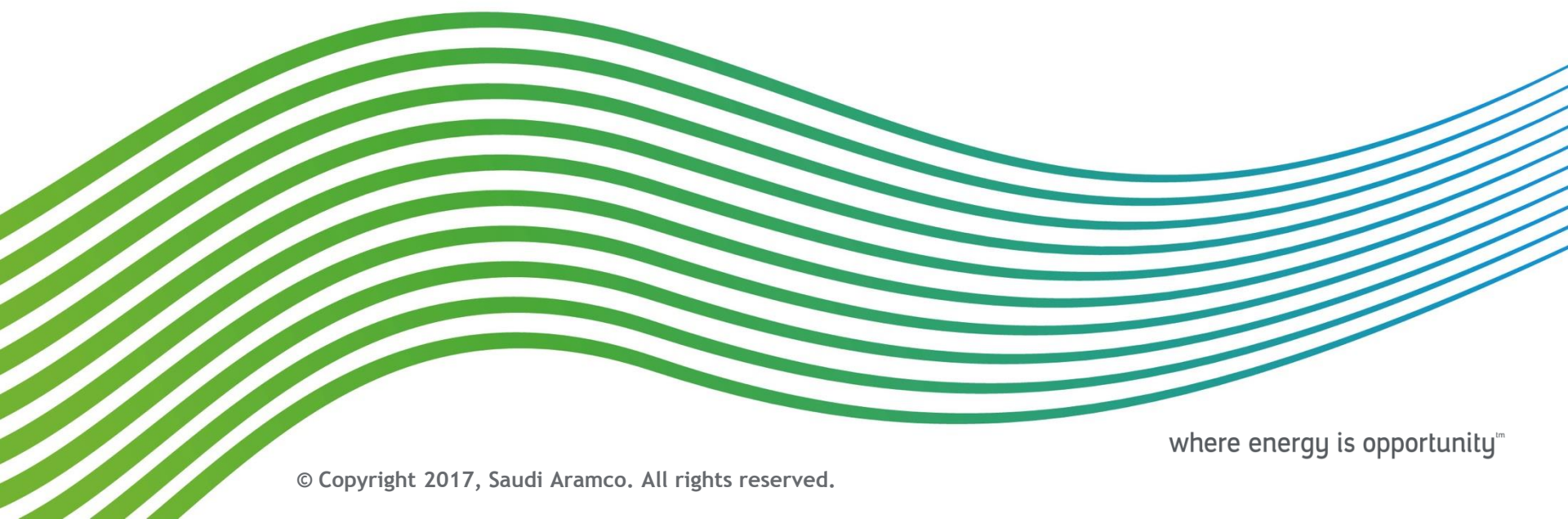


Sustainable Corrective Actions - Is SMART Good Enough?

