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NEW QUESTION: 1

In cases where inspection technology cannot adequately and/or cost-effectively mitigate risks, what is the next step to consider?

- A. Other risk mitigation approaches
- B. The equipment should be replaced
- C. A new risk assessment should be conducted
- D. The inspection interval should be shortened

Answer: A (LEAVE A REPLY)

API 580, Section 13.1 states:

"Inspection may not always provide sufficient risk mitigation or may not be the most cost-effective method.

The purpose of this section is to describe other methods of risk mitigation." And further clarifies:

"RBI offers the added advantage of identifying gaps or shortcomings in the effectiveness of commercially available inspection technologies... In cases where technology cannot adequately and/or cost-effectively mitigate risk, other risk mitigation approaches can be implemented." Reference: API 580, 2nd Edition (2016), Section 13.1

NEW QUESTION: 2

In most consequence evaluations, a key element in determining the magnitude of the consequence is

- A. The volume of fluid released
- B. Physical area impacted by release
- C. Amount of surface area exposed due to toxic release

Answer: (SHOW ANSWER)

NEW QUESTION: 3

Which of the following would be the minimum expectations of contractors hired to implement an RBI program?

- A. Certification in accordance with API RP 580
- B. Documented training in damage mechanisms
- C. Certification of corrosion/materials specialist to API RP 571
- D. Documented training and suitably qualified personnel

Answer: D (LEAVE A REPLY)

API 580 Section 15.3.1 and 15.3.2 confirm:

"Contractors... should have a program of training and be able to document that their personnel are suitably qualified." While API 580 certification is beneficial, it is not required. Therefore, "Documented training and suitably qualified personnel" is the minimum expectation.

Reference: API 580, 2nd Edition (2016), Section 15.3.1-15.3.2

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NEW QUESTION: 4

If a very aggressive acid is carried over from a corrosion resistant part of a system into a downstream vessel that is made of carbon steel, the result would be

- A. General corrosion over a period of time could result in metal loss
- B. No deterioration will take place since carbon steel is resistant to aggressive acid
- C. Rapid corrosion could result in failure in a few hours or days.

Answer: C (LEAVE A REPLY)

NEW QUESTION: 5

Potential source of errors in RBI analysis regarding data quality are the following except

- A. Assumptions in equipment history
- B. Advanced inspection methods
- C. Inspector error
- D. Outdated drawings and documentation

Answer: B (LEAVE A REPLY)

NEW QUESTION: 6

The primary audience for rp 580 is

- A. Only inspection personnel
- B. Only materials engineering personnel
- C. Inspection and materials engineering personnel
- D. Maintenance personnel

Answer: A (LEAVE A REPLY)

NEW QUESTION: 7

Aqueous chloride solution is carried into a sensitized stainless steel vessel, the following cracking mechanism takes very rapidly depending on temperature.

- A. Leak can occur
- B. Sulphide stress corrosion cracking
- C. Chloride stress corrosion cracking

Answer: ([SHOW ANSWER](#))

NEW QUESTION: 8

The programme that focused on maintaining the mechanical integrity of pressure equipment items and minimizing the risk of loss of containment due to deterioration

- A. RBI
- B. REM
- C. Hazop
- D. PHA

Answer: A ([LEAVE A REPLY](#))

NEW QUESTION: 9

Thing or activity with a potential for consequence

- A. Hazard
- B. Source
- C. Toxic

Answer: B ([LEAVE A REPLY](#))

NEW QUESTION: 10

_____ delineate initiating events and combinations of system

- A. Fault trees
- B. Logic trees
- C. Event trees

Answer: ([SHOW ANSWER](#))

NEW QUESTION: 11

The suitability and current condition of the equipment within the current operating envelope will determine the _____ of the equipment from one or more deterioration mechanisms.

- A. Total risk
- B. Probability of failure (pot)
- C. Consequence of failure
- D. Relative risk

Answer: B ([LEAVE A REPLY](#))

NEW QUESTION: 12

The following are the risks identified by rbi assessment that may be managed by actions other than inspection. Except one

- A. Identifying and detecting deterioration and predicting future deterioration states with advanced inspection technique(s)
- B. Modification of the process to eliminate conditions driving the risk
- C. Chemical treatment of the process to reduce deterioration rates/susceptibilities
- D. Modification of operating procedures to avoid situations driving the risk

Answer: (SHOW ANSWER)

NEW QUESTION: 13

In the determination of risk, what values are often used when COF and/or POF data are not available?

- A. Sensitivity analyses
- B. Assumptions or estimates of input
- C. Estimates of total risk by subject matter experts
- D. Similar losses reported by insurance companies or jurisdictions

Answer: (SHOW ANSWER)

Section 11.5 of API 580 clearly states:

"Assumptions or estimates of input values are often used when consequence and/or POF data are not available." This allows an RBI team to proceed with analysis in the absence of complete data while noting that all assumptions must be documented and agreed upon to avoid misrepresentation.

