HOW GEORGIA-PACIFIC USED A FOCUS ON "CRITICAL HAZARDS" TO ADDRESS SERIOUS INJURIES AND FATALITIES

Georgia-Pacific

- Based in Atlanta – Purchased by Koch Industries in 2006
- One of world's leading manufacturers of bath tissue, paper towels, and napkins
- Building products – Plywood, gypsum wallboard, OSB, lumber, and chemicals
- Containerboard and corrugated packaging
- Fluff, market, and dissolvable pulp
- Brands - Quilted Northern®, Angel Soft®, Brawny®, enMotion®, Sparkle®, Mardi Gras®, Vanity Fair®, and Dixie®
- Roughly 35,000 employees

PREVIOUS WORK

Good programs to address the “blocking and tackling” of safety,

BBS based on a pareto (frequency) analysis.

Incentives and pressures aligned with a vision of zero.

Leaders often spending too much time managing the injury.

Serious injuries and fatalities began to trend upward.

FOCUS SINCE 2015

Critical Hazards – Represent over 80 percent of GP SIFs

1. Contact with Uncontrolled/Unguarded Energy
2. Falls from Elevated Surfaces
3. Interacting/Struck by Mobile Equipment
4. Fire and Explosion
5. Exposure to Chemical/Thermal Release

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Table of Contents

HOW DO WE COMMUNICATE THE CRITICAL HAZARDS?

- Small Group Conversations
- Critical Hazard Field Guide
- Verification (GPS location)
- Validation
- Metrics

CRITICAL HAZARDS FIELD GUIDE INTRODUCTION VIDEO

\High res version (click here):

https://www.youtube.com/watch?v=PP_F1-QyBYs

Contact with Uncontrolled/ Unguarded Energy Source

Potential sources of hazardous energy include: electrical, mechanical, hydraulic, air (pneumatic), gravity, torsional, chemical, and thermal. During normal operations, we often use machine guarding to prevent contact with equipment that could cause an injury.

The best way to avoid injury is to effectively guard equipment. When guarding use the AUTO principle, which prevents contact if someone were to reach:

- **A**round the guard
- **U**nder the guard
- **T**hrough the guard
- **O**ver the guard

During servicing or maintenance of equipment, we are most often protected from unexpected start-ups or release of stored energy through the Energy Isolation/Lock/Tag/Verify process. For activities that are routine or repetitive and integral to the operation, Alternative Protective Measures (APMs) may be used, provided that the protection is at the same level as a lockout and anyone involved with that work maintains exclusive control of the APMs.

Associated hazardous activities and/or key controls include the following tabs in Section 2 of this Guide:

- **Confined Space Entry** (p32)
- **Electrical Safety/Arc Flash** (p34)
- **Excavation and Trenching** (p40)
- **Line Breaking** (p48)
- **Lock/Tag/Verify** (p50)
- **Machine Guarding** (p52)

The pictures depicted on pages 7-25 of this Guide, are only a sampling of types of controls utilized throughout our facilities and do not represent all controls used.

Contact with Uncontrolled/ Unguarded Energy Source Higher Order Controls

Engineering

Perimeter guarding around in-running nip points.

Perimeter and distance guarding.

Engineering

Guard 'Open' to place plywood stacks.

Guard 'Closed' to protect from moving chains.

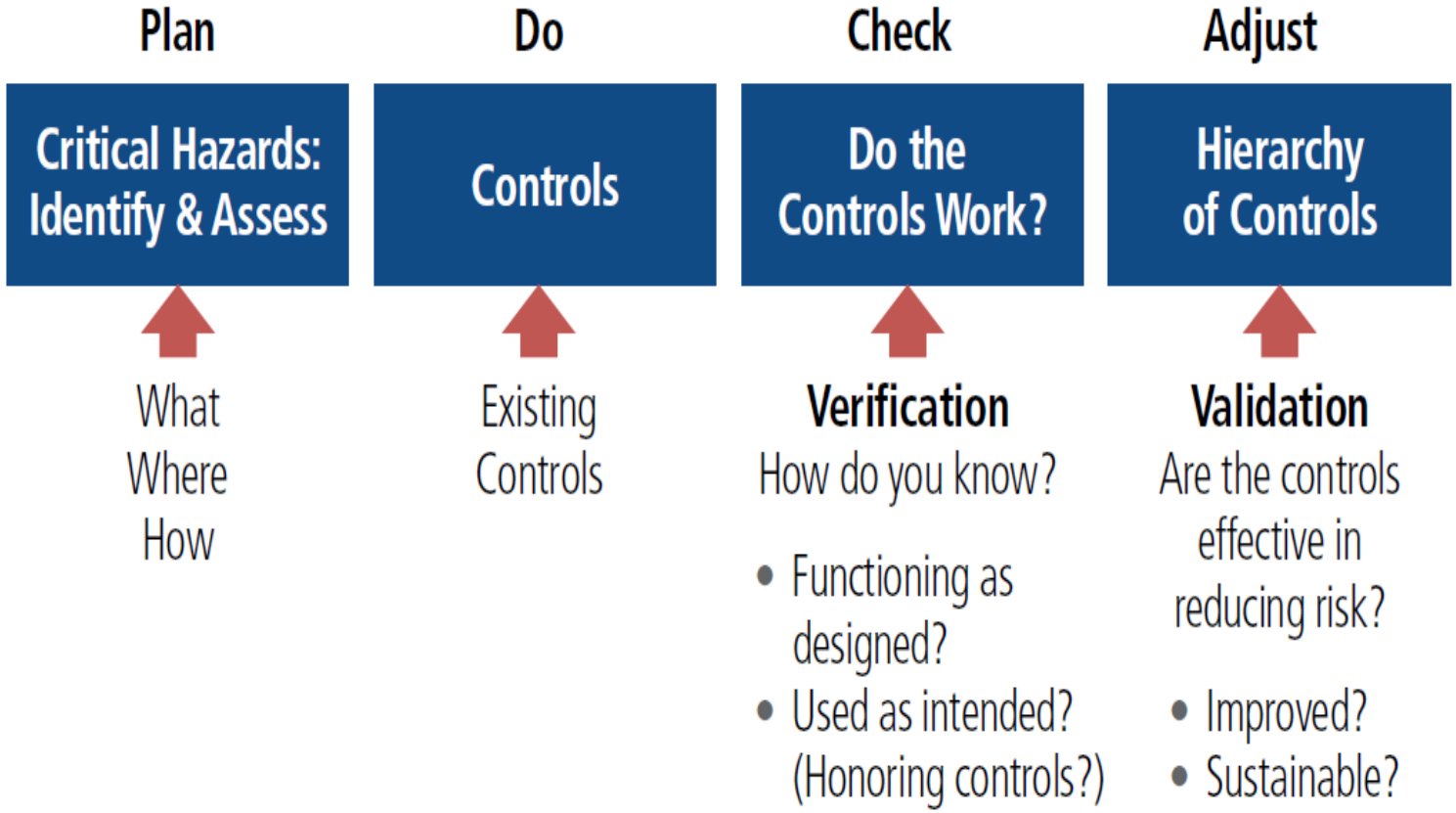
Contact with Uncontrolled/
Unguarded Energy Source
Higher Order Controls

Engineering

Perimeter guarding.

Arc flash mitigation controls for local disconnect switches. Electrical panel with both phase indicator lights and viewing window to aid in verification of zero electrical energy.

CRITICAL HAZARD CONTROLS VERIFICATION/VALIDATION MODEL



RISK BASED VS. OUTCOME BASED METRICS

Previous focus:

- TCIR
- Lost Time
- Learning Events Reported
- BBS Observations

New focus:

- Risk Assessment
- High Potential Events (HPE)
- Serious Injuries
- Percentage of HPE with RCA
- Percentage of HPE with a higher order control
- Focused conversations about the critical hazards

HIGH POTENTIAL EVENT

First aids, recordables, near misses, unsafe observations, and substandard conditions are all reported into the same system (approximately 6,000 per month.)

All are scored using our risk matrix.

Events that score nine or above are considered a “high” or “critical” risk.

The person entering the event also selects a “type of event”. These events generally line up with our critical hazards.

End up with about 100 “High Potential Events.”

Track root cause analysis, selection of “higher order controls”, and corrective action process more closely .

Other events may be important, but focus on HPE first/

SERIOUS INJURIES

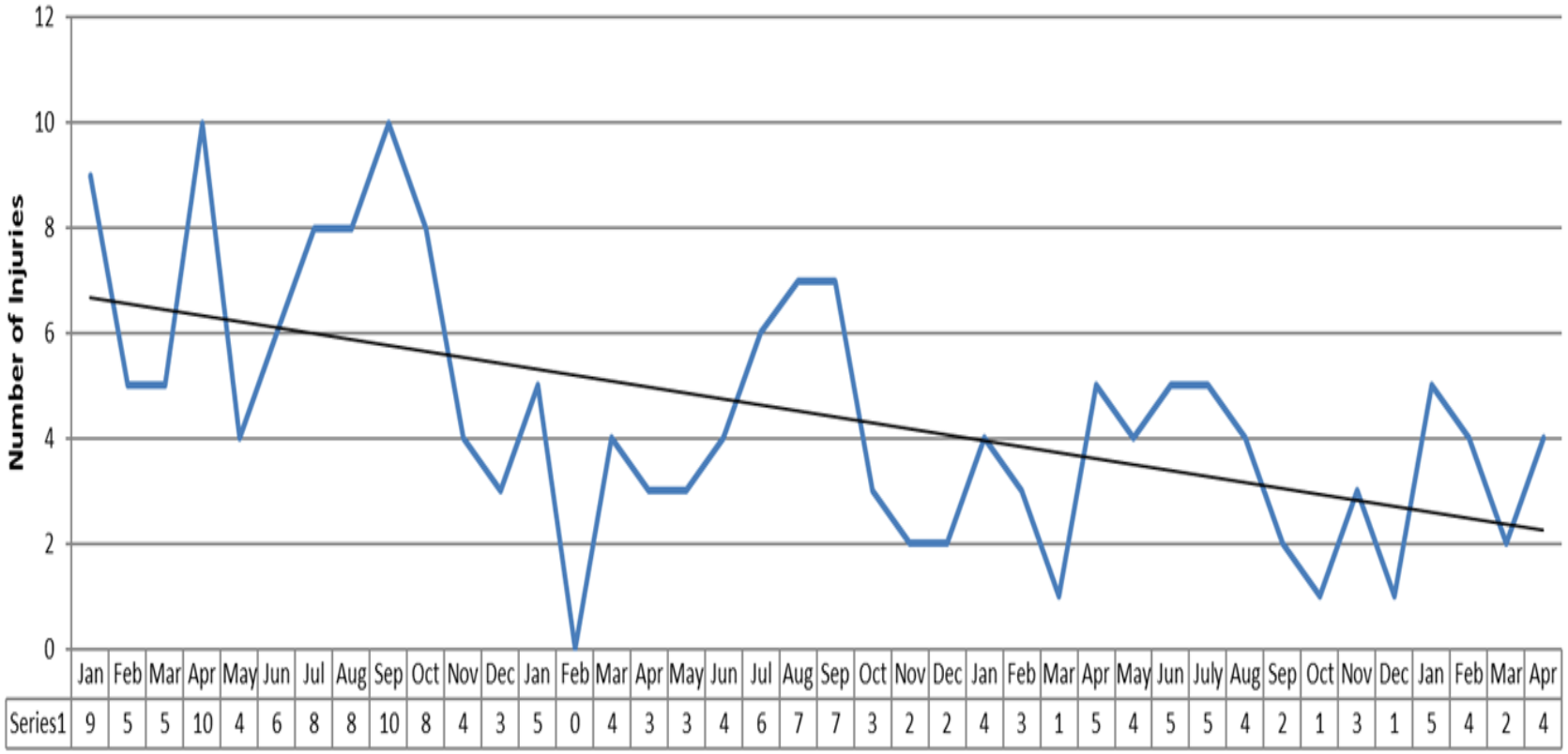
Rigid criteria

At least 10 days lost time AND

Serious injury consequences:

- Fatality
- Amputation
- Dislocation
- Fracture
- Laceration/Puncture
- Crushing
- Respiratory
- Electrocution
- Burns

Serious Injury Count by Month, Since January 2014



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr
Series1	9	5	5	10	4	6	8	8	10	8	4	3	5	0	4	3	3	4	6	7	7	3	2	2	4	3	1	5	4	5	5	4	2	1	3	1	5	4	2	4

NEW AUGUSTA, MS FATALITY

- A 28-year-old utility tech was killed while changing a sight glass on an evaporator set.
- During a scheduled recovery boiler outage, operators changed the sight glasses throughout the evaporators, including shutting down the two steam ejectors.
- On startup, two of these sight glasses began leaking but efforts to tighten the bolts failed, necessitating change out of those sight glasses.
- A Safe Work Permit was completed before starting the work, but the operators did not completely isolate the steam ejectors, and instead referred to a lockout from the work conducted during the outage. While the lockout removed steam and liquor from the supply side, the steam ejectors on the back end were not isolated. A simultaneous weather delay contributed to increase vacuum and the crew did not verify the pressure inside the vessel before beginning work.
- Channel locks were used to create a small hole in the sight glass but as the operator attempted to break away more of the glass, his arm was pulled into the 8” opening, pinning the operator against the flange.

EXAMPLE OF SIMILAR SIGHT GLASS.

KEY LEARNINGS

- Steam ejectors should have been isolated, but the SOP for changing the sight glasses for the other evaporator set was not used as a reference when drafting the LOTO or SWP.
- After initiating the LOTO procedure, the try/verify steps were not conducted.
- The SWP was not revalidated after the weather delay, despite the fact that the steam ejectors continued to pull vapor through the set, increasing the vacuum throughout the weather delay.
- The potential for a vacuum hazard, which typically would be greater in other evaporators, was not considered for this task on this evaporator.
- While the hazards of pressure are well recognized, vacuum must also be controlled through the LOTO process.

QUESTIONS TO CONSIDER

- How do individuals with technical and process knowledge get involved when a decision is made to develop or change process LOTO procedures?
- What are the expectations to verify all energy sources have been isolated? Do lockouts clearly define the method to confirm zero energy?
- When a SOP or JHA already exists, what are the expectations to use the SOP/JHA versus drafting a new JHA as part of the Safe Work Permit (SWP)?
- Which documents should be the primary source when drafting a lockout, P&ID, SWP or SOP?
- Do we think about worst case scenarios to identify and manage hidden hazards?

QUESTIONS & ANSWERS