Upstream Operational Compliance Division



Current Corrective Action Methodologies & Deficiencies



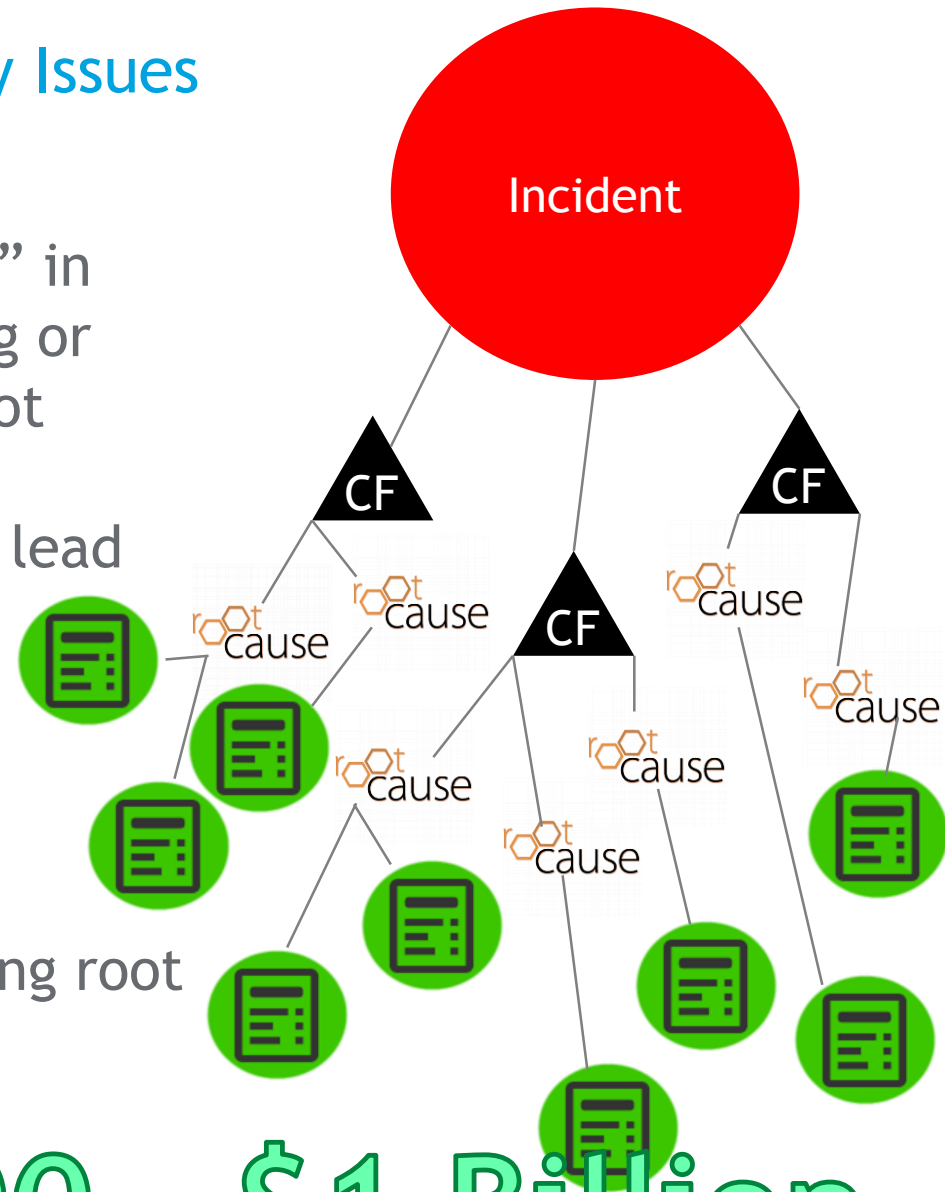
SMART

- First Use in journal, “Management Review” in 1982 by Doran
- Several different versions
- Much of the intent is very similar if not exactly the same
- Expanded to SMARTER©

S	Specific A defined end point or target of the web interaction
M	Measurable Attach numbers and timelines to the goal
A	Achievable Based on existing figures and research is it achievable?
R	Relevant Is this web goal in line with the business's broader goals?
T	Time Limited The goal must be measurable over a period of time
E	Effective The action must eliminate the associated root cause
R	Reviewed The action has been independently reviewed for unintended consequences

Field Review Results - Quality Issues

- Causal factor (CF) - A “problem” in the form of who did what wrong or what equipment failed or did not operate as intended
- Multiple problems (CFs) usually lead to the event
- Every CF has its own group of root causes
- There are one or more CARs to address each CF
- Wrong or missed problems; wrong root causes; wrong or weak CARs



\$750,000,000 - \$1 Billion

Field Review Results - CARs

- Corrective Action Recommendations (CARs) not defined to address reason for root cause
- CARs don't address generic problems
- CARs often implemented to “check the box”
- “Measurement” most often addresses only the short-term
- CARs are not structured to address long-term sustainability
- CARs often cease to exist within a few months
- Incidents occur with repeat root causes/causal factors