Reference: API 580, 2nd Edition (2016), Section 11.5

NEW QUESTION: 14

The ability to state the rate of deterioration precisely is affected by the following except

- A. By equipment complexity
- B. Lack of coverage of an area subject to deterioration
- C. Inaccessibility for inspection, limitations of inspection and test methods
- D. Type of deterioration mechanism, process and metallurgical variations
- E. None of the above

Answer: C (LEAVE A REPLY)

NEW QUESTION: 15

Rbi is focused on a systematic determination of

- A. Comparable risks
- B. Relative risks
- C. Total risks
- D. Absolute risks

Answer: B (LEAVE A REPLY)

NEW QUESTION: 16

Which of the following is the act of mitigating a particular risk?

- A. Risk assessment
- B. Risk management
- C. Risk reduction
- D. Risk determination

Answer: (SHOW ANSWER)

API 580, Section 4.2 defines risk reduction as:

"Risk reduction is the act of mitigating a known risk that is deemed to be too high to a lower, more acceptable level of risk with some form of risk reduction activity." Risk assessment and risk determination involve identifying and evaluating risk.

Risk management is the broader process that may or may not involve mitigation.

Reference: API 580, 2nd Edition (2016), Section 4.2 - Risk Management and Risk Reduction

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NEW QUESTION: 17

The consequences of environmental damage are best understood by

- A. Toxic concentration
- B. Volume of fluid
- C. Cost
- D. Release

Answer: (SHOW ANSWER)

NEW QUESTION: 18

An analytical tool that organizes and characterizes potential accidents in a logical and graphical manner

- A. Consequence
- B. Event
- C. Event tree
- D. Outcome

Answer: C (LEAVE A REPLY)

NEW QUESTION: 19

Who can provide useful input (such as the spectrum of process conditions, injection points etc.) To aid

materials specialists in the identification of deterioration mechanisms and rates

- A. Process specialists
- B. Plant operation specialists
- C. Asset integrity experts
- D. Inspection engineers

Answer: A (LEAVE A REPLY)

Explanation

NEW QUESTION: 20

Which of the following are essential elements of an RBI program? (Select all that apply)

- A. Management system for personnel qualifications
- B. Documented method of determining failure probability and consequence
- C. Management system for maintaining documentation and analysis updates
- D. Process hazard analysis to verify the adequacy of process safety

Answer: A,B,C (LEAVE A REPLY)

According to API 580, a complete and effective RBI program should include several essential elements to ensure it is systematic, repeatable, and technically sound. Section 5.2 of API 580 outlines the key components:

* "A management system for personnel qualifications" - Personnel involved in RBI must be competent and qualified for their roles.

* "A documented and validated methodology for assessing PoF and CoF" - A formal process is required to ensure the reliability of the analysis.

* "A management system for documentation and update of RBI assessments" - Records must be controlled, updated regularly, and traceable.

These three components are explicitly defined in API 580 as essential elements.

On the other hand:

* "Process hazard analysis to verify the adequacy of process safety" is important in the broader context of process safety management but is not listed as a required element of an RBI program in API 580. It is typically part of PSM frameworks under OSHA or similar, not RBI-specific.

Reference: API 580, 2nd Edition (2016), Section 5.2 - Elements of an RBI Program

NEW QUESTION: 21

_____ to be established to judge acceptability of risk could be an objective of the RBI assessment if

such criteria do not exist already within the user's company.

- A. Risk criteria
- B. Risk plan

C. Risk analysis

Answer: A ([LEAVE A REPLY](#))

NEW QUESTION: 22

An RBI assessment of new equipment or a new project may:

- A. not be useful because there is no inspection history.
- B. be needed in order to define the risk criteria to be used in service.
- C. be conducted only after 1000 hours of operation to establish operating and inspection data.
- D. yield useful information on potential future risks.

Answer: D ([LEAVE A REPLY](#))

According to API 580, Section 6.2.8:

"An RBI assessment made on new equipment or a new project while in the design stage may yield important information on potential risks. This may allow potential risks to be minimized by design and have a RBI plan in place prior to actual installation." This statement confirms the value of performing RBI even in the absence of historical data, especially for forward-looking risk identification.

Reference: API 580, 2nd Edition (2016), Section 6.2.8

NEW QUESTION: 23

A likely trigger for an RBI reassessment would be after:

- A. API RP 580 Risk-Based Inspection has been updated.
- B. a mitigation strategy has been implemented.
- C. RBI team members have changed.
- D. a sensitivity analysis on the risk determination has been conducted.

Answer: ([SHOW ANSWER](#))

API 580 Section 14.3.3 clearly states:

"Once a mitigation strategy is implemented it is prudent to determine how effective the strategy was in reducing the risk to an acceptable level. This should be reflected in a reassessment of the risk and appropriate update in the documentation." Thus, option B is correct. Updating standards or team members is not a listed reassessment trigger, and sensitivity analysis alone is a supporting tool, not a trigger.

Reference: API 580, 2nd Edition (2016), Section 14.3.3

-

NEW QUESTION: 24

Who can provide useful input (such as the spectrum of process conditions, injection points etc.) To aid materials specialists in the identification of deterioration mechanisms and rates

- A. Inspection engineers
- B. Plant operation specialists
- C. Process specialists

D. Asset integrity experts

Answer: C ([LEAVE A REPLY](#))

NEW QUESTION: 25

In the data collection stage, an assessment of what information is generally necessary?

- A. The type of RBI assessment that will be applied to the project
- B. The codes and standards in use for in-service inspection and evaluation
- C. What other types of risk assessment and mitigation have been applied to the equipment
- D. The risk thresholds that will be used to determine acceptable vs. unacceptable risks

Answer: ([SHOW ANSWER](#))

Per API 580 Section 7.4:

"In the data collection stage, an assessment of what codes and standards are currently in use for in-service inspection and evaluation or were in use during the equipment design is generally necessary." This evaluation ensures compatibility of RBI with existing regulatory and operational frameworks and impacts the outcome of risk evaluations.

Reference: API 580, 2nd Edition (2016), Section 7.4

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NEW QUESTION: 26

If a QRA has been prepared for a process unit, the analysis can borrow extensively from this effort.

- A. RBI likelihood
- B. RBI consequence
- C. RBI probability

Answer: C ([LEAVE A REPLY](#))

NEW QUESTION: 27

If a qra has been prepared for a process unit, the analysis can borrow extensively from this effort.

- A. Rbi consequence
- B. Rbi probability
- C. Rbi likelihood

Answer: B ([LEAVE A REPLY](#))

NEW QUESTION: 28

At the conclusion of the initial planning portion for the development of the RBI program, which of the following important issues should have been completed?

- A. Designation of needed team members
- B. Identification of the physical boundaries
- C. Collection of the necessary data to be analyzed during the assessment
- D. Request for resources to complete the analysis (not including implementation)

Answer: B (LEAVE A REPLY)

API 580, Section 6.1 and 6.2 clearly states:

"At the conclusion of the planning portion of the development of the RBI program the following should have been completed:

- b) identify the physical boundaries;
- c) identify the operating boundaries..."

Thus, one of the primary deliverables of the planning stage is defining boundaries to scope the risk evaluation.

Reference: API 580, 2nd Edition (2016), Section 6.2 - Establishing Objectives and Goals of an RBI Assessment

NEW QUESTION: 29

Depending on the methodology employed in qualitative analysis, the categories may be described with words such as

- A. High, medium or low only
- B. Numerical descriptors only
- C. High, medium or low or may have numerical descriptors.

Answer: C (LEAVE A REPLY)

NEW QUESTION: 30

Damage mechanisms where deterioration rates are immeasurable or unknown are

- A. Stress corrosion cracking
- B. Thinning
- C. Hydrogen induced cracking
- D. Both A and B
- E. All of the above

Answer: (SHOW ANSWER)

NEW QUESTION: 31

Rbi is based on

- A. Hazop principles
- B. Risk mitigation principles
- C. Sound, proven risk assessment and management principles
- D. Pha principles

Answer: (SHOW ANSWER)

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NEW QUESTION: 32

Most of the damage from thermal effects tends to occur in

- A. Close range
- B. Wide range
- C. None of the above
- D. Large distance

Answer: (SHOW ANSWER)

NEW QUESTION: 33

The type of failure mode that likely to occur due to mechanical and metallurgical deterioration

- A. Small holes to ruptures
- B. Catastrophic ruptures
- C. Cracks
- D. Leaks

Answer: B (LEAVE A REPLY)

NEW QUESTION: 34

The type of failure mode that likely to occur due to mechanical and metallurgical deterioration

- A. Leaks
- B. Cracks
- C. Catastrophic ruptures
- D. Smallholes to ruptures

Answer: C (LEAVE A REPLY)

NEW QUESTION: 35

For a typical inspection program, if excessive inspection is applied then,

- A. Level of risk may go down
- B. Level of risk may go up
- C. Level of risk remain the same

Answer: (SHOW ANSWER)

NEW QUESTION: 36

Inspection and decommissioning are forms of:

- A. risk mitigation.
- B. probability mitigation.

