenance

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Learning Outcomes from this course

- You can understand and apply human factor and human error concept approach to prevent accidents/incidents in plant maintenance operations
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- You can understand the human performance and limitations
- You can develop a structured approach to investigate maintenance error in plant maintenance operations
- You can build an effective Plant Safety Defence against maintenance error
- You can develop a proactive approach to manage maintenance error in the plant maintenance operations
- You can apply and utilize a comprehensive set of tools and techniques required to prevent and reduce maintenance error, reduce safety risks and improve safety