Four Tools for Improving CAR Development & Implementation

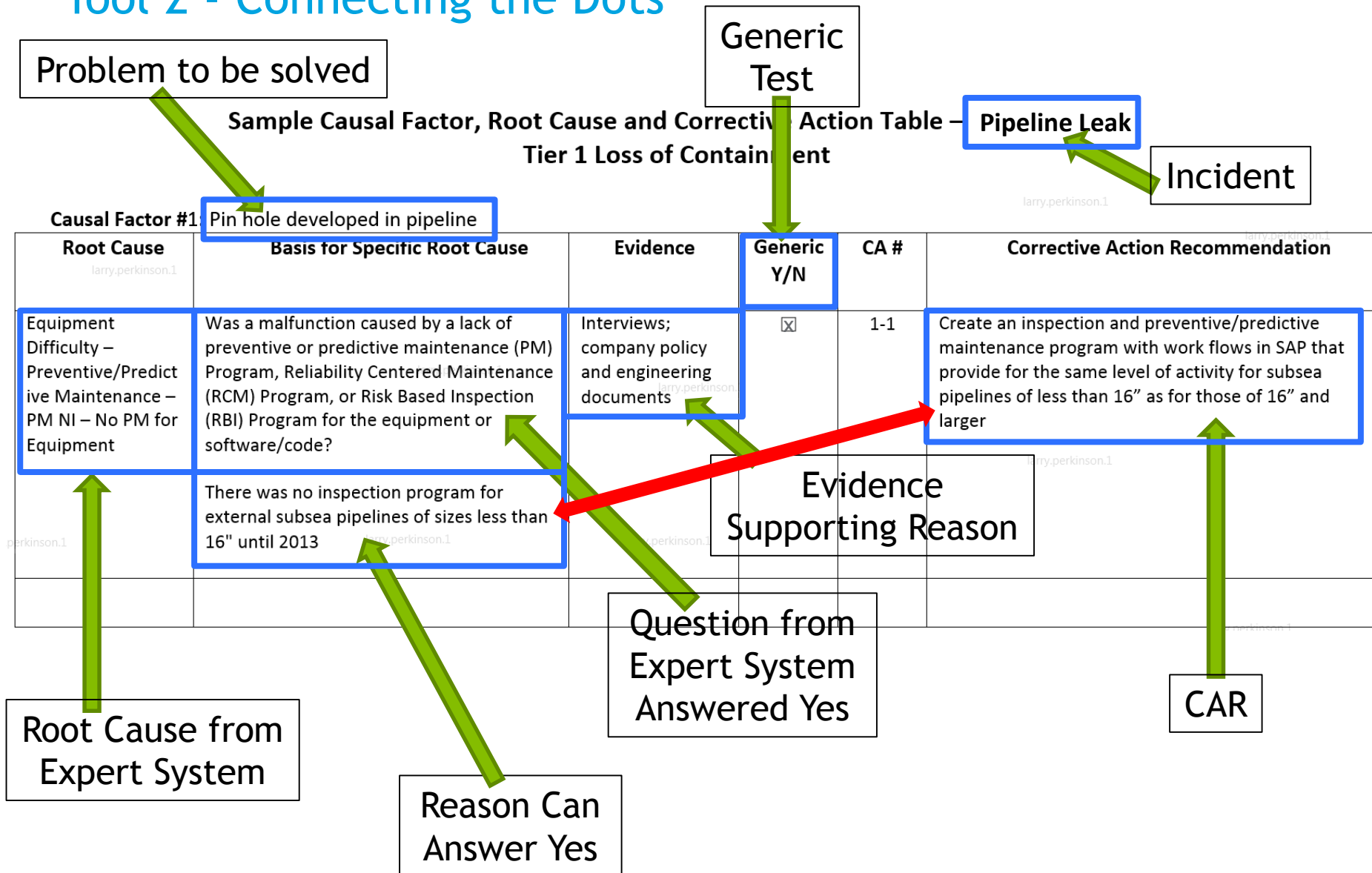


Tool 1 - Quality Assurance Hold Points

- Problem identification (CF/SI selection)
- Root cause selection
- Suggested CARs
- Final report



Tool 2 - Connecting the Dots

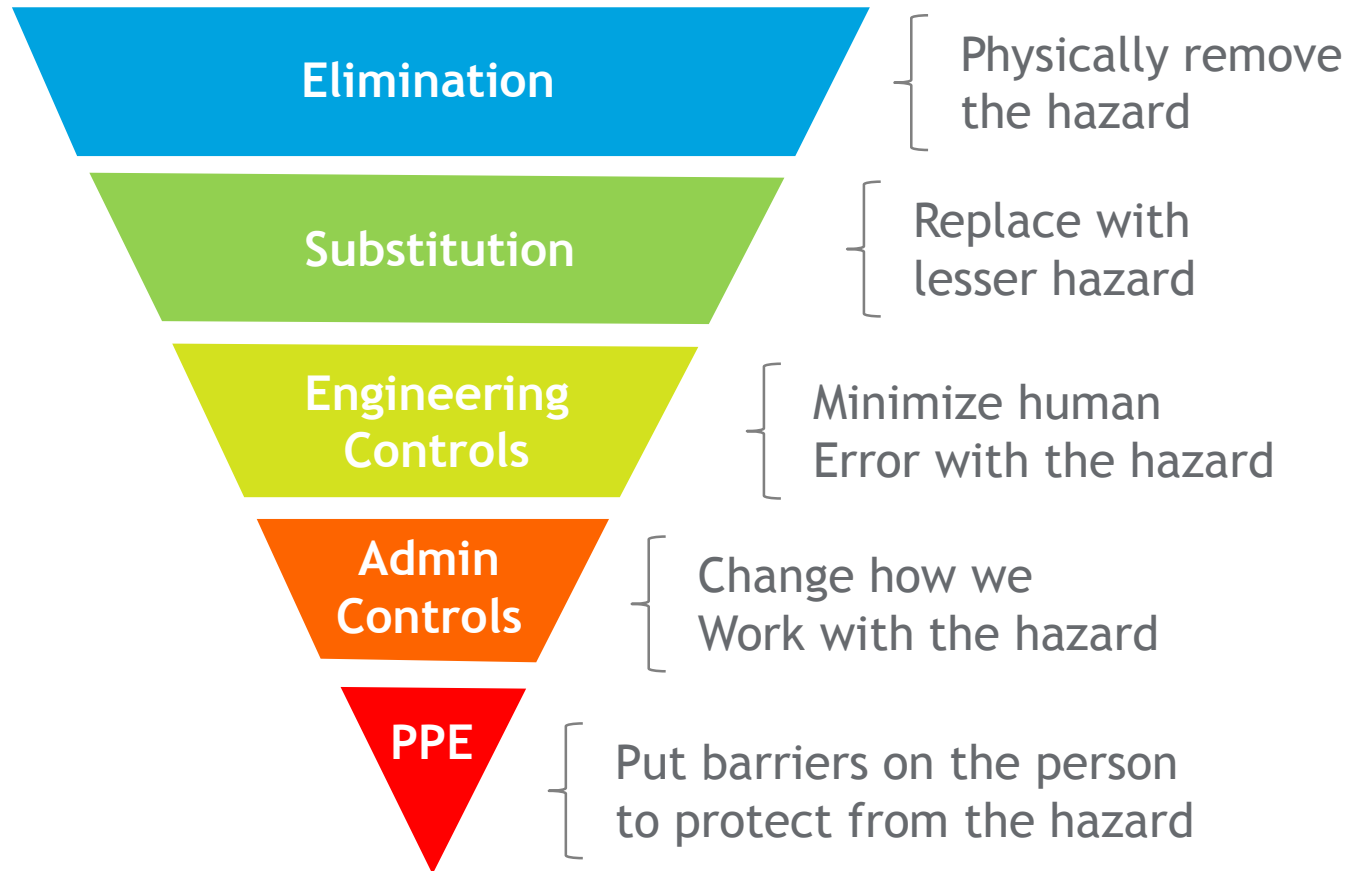


Tool 3 - Building in Sustainability

Most Effective

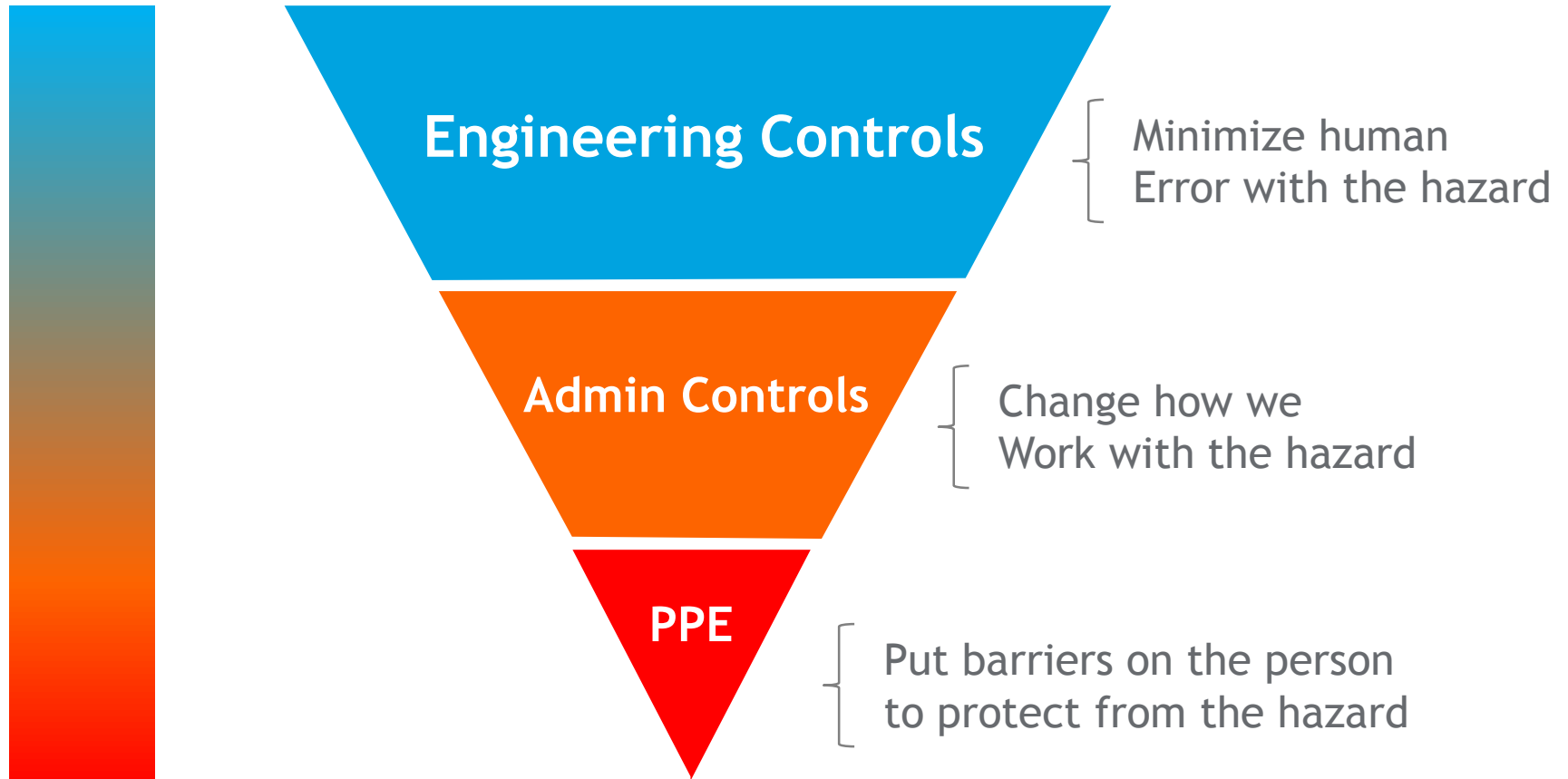


Least Effective



Tool 3 - Building in Sustainability

Most Effective



Least Effective

Tool 3 - Building in Sustainability - Engineering Controls

- Operations independently of
- Predictive/Preventive
- Requires a center for intervention
- Training for maintenance personnel on control
- Competence Evaluations
- PM Data Gathering & Analysis
- Root Cause Analysis of equipment failures
- Fail Safe/Monitored
- Third Party Audits



Tool 3 - Building in Sustainability - Admin Controls

- Training in the control
- Competency evaluation
- Provisions for new personnel
- Audits of training compliance
- Control in line with BP
- Audits of control application
- Reporting audit results to management
- Results used in KPI/PM
- Audit results analyzed for root causes and actioned
- MOC
- BBS
- Third party audits



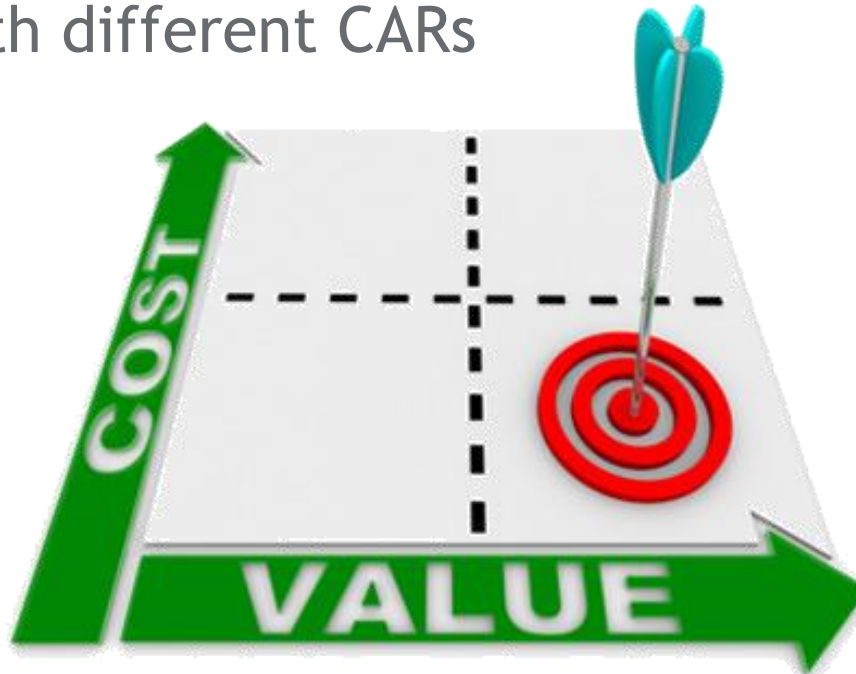
Tool 3 - Building in Sustainability - PPE Controls

- Just Culture & disciplinary system
- Training & competence
- PPE inspection for team for audit
- Audits & PPE compliance
- Audits reported to management
- PPE selection & use in line with BP
- Audit results used in KPI/PM
- Audit results analyzed for root causes and actioned
- MOC
- PPE included in BBS
- Third party audit



Tool 3 - Building in Sustainability - BONUS

- Developed an effectiveness algorithm on addressing causal factors based on scores for sustainability
- Can determine the cost of a CAR and its sustainability score
- Then compare the cost to the degree of risk reduction achieved with different CARs



Sample Sustainable Recommendation

Causal Factor #1: Pin hole developed in pipeline

Root Cause	Basis for Specific Root Cause	Evidence	CA #	Corrective Action Recommendation
Equipment Difficulty – Preventive/Predictive Maintenance PM NI for Equipment	Was a malfunction caused by a lack of preventive or predictive maintenance	Interviews; company policy and	1-1	Create an inspection and preventive/predictive maintenance program to provide for the same level of activity for smaller diameter pipe as for those of 16" and larger.

Which is more Effective?

Audit results analyzed for root causes & actioned

Personnel trained in control

Training for new personnel

Competency evaluation

Control conforms to best practice

Results reported to mgmt.

Audits of training compliance

Results reported to mgmt.

Tool 4 - Validating CARs

Review in the field:

- Are validation reviews done six and 18 months after implementation?
- Were all parts of the CAR originally implemented?
- Are sustainability elements in place and functioning?
- Are CAR measurements communicated to management?
- Have there been further occurrences of the CF or RC?
- Are validation results communicated to management?

Would you validate my parking?

Good spacing on each side; pulled all the way in; could improve angle to sidewalk



SUMMARY

Summary

- SMART is only first part of developing good CARs
- Include QA hold points
- Connect the dots
- Include sustainability in your CARs
- Validate CARs in the field 6-18 months later





Questions

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