C. consequence mitigation.

D. risk analysis.

Answer: A (LEAVE A REPLY)

As stated in Section 13.1 of API 580:

"Inspection is often an effective method of risk management. However, inspection may not always provide sufficient risk mitigation or may not be the most cost-effective method."

This clarifies that inspection is categorized under risk mitigation activities. Similarly, decommissioning is used as a risk mitigation strategy when the risk from continued operation becomes unacceptable.

Risk mitigation activities described in API 580 may:

reduce the magnitude of consequence,

reduce the probability of failure,

enhance survivability, or

mitigate the source of the consequence.

Thus, both inspection and decommissioning clearly fall under the broad category of risk mitigation.

Reference: API 580, 2nd Edition (2016), Section 13.1

NEW QUESTION: 37

The type of failure mode that likely to occur due to pitting

A. Catastrophic rupture

B. Small holes to ruptures

C. Small hole sized leaks

D. Cracks

Answer: (SHOW ANSWER)

NEW QUESTION: 38

Which of the following codes provide requirements and limitations for implementing RBI programs? (Select all that apply)

A. API 653

B. API 573

C. API 570

D. API 510

E. API 578

Answer: A,C,D (LEAVE A REPLY)

According to API 580, multiple API inspection codes include provisions for RBI. Section 4.3 of API 580 clearly states:

"The RBI methodology is recognized in the API inspection codes - API 510, API 570, and API 653 - as an acceptable method to determine inspection intervals." Each of these codes outlines both the requirements and limitations for using RBI in their specific contexts:

* API 510 - for pressure vessels

- * API 570 - for piping systems
- * API 653 - for aboveground storage tanks

On the other hand:

- * API 573 is a recommended practice for the inspection of fired heaters and does not include formal RBI provisions.
- * API 578 focuses on Positive Material Identification (PMI) and is unrelated to RBI methodologies or requirements.

Therefore, the correct selection includes:

##API 510

##API 570

##API 653

Reference: API 580, 2nd Edition (2016), Section 4.3

NEW QUESTION: 39

_____ is usually not the primary objective of a RBI assessment, but it is frequently a side effect of optimization.

- A. Reducing inspection costs
- B. Increasing frequency of inspection programs
- C. Increasing inspection costs

Answer: A (LEAVE A REPLY)

NEW QUESTION: 40

_____ are often necessary to establish susceptibility of equipment to stress corrosion cracking.

- A. Damage mechanisms
- B. Literature, expert opinion and experience
- C. Fluid toxicity and its constituents
- D. Cracking mechanisms

Answer: B (LEAVE A REPLY)

NEW QUESTION: 41

Hazard identification in a RBI analysis generally focuses on identifiable failure mechanisms in the equipment

(inspectable causes) but does not explicitly deal with

- A. Other potential failure scenarios resulting from events such as power S failures or human errors
- B. Other potential failure resulting from events such as flammable fire due to leak from equipment
- C. Environmental impact caused due to toxic release

Answer: A (LEAVE A REPLY)

Explanation/Reference:

NEW QUESTION: 42

The reduction in the ability of a component to provide its intended purpose of containment of Fluids

- A. Damage
- B. Degradation
- C. Deterioration
- D. Thinning

Answer: C ([LEAVE A REPLY](#))

NEW QUESTION: 43

Is key to performing deterioration mechanism identification

- A. Understanding equipment operation and its safety protective measures
- B. Understanding equipment operation and process upsets
- C. Understanding equipment operation and the interaction with the chemical and mechanical environment

Answer: ([SHOW ANSWER](#))

NEW QUESTION: 44

Deterioration susceptibility and rate can be done

- A. Not possible to group under any circumstances
- B. By random inspection method
- C. By grouping the same material of construction/similar process/environment

Answer: C ([LEAVE A REPLY](#))

NEW QUESTION: 45

Which of the following is a step in estimating the consequences of releasing a hazardous material into the surrounding environment?

- A. Estimating the release rate
- B. Identifying the most likely failure mode
- C. Determining the deterioration susceptibility and rate
- D. Identifying active and credible damage mechanisms

Answer: A ([LEAVE A REPLY](#))

According to API 580, Section 10.6.1:

"The consequences of releasing a hazardous material can be estimated in six steps...

- a) estimate the release rate;
- b) estimate total volume of fluid...
- c) determine if the fluid disperses..."

Therefore, "Estimating the release rate" is the first step in the consequence evaluation process and is essential for modeling potential impact scenarios.

Reference: API 580, 2nd Edition (2016), Section 10.6.1 - Determination of COF

NEW QUESTION: 46

Qualitative assessment is done on the basis of

- A. All the above
- B. Knowledge of operating History
- C. Inspection plans
- D. Possible material deteriorations

Answer: B (LEAVE A REPLY)

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NEW QUESTION: 47

Rbi requires the commitment and cooperation of the

- A. Materials engineering
- B. Maintenance
- C. Inspection
- D. Total organization

Answer: (SHOW ANSWER)

NEW QUESTION: 48

The primary audience for RP 580 is

- A. Maintenance personnel
- B. Only materials engineering personnel
- C. Inspection and materials engineering personnel
- D. Only inspection personnel

Answer: D (LEAVE A REPLY)

NEW QUESTION: 49

Act of mitigating a known risk to a lower level of risk.

- A. Risk mitigation
- B. Risk evaluation
- C. Risk reduction

Answer: A (LEAVE A REPLY)

NEW QUESTION: 50

If the probability and consequence combination (risk) is high enough to be unacceptable, then

- A. A mitigation action to predict or prevent the event is recommended.
- B. A mitigation action to predict or prevent the event is not recommended
- C. Warrant to analyze risks involved

Answer: A (LEAVE A REPLY)

NEW QUESTION: 51

FILL BLANK

RBI as an integrated management tool that complements _____

Answer:

PHA, RCM

NEW QUESTION: 52

For qualitative rbi analysis it is important to establish a set of rules to assure consistency in

- A. Ranking
- B. Segregation
- C. Categorization or classification

Answer: C (LEAVE A REPLY)

NEW QUESTION: 53

Process used to compare the estimated risk against given risk criteria to determine the significance of the risk.

- A. Risk evaluation
- B. Risk estimation
- C. Risk identification

Answer: A (LEAVE A REPLY)

NEW QUESTION: 54

The resources and time required to implement an RBI assessment will vary widely between organizations depending on a number of factors including:

- A. degree of precision required.
- B. amount of mitigation activities generated.
- C. duration of the turnaround for risk-based inspections to be completed.
- D. whether the risk driver is a consequence of failure or probability of failure.

Answer: A (LEAVE A REPLY)

API 580 Section 6.6 specifies:

"The resources and time required to implement an RBI assessment will vary widely between organizations depending on a number of factors including... g) degree of precision required." Other listed factors include knowledge and training, data availability, and complexity of analysis, but not the number of mitigation activities or whether CoF or PoF is the dominant risk driver.

Reference: API 580, 2nd Edition (2016), Section 6.6

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NEW QUESTION: 55

Consequence is always _____ for safety aspects

- A. Neutral
- B. Positive
- C. Negative

Answer: C (LEAVE A REPLY)

NEW QUESTION: 56

Is a risk management activity that may lead to risk reduction?

- A. Evaluation
- B. Analysis
- C. Inspection

Answer: C (LEAVE A REPLY)

NEW QUESTION: 57

Which of the following may make it impractical to reduce some risks to an acceptable level?

- A. Technology
- B. Labor contracts
- C. Production needs
- D. Regulatory requirements

Answer: A (LEAVE A REPLY)

As indicated in API 580 Section 11.8:

"Reduction of some risks to a lower level may not be practical due to technology and cost constraints. An as low as reasonably practical (ALARP) approach to risk management may be necessary for these items." Thus, technology limitations are explicitly cited as a reason why some risks cannot be feasibly reduced further.

Reference: API 580, 2nd Edition (2016), Section 11.8

NEW QUESTION: 58

Through _____, inspection activities are focused on higher risk items and away from lower risk items.

- A. REM

- B. RBI
- C. HAZOP
- D. PHA

Answer: D ([LEAVE A REPLY](#))

NEW QUESTION: 59

Following are some of the recognized risks which cannot be managed by inspection alone except one

- A. Failure mechanisms (such as brittle fracture, fatigue) where avoidance of failure primarily depends on operating within a defined pressure/temperature envelope
- B. Equipment nearing retirement
- C. The suitability and current condition of the equipment within the current operating envelope will determine the probability of failure (pof) of the equipment from one or more deterioration mechanisms
- D. Consequence-dominated risks

Answer: ([SHOW ANSWER](#))

NEW QUESTION: 60

If multiple inspections have been performed, which inspection may best reflect current operating conditions?

- A. Most recent inspection
- B. Process conditions
- C. Base line inspection survey
- D. Corrosion survey

Answer: A ([LEAVE A REPLY](#))

NEW QUESTION: 61

Once a credible damage mechanism(s) has been identified, the associated failure mode should also be identified. An example of a failure mode is:

- A. rupture
- B. stress corrosion cracking
- C. general corrosion
- D. embrittlement

Answer: A ([LEAVE A REPLY](#))

According to Section 8.3 of API 580:

"Once a credible damage mechanism(s) has been identified the associated failure mode should also be identified... Examples of failure modes include the following:

- a) pinhole leak
- b) small to moderate leak
- c) large leak
- d) ductile rupture

e) brittle fracture."

Rupture is clearly listed as a type of failure mode. In contrast:

Stress corrosion cracking (B), general corrosion (C), and embrittlement (D) are damage mechanisms, not failure modes.

Reference: API 580, 2nd Edition (2016), Section 8.3 - Failure Modes

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NEW QUESTION: 62

_____ Depict ways in which the system failures represented in the event trees can occur.

- A. Event trees
- B. Fault trees
- C. Logic trees

Answer: (SHOW ANSWER)

NEW QUESTION: 63

The reduction in the ability of a component to provide its intended purpose of containment of Fluids

- A. Thinning
- B. Damage
- C. Deterioration
- D. Degradation

Answer: C (LEAVE A REPLY)

NEW QUESTION: 64

_____ are the primary inputs into the probability of failure evaluation.

- A. Loss of containment of fluid
- B. The deterioration mechanisms, rates and susceptibilities
- C. Damage mechanisms and its severity
- D. Fluid toxicity and its concentration

Answer: B (LEAVE A REPLY)

NEW QUESTION: 65

Corrosion, cracking, and mechanical are all examples of what?

- A. Leaks
- B. Failure modes
- C. Failure mechanisms
- D. Damage mechanisms

Answer: D (LEAVE A REPLY)

As defined in Section 8.2 of API 580:

"Understanding equipment operation and the interaction with the process environment (both internal and external) and mechanical environment is key to identifying damage mechanisms... Examples include corrosion, cracking, erosion, and mechanical impacts."

Further reinforced in the glossary and API RP 571, these are classified as damage mechanisms, which lead to specific damage modes and eventually failure modes.

Reference: API 580, 2nd Edition (2016), Section 8.2

-

NEW QUESTION: 66

CORRECT TEXT

Rp 580 is intended to promote consistency and quality in identification, assessment and management of risks pertaining to....., which could lead to.....

Answer:

Material

deterioration, loss of containment

NEW QUESTION: 67

Is a risk management activity that may lead to risk reduction?

- A. Evaluation
- B. Analysis
- C. Inspection

Answer: C (LEAVE A REPLY)

NEW QUESTION: 68

Potential hazards identified in a pha will often affect the

- A. Probability of failure side of the risk equation.
- B. Consequence of failure side of the equation

Answer: A (LEAVE A REPLY)

NEW QUESTION: 69

A Rbi analysis shares many of the techniques and data requirements with

a_____.

- A. Event tree
- B. Hazop

C. Pha

D. Qra

Answer: D ([LEAVE A REPLY](#))

NEW QUESTION: 70

If multiple inspections have been performed, which inspection may best reflect current operating conditions?

A. Most recent inspection

B. Corrosion survey

C. Process conditions

D. Base line inspection survey

Answer: ([SHOW ANSWER](#))

NEW QUESTION: 71

Deterioration for specific process equipment is not available, this can be sourced from

A. Published data

B. Experience with other similar equipment

C. All the above

D. Previous inspection data

Answer: A ([LEAVE A REPLY](#))

NEW QUESTION: 72

_____ refers to a prescriptive methodology that has resulted from the application of risk analysis

techniques at many different types of facilities -

A. Quantitative risk assessment (QRA)

B. Qualitative risk assessment

C. Semi quantitative risk assessment

Answer: A ([LEAVE A REPLY](#))

NEW QUESTION: 73

In the event of a leak the potential failure of an isolation valve could

A. Increase the inventory

B. Decrease the inventory

C. No harm to inventory

Answer: A ([LEAVE A REPLY](#))

NEW QUESTION: 74

The risk prior to mitigation activities

A. Mitigated risk

B. Known risk

C. Unmitigated risk

Answer: C (LEAVE A REPLY)

NEW QUESTION: 75

As indicated in API RP 580, one essential element of an RBI program includes:

- A. avoidance of catastrophic loss and fatalities.
- B. documented method of COF determination.
- C. consideration of all possible damage mechanisms.
- D. the reduction of risk associated with loss of containment.

Answer: (SHOW ANSWER)

Section 1.3 of API 580 explicitly states:

"The RBI process is focused on maintaining the mechanical integrity of pressure equipment items and minimizing the risk of loss of containment due to deterioration." This confirms that reducing the risk associated with loss of containment is a fundamental goal and essential element of an RBI program. The other options:

A is a broad safety goal, not an RBI-specific essential element.

B is a component of methodology, not the goal itself.

C is incorrect-only credible, not all possible, damage mechanisms are required.

Reference: API 580, 2nd Edition (2016), Section 1.3

NEW QUESTION: 76

_____ curves are referred for the deterioration mechanism for carbon and low alloy steel materials.

- A. Schmidt curves for sulfide corrosion
- B. PH concentration curves
- C. Nelson curves

Answer: C (LEAVE A REPLY)

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NEW QUESTION: 77

A most common indicator in consequence analysis is:

- A. cost of loss.
- B. environmental damage.

C. affected area.

D. number of injuries.

Answer: A (LEAVE A REPLY)

According to API 580 Section 10.3.3:

"Cost is commonly used as an indicator of potential consequences. Consequence may be expressed in relative monetary units (e.g. dollars)... This will permit adding the different consequences of a single event and facilitate comparisons of risk from one process unit to another." Cost can represent multiple consequence dimensions, including production loss, emergency response, equipment damage, fines, and more. This method enables direct comparison of diverse consequence types on a unified basis, making it the most commonly applied indicator in practice.

Reference: API 580, 2nd Edition (2016), Section 10.3.3

NEW QUESTION: 78

Following is the unit of measure of consequence that is least developed among those currently used for RBI assessment.

A. Environmental damage

B. Cost

C. Safety

D. Affected area

Answer: A (LEAVE A REPLY)

NEW QUESTION: 79

Some failures have potentially serious consequences, but if the probability of the incident is low, then

A. The risk may warrant appropriate mitigation action

B. The risk may not warrant immediate action

C. The risk may warrant immediate action

Answer: B (LEAVE A REPLY)

NEW QUESTION: 80

_____ to be established to judge acceptability of risk could be an objective of the RBI assessment if such criteria do not exist already within the user's company.

A. Risk plan

B. Risk analysis

C. Risk criteria

Answer: C (LEAVE A REPLY)

NEW QUESTION: 81

Provides a basis for risk evaluation, risk mitigation and risk acceptance

- A. Risk estimation
- B. Risk identification
- C. Risk evaluation

Answer: A ([LEAVE A REPLY](#))

NEW QUESTION: 82

Who can provide useful input (such as the spectrum of process conditions, injection points etc.)To aid materials specialists in the identification of deterioration mechanisms and rates

- A. Process specialists
- B. Inspection engineers
- C. Asset integrity experts
- D. Plant operation specialists

Answer: ([SHOW ANSWER](#))

NEW QUESTION: 83

The risk assessment programme which focuses on process unit design and operating practices and their adequacy given the unit's current or anticipated operating conditions

- A. RBI
- B. PHA
- C. RCM
- D. HAZOP

Answer: D ([LEAVE A REPLY](#))

NEW QUESTION: 84

The program that is focused on understanding failure modes, addressing the modes and therefore improving the reliability of equipment and process facilities.

- A. REM
- B. RBI
- C. PHA
- D. HAZOP

Answer: ([SHOW ANSWER](#))

NEW QUESTION: 85

Once a credible damage mechanism(s) has been identified, the associated failure mode should also be identified. An example of a failure mode is:

- A. pit-to-leak
- B. localized thinning
- C. chloride cracking
- D. weld undercut

Answer: A ([LEAVE A REPLY](#))

As per API 580, Section 8.3:

"Once a credible damage mechanism(s) has been identified, the associated failure mode should also be identified. For example, local thinning could lead to a pinhole leak in the pressure-containing boundary." The example "pit-to-leak" accurately reflects a transition from a damage mechanism (pitting corrosion) to a failure mode (leak). Options B and C are damage modes or mechanisms, and D is a fabrication defect-not a failure mode.

Reference: API 580, 2nd Edition (2016), Section 8.3

NEW QUESTION: 86

Following are the critical variables for deterioration mechanism except

- A. Start up and shut down conditions
- B. Material of construction
- C. Process operating
- D. Insulation

Answer: D (LEAVE A REPLY)

NEW QUESTION: 87

Conducting more internal inspection than is called for by RBI:

- A. reduces risk to the lowest practical level.
- B. can result in inspection optimization.
- C. may cause additional deterioration and risk.
- D. will produce further risk reduction.

Answer: (SHOW ANSWER)

API 580, Section 12.4 and 12.6 emphasize that inspection should be optimized and risk-focused. Excessive inspections can increase exposure to damage mechanisms (such as mechanical or corrosion risks introduced during inspection activities), especially if not needed.

From Section 12.4:

"Organizations should be deliberate and systematic in assigning the level of risk management achieved through inspection and should be cautious not to assume that there is an unending capacity for risk management through inspection." Further, in risk-optimization contexts (Section 12.5):

"While there is a potential for reduction of inspection costs through utilization of RBI, increased equipment integrity and inspection cost optimization should remain the focus."

Therefore, excess inspections may be:

Unjustified

Economically wasteful

Risk-enhancing (e.g., opening equipment unnecessarily may lead to deterioration)

Reference: API 580, 2nd Edition (2016), Sections 12.4 and 12.6

NEW QUESTION: 88

Reliability efforts, such as reliability centered maintenance (rcm), can be linked with rbi, resulting in an integrated program to

- A. To reduce risk by mitigation activities
- B. Reduce operating time of a unit
- C. Reducedowntime in an operating unit

Answer: C ([LEAVE A REPLY](#))

NEW QUESTION: 89

Method used for consequence analysis should demonstrate the ability to provide

- A. The required level of discrimination between higher and lower consequence equipment items.
- B. No output is required
- C. Just an analysis

Answer: A ([LEAVE A REPLY](#))

NEW QUESTION: 90

The primary work products of the RBI assessment and management approach and implementation of RBI provides

- A. Overall reduction of risk and acceptance of current risk
- B. Overall increase of risk and negligence of current risk
- C. Overall increase of risk and acceptance of risk
- D. Overall reduction of risk and negligence of current risk

Answer: A ([LEAVE A REPLY](#))

NEW QUESTION: 91

When equipment has deteriorated to such an extent that the risk of failure cannot be managed and held to an acceptable level, often the only way to mitigate risk is to:

- A. repair/replace the equipment.
- B. perform a fitness-for-service analysis.
- C. shorten the inspection interval.
- D. rerate the equipment.

Answer: ([SHOW ANSWER](#))

API 580, Section 13.2 (Equipment Replacement and Repair) states:

"When equipment deterioration has reached a point that the risk of failure cannot be managed to an acceptable level, replacement/repair is often the only way to mitigate the risk." This confirms that when deterioration is severe and other mitigation efforts cannot reduce the risk to acceptable levels, replacement or repair is the only effective solution.

Option B (FFS) may apply in earlier deterioration stages.

Option C (shortened inspection) is a monitoring method, not risk elimination.

Option D (rerating) helps in select cases but not when deterioration is too advanced.

Reference: API 580, 2nd Edition (2016), Section 13.2 - Equipment Replacement and Repair

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NEW QUESTION: 92

One of the key elements of an inspection plan is:

- A. probability of failure.
- B. examination methods to be used.
- C. repairs necessary to reduce risk.
- D. consequence of failure.

Answer: B (LEAVE A REPLY)

API 580 outlines the required contents of an inspection plan in Section 12.3 and also in the "Output" section:

"The RBI inspection plan should include:

- b) inspection methods that should be used;
- c) extent of inspection (percent of total area to be examined or specific locations); d) inspection interval or next inspection date (timing)." Therefore, "examination methods to be used" is a fundamental part of the inspection plan, as explicitly stated.

Probability and consequence of failure are inputs to the risk analysis but not part of the inspection plan structure itself.

Reference: API 580, 2nd Edition (2016), Section 12.3 and Output (Inspection Plan)

NEW QUESTION: 93

A RBI analysis shares many of the techniques and data requirements with a

_____.

- A. PHA
- B. Event tree
- C. HAZOP
- D. QRA

Answer: D (LEAVE A REPLY)

NEW QUESTION: 94

.....Is not a substitute for a process hazards analysis (pha) or hazop

- A. Pha
- B. Rem
- C. Rbi
- D. Hazop

Answer: A ([LEAVE A REPLY](#))

NEW QUESTION: 95

If operating condition have changed, deterioration rates based on inspection data from the previous operating conditions

- A. Valid till the equipment exists with any change
- B. May not be valid
- C. Can be valid with some correction by engineers

Answer: ([SHOW ANSWER](#))

NEW QUESTION: 96

Risk presented in qualitative risk analysis as

- A. Form of event tree and fault tree
- B. Form of risk matrix
- C. Precise numeric value

Answer: B ([LEAVE A REPLY](#))

NEW QUESTION: 97

The data validation step stresses the need for a knowledgeable individual.

- A. All of the above
- B. Similar systems at the site or within the company or published data
- C. To comparing data from the inspections to the expected deterioration mechanism and rates
- D. To compare the results with previous measurements on that system

Answer: A ([LEAVE A REPLY](#))

NEW QUESTION: 98

The type of failure mode that likely to occur due thinning

- A. Only rupture
- B. Metal loss
- C. Cracks
- D. Larger leaks or rupture

Answer: D ([LEAVE A REPLY](#))

NEW QUESTION: 99

When some risk identified as acceptable then one of the following is not required.

- A. Risk mitigation
- B. Risk control
- C. Risk evaluation
- D. Risk reduction

Answer: A ([LEAVE A REPLY](#))

NEW QUESTION: 100

RBI is based on

- A. HAZOP principles
- B. PHA principles
- C. Sound, proven risk assessment and management principles
- D. Risk mitigation principles

Answer: C ([LEAVE A REPLY](#))

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