

## Composite

Indicator	Score				Perception Gap			
	Eno	Sec	MNS	MSP	Eno	Sec	MNS	MSP
Recognition for Performance	58.4	78.3	74.6	85.7	34.1	21.9	6.1	11.4
Inspections	59.2	84.7	80.5	87.7	62.1	38.8	19.0	15.0
Supervisor Training	61.9	69.4	72.6	86.5	62.9	74.5	65.9	73.0
Substance Abuse	62.9	74.5	65.9	73.0	35.6	63.4	62.0	66.5
Attitude Towards Safety	63.4	62.0	66.5	89.3	17.9	63.5	74.5	73.9
Operating Procedures	63.5	74.5	73.9	71.5	28.8	4.3	20.0	1.5
Discipline	63.5	74.5	73.9	71.5	28.8	4.3	20.0	1.5
New Employees	63.7	82.7	64.5	80.3	29.8	14.5	14.8	9.1
Safety Contacts	63.7	82.7	64.5	80.3	29.8	14.5	14.8	9.1
Support for Safety	65.1	79.3	74.3	74.7	4.3	29.8	39.6	24.7
Awareness Programs	65.1	79.3	74.3	74.7	4.3	29.8	39.6	24.7
Involvement of Employees	65.1	79.3	74.3	74.7	4.3	29.8	39.6	24.7
Management Credibility	65.1	79.3	74.3	74.7	4.3	29.8	39.6	24.7
Quality of Supervision	65.1	79.3	74.3	74.7	4.3	29.8	39.6	24.7
Employee Training	65.1	79.3	74.3	74.7	4.3	29.8	39.6	24.7
Goals of Safety Performance	65.1	79.3	74.3	74.7	4.3	29.8	39.6	24.7
Communication	65.1	79.3	74.3	74.7	4.3	29.8	39.6	24.7
Hazard Correction	65.1	79.3	74.3	74.7	4.3	29.8	39.6	24.7
Safety Committee	65.1	79.3	74.3	74.7	4.3	29.8	39.6	24.7
Incident Analysis	65.1	79.3	74.3	74.7	4.3	29.8	39.6	24.7
Combined Score	65.1	79.3	74.3	74.7	4.3	29.8	39.6	24.7
Respondents	65.1	79.3	74.3	74.7	4.3	29.8	39.6	24.7

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## HOW DID A HEAVY EQUIPMENT MANUFACTURING FACILITY TRANSFORM ITS SAFETY CULTURE, RESULTING IN AN 89% REDUCTION IN RECORDABLE INJURY FREQUENCY IN 4 YEARS?

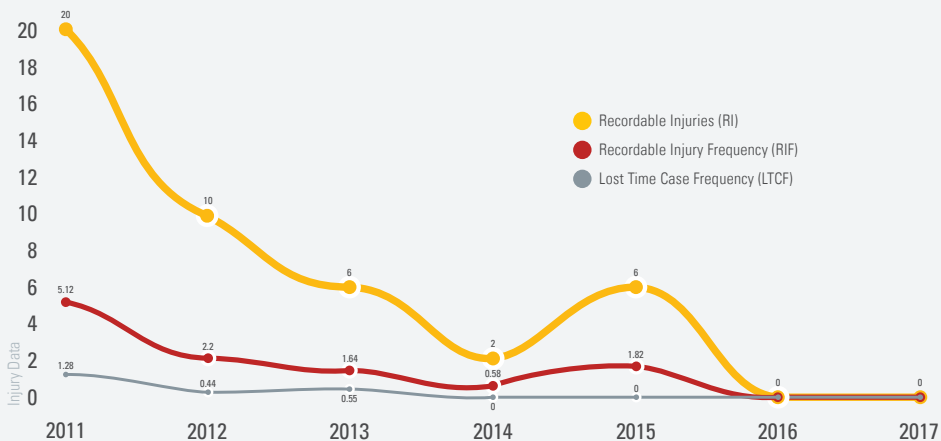
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This isn't a riddle, and luck isn't the answer. It was the product of a proven process, by which the perception, skill and experience of front-line employees were leveraged to improve existing safety processes and create new programs. Supervisors were empowered through training on effective communication and recognition techniques. Employees at every level of the organization – from the general manager to the newest shop floor employee – had clearly defined safety-related tasks that were designed by cross-functional continuous improvement teams. These leading indicator activities were embraced by leadership and tied to performance ratings, just like quality and velocity metrics. The safety department's responsibility shifted from creating and leading change to facilitating and supporting the improvement efforts. This required the EHS Department Manager to also go through a personal transformation, from being the secretly skeptical, compliance-focused front man to a passionate employee advocate and eventual consultant to organizations across North America. Each component of this Zero-Incident Performance (ZIP™) Process steered away from an after-the-incident reactionary culture and toward an environment where engaged employees recognized each other for positive behavior and participation in improvement.

The North Little Rock, Arkansas, Caterpillar facility employs approximately 500 employees and manufactures Motor Graders for global distribution. Production began in June 2010. In the first full year of production (2011), the facility had a Recordable Injury Frequency (RIF) of 5.12 with 20 recordable injuries. Of 68 manufacturing facilities in the Caterpillar enterprise, the North Little Rock (NLR) facility ranked number 65. Caterpillar Safety Services, a consultancy group within Caterpillar Inc., was enlisted to help assess and improve the safety culture through its Zero-Incident Performance (ZIP™) Process. Key performance improvement

initiatives included a Safety Perception Survey (SPS) of all employees, Leadership Roundtable with top management and the formation of a cross-functional Safety Steering Team which commissioned multiple Continuous Improvement teams. At the end of 2014, the facility had achieved an 89% reduction in RIF, with better than world class performance of 0.58.

## CATERPILLAR NLR SAFETY JOURNEY // 2011 – 2017



From the facility's first full year of production (2011) to 2017, a combination of safety initiatives, leadership development and an overall focus on cultural improvement drove the Recordable Incident Frequency from 5.12 down to 0.

## THIS WILL BE A MARATHON, NOT A SPRINT . . .

The journey to improving a safety culture is long and fraught with challenges, most of them individual people you know well. It's not their fault (usually), as culture change involves shifting organizational norms, acceptable behaviors or practices, which have been reinforced over time. However, if one life is preserved, the work is worth it. It's likely you'll see improvements in your production and quality as well, as safer workers are more efficient and engaged workers. Through committed & visible leadership, effective accountability systems, and the involvement of front-line employees, the following successes were realized at the North Little Rock Caterpillar facility:

Broadened perspective and reputation of the Environmental Health & Safety (EHS) manager and professionals from compliance cops to trusted advisors

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Results from a cultural assessment were leveraged to focus improvement efforts on issues that employees actually cared about

Improved upper management understanding that the messages they send impact employee perception and actions in relation to safety vs. production

Leveraging the skills and experiences of craft employees to build proactive safety programs

Implementation of metrics around activities that reflect the presence of safety instead of statistics on the absence of injuries

Increased employee engagement and workplace positivity through effective recognition of specific desired behaviors

## TO LET THEM TO RUN, YOU MUST LOOSEN THE REINS

The North Little Rock safety culture journey involves a personal transformation as well. I began my career as an environmental professional. In my world, things were very black and white. Either you were “in” compliance, or you were “out.” It was about rules and regulations. Period. My perception of the safety profession was the same. I thought safety professionals were created to police the masses. Why else did the safety department spend so much time writing all those policies and procedures? Sound familiar? After getting my first taste of the safety profession at Caterpillar’s Proving Grounds, I was offered an opportunity to establish the environmental management system at the North Little Rock facility. Six months later, I was in the EHS Department Manager’s role and tasked with implementing a strategy to improve the safety culture. Compliance I could do. But this required more. I distinctly (and shamefully) remember declaring to my boss that zero injuries was NOT possible because safety involves people, and people make mistakes. Not only was I focusing on the wrong thing (statistics), but I was wrong. I would soon learn that not only was zero injuries a possibility, but those same people that I had discounted would be the key to our shared success. And to do that, I’d have to let go of my need to be in control, to be in the spotlight, to be the one determining the strategies and areas of focus on our corporate safety. And once I accepted that reality, that safety was bigger than the Safety Department, that it was not about compliance, but about people, my world was forever changed. Caterpillar Safety Services’ Zero-Incident Performance (ZIP) Process was the roadmap for my journey.

## IN ORDER TO KNOW WHERE WE'RE GOING, WE MUST KNOW WHERE WE ARE

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Many organizations create safety strategies based on the latest compliance requirements, corporate best practices or at the whim of a top leader who saw something they liked at another company. We were no different. In past roles I witnessed safety departments invest significant resources of time, talent and money on initiatives that were well conceived and designed, but poorly executed and ultimately shelved. The thought of asking the same employees that we were trying to protect for their perceptions about our current cultural reality was a novel approach. Caterpillar Safety Services' Safety Perception Survey contains 73 yes/no questions over 20 safety indicators. The survey provides a thorough assessment of safety to begin an organization-wide continuous improvement effort. The goal is to identify how well an organization is doing in safety, what needs improvement and where the organization must begin. Equipped with the perceptions of employees, supervisors and managers, our cross-functional Safety Steering Team had data to prioritize improvement opportunities to make the biggest impact on the culture. Not only did this take the pressure off the Safety Department to hypothesize what would be effective, but it freed up their time to focus on issues that required their knowledge and training.

Exhibit 1 and Exhibit 2 show the baseline and benchmark SPS results for NLR. Exhibit 1 is the initial baseline survey that took place in 2011. You'll see by the color coding in the table there were several areas that needed immediate attention as well as areas that needed improvement. In the initial baseline survey, there were no topics considered a strong performance area. There were also perception gaps between employees, supervisors and management. One of the weakest areas from the baseline survey was Supervisor Training; the next section of the paper explains how / why supervisor training was one of the first areas addressed through the ZIP Process. Inspections was another area of concern based on the results of the survey, and that was the topic addressed by the first Continuous Improvement (CI) Team (also explained later in the paper). The survey is an excellent tool to identify what the problems are and which topics should be addressed first.



Category	Percent Positive			Perception Gap		
	Emp.	Sup.	Mgmt.	Emp./Sup.	Emp./Mgmt.	Sup./Mgmt.
Stress	58.3	71.8	71.8	23.2	23.2	0.1
Supervisor Training	64.2	83.6	64.7	30.4	0.9	22.6
Recognition for Performance	64.3	71.6	66.2	11.4	3.0	7.6
Inspections	65.2	70.7	68.6	8.4	5.1	3.1
Awareness Programs	68.1	70.4	74.9	3.4	10.1	6.5
Operating Procedures	71.3	75.6	78.4	6.1	10.0	3.7
Quality of Supervision	71.8	87.1	79.6	21.3	10.9	8.6
Employee Training	72.4	73.2	67.8	1.1	6.4	7.4
Discipline	73.0	71.4	72.2	2.2	1.1	1.1
Safety Climate	73.1	76.0	77.7	4.0	6.3	2.2
Support for Safety	73.5	75.4	76.7	2.6	4.3	1.6
Substance Abuse	73.6	81.5	81.2	10.9	10.4	0.4
Safety Contacts	73.8	73.8	73.9	0.0	0.1	0.1
Involvement of Employees	74.8	78.5	75.6	4.9	1.0	3.8
Attitude Towards Safety	75.0	81.8	84.9	9.0	13.1	3.8
Hazard Correction	75.5	70.0	79.5	7.2	5.4	13.6
Management Credibility	75.9	74.4	79.3	2.0	4.5	6.6
New Employees	77.4	78.3	78.2	1.2	1.0	0.1
Communication	78.7	85.6	81.4	8.8	3.4	4.9
Goals of Safety Performance	79.5	79.6	75.7	0.2	4.7	4.9
Incident Analysis	87.1	87.8	88.3	0.8	1.4	0.6
<b>Combined Score</b>	<b>72.7</b>	<b>77.1</b>	<b>76.0</b>	<b>7.6</b>	<b>6.0</b>	<b>4.9</b>
<b>Respondents</b>	274	14	59			

- Needs Immediate Attention (< 75%)
- Needs Improvement (75–89%)
- Strong Performance (≥ 90%)
- Needs Attention (≥ 14% Perception Gap)

Exhibit 1: Composite results from the baseline 2011 Safety Perception Survey taken at the NLR Caterpillar facility.

After an improvement strategy has been developed and execution is underway, the survey was used again to measure progress and identify additional areas of opportunity. Exhibit 2 shows the benchmark results from the 2016 survey. Not only were there significant improvements across the board, but the specific topics addressed by CI Teams improved tremendously.

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Indicator	Score				Perception Gap					
	Hrly	Mgt	Sup	Mgr	Hrly Mgt	Hrly Sup	Hrly Mgr	Mgt Sup	Mgt Mgr	Sup Mgr
Substance Abuse	70.2	84.0	78.9	84.8	19.7	12.4	20.8	6.0	1.0	7.5
Operating Procedures	71.2	73.2	82.1	79.2	2.7	15.2	11.2	12.1	8.2	3.5
Discipline	71.7	79.6	87.8	86.7	11.0	22.4	20.8	10.3	8.9	1.2
Supervisor Training	74.1	90.0	92.0	100.0	21.5	24.2	35.0	2.2	11.1	8.7
Recognition for Performance	74.2	90.4	90.8	89.5	21.8	22.3	20.6	0.4	1.0	1.4
Inspections	74.3	90.8	88.7	91.5	22.3	19.5	23.2	2.3	0.7	3.1
Awareness Programs	75.9	87.2	84.4	93.5	14.8	11.2	23.1	3.1	7.2	10.7
Quality of Supervision	79.7	92.4	90.6	98.7	16.0	13.7	23.9	2.0	6.8	9.0
New Employees	80.4	91.4	91.9	86.5	13.6	14.3	7.5	0.6	5.4	5.9
Employee Training	80.5	93.4	94.4	90.6	16.0	17.2	12.5	1.0	3.0	4.0
Involvement of Employees	81.1	87.6	83.2	89.4	8.0	2.6	10.2	5.0	2.0	7.4
Attitude Towards Safety	81.2	91.4	92.2	95.8	12.5	13.6	18.0	0.9	4.8	3.9
Support for Safety	82.8	94.5	91.3	96.3	14.1	10.3	16.3	3.4	1.9	5.4
Safety Climate	85.2	91.7	88.2	96.6	7.5	3.5	13.3	3.8	5.4	9.5
Management Credibility	85.7	92.9	88.3	97.1	8.4	3.1	13.3	4.9	4.5	9.9
Communication	86.0	93.6	89.7	93.1	8.8	4.3	8.3	4.2	0.5	3.8
Goals of Safety Performance	86.8	89.7	80.8	90.6	3.3	7.0	4.3	10.0	1.0	12.2
Hazard Correction	88.3	94.3	93.4	97.9	6.9	5.8	10.9	1.0	3.7	4.8
Safety Contacts	89.1	95.1	97.4	100.0	6.8	9.4	12.2	2.4	5.1	2.6
Incident Analysis	91.7	97.5	97.4	100.0	6.3	6.2	9.0	0.0	2.6	2.6
<b>Combined Score</b>	<b>80.5</b>	<b>90.0</b>	<b>89.2</b>	<b>92.9</b>	<b>12.1</b>	<b>11.9</b>	<b>15.7</b>	<b>3.8</b>	<b>4.3</b>	<b>5.9</b>
<b>Respondents</b>	214	44	13	8						

- Strong Performance ( $\geq 90\%$ )
- Needs Improvement (75–89%)
- Needs Immediate Attention ( $< 75\%$ )
- Needs Attention ( $\geq 14\%$  Perception Gap)

Exhibit 2: Composite results from the 2016 benchmark Safety Perception Survey showing significant improvement in multiple categories at the NLR Caterpillar facility.

## MATCH YOUR ACTIONS TO YOUR INTENTIONS

It is safe to assume the vast majority of leaders have no intention of getting their employees hurt. However, their actions sometimes belie their intentions. A critical component of transforming culture requires leaders who understand that what they talk about most, what they measure their employees by, and what they choose to recognize with positive feedback sends a much louder message to employees than just saying “safety first.” For example, a supervisor that recognizes the employee that consistently completes work the fastest may inadvertently be encouraging increased safety risks by taking shortcuts. Or, if they communicate that the build rate is increasing and there will be more work to spread across the existing personnel, then employees may interpret that they are to do whatever it takes (including bypassing safety protocols) to meet demand and keep the boss happy. Supervisor Training in Accountability and Recognition Techniques (S.T.A.R.T.<sup>™</sup>), a Caterpillar Safety Services tool included in the ZIP Process, underscores the importance of an organization’s safety culture, specifically teaching supervisors what they can do to nurture an effective safety culture. More than 50 leaders have completed S.T.A.R.T. training at the Caterpillar NLR facility. Overwhelmingly positive reviews came from supervisors, many of them admitting their expectations were far exceeded from their initial thoughts when receiving an 8-hour safety training invite.

## TO EVOLVE, INVOLVE

The cornerstone of safