COMPETENCE OF PHA TEAMS

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OVERVIEW

• Meaning
• Importance
• Regulatory requirements
• Competence management program
• Selection of participants
• Assessment of competence
• Performance metrics
• Certification
MEANING OF COMPETENCE

- The ability of people to perform tasks according to expectations
  - Individually and as a group

ELEMENTS OF INDIVIDUAL COMPETENCE

- Fitness for duty
- Training
- Skills
- Knowledge
- Understanding
- Experience
- Qualifications
- Behavior
- Attitudes

Competence = Physical and mental capabilities + Performance Standards = Acceptable Performance

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GROUP COMPETENCE

• PHA team must function competently as a group
  – Team chemistry matters
  – Function of the personal attributes of team members
    » Personalities, backgrounds, behaviors and attitudes

• Incompatibilities can result in dysfunctional teams
PHAs are the cornerstone of process safety.

Poor quality means higher risk than is tolerable.

Quality depends on the individual and group competence of participants.
REGULATORY REQUIREMENTS

• OSHA PSM PHA requirements
  – Expertise in engineering and process operations
  – At least one employee who has experience and knowledge specific to the process being evaluated
  – One team member knowledgeable in the specific PHA method being used

• These are minimal requirements
• More detailed requirements are desirable
COMPETENCE MANAGEMENT PROGRAM

- Responsibilities
- Requirements
- Team composition
- Selection criteria for teams and team members
- Development of competencies
- Assessment of competence
- Documentation of competence
- Maintaining competence
- Reassessing competence
- Monitoring competence
- Defining and using performance metrics
- Certification of practitioners
- Continuous improvement
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SELECTION OF PHA PARTICIPANTS

• Utilize selection criteria for:
  – Teams
  – Individual team members

• Different types of team members require different types of competencies
SELECTION OF PHA PARTICIPANTS (CONT'D.)

• For each type of participant, base selection on appropriate:
  – Technical qualifications
  – Personal characteristics

• Divide into critical and recommended
  – Ideal participants are unlikely to be found in the real world

• Various positive and negative attributes influence the effectiveness of participants
EXAMPLES OF CRITICAL TECHNICAL ATTRIBUTES - LEADER

- Technical education
- Formal training in PHA and leadership / facilitation skills
- Knowledge of and expertise in the PHA method to be used
- Knowledge of regulatory, industry and company requirements for PHA
- Project management skills
- Motivational / people skills
- Communications skills
EXAMPLES OF CRITICAL PERSONAL ATTRIBUTES - LEADER

- Impartial in the evaluation
- Organized
- Seeks consensus
- High stamina
- Able to focus on multiple items simultaneously
- Respected by the team
- Friendly and cooperative
- Strong personality to control the team and drive the study but not overbearing
PRACTICAL CONSIDERATIONS IN SELECTING PHA PARTICIPANTS

• Often the pool of team members is limited
  – Prevents the selection of an ideal team
  – Compromises likely will be needed

• Availability of people also must be taken into account
May be only one choice of person for a particular role on the team, e.g. process engineer

- Team leader needs to be ready to deal with any issues that may arise

» To the extent that the person does not meet selection criteria

- Usually in their personal attributes
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ASSESSMENT OF COMPETENCE (CONT'D.)

• Technical competencies and some personal competencies can be assessed by:
  – Verbal or written tests
  – Demonstrations
  – Observation of task performance

• Other personal competencies can be more difficult to assess
  – Such as the ability to read people
ASSESSMENT OF COMPETENCE (CONTD.)

- Aptitude tests and psychometric personality tests are used in some fields
  - Desirable for prospective team leaders
- May discourage participation in PHA studies by prospective technical team members
- Reliance may need to be placed on prior knowledge of their personal competencies
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- *Defining and using performance metrics*
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PHA PERFORMANCE METRICS

• Competence of PHA participants helps to ensure quality PHA studies
  – Identify hazard scenarios as completely as possible

• No way of knowing if all credible scenarios have been identified in a study
Unidentified incident rate is not a good measure of the quality of a PHA study

- Catastrophic incidents occur infrequently
  - Not often enough to provide sufficient data to validate effective performance
- Details of real-world incidents often are far more complex than can be identified by PHA
- Highly unlikely that any PHA will identify all possible scenarios owing to the difficulty of doing so
POSSIBLE PHA PERFORMANCE METRICS

• Average amount of time taken to identify a hazard scenario
• Ratio of the number of hazard scenarios identified to the size and complexity of the process
• Number and type of departures from PHA guidelines governing the study
• Number and type of findings from periodic audits and audits of team performance
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ASSUMPTIONS OF COMPETENCE

• Often inappropriate assumptions of competence are made

• For example, team leaders are considered qualified if they have:
  – Read a book on PHA
  – Been a member of a study
  – Been a scribe for a study
  – Attended a short course
CERTIFICATION OF PRACTITIONERS

• Team leaders, should be certified or accredited by external organizations
  – Owing to the importance of the role they play during a PHA study

• Formal certification of competence against a set of defined criteria is needed
CERTIFICATION CRITERIA

- Academic qualifications
- Experience
- Facilitation skills
- Work products
- Training
- References
- Examination
CONCLUSIONS

• Competence of PHA participants should be managed formally

• Selection criteria are key to a competence management program
  – Cover both technical and personal attributes

• Performance metrics are needed to correlate PHA performance with the assessment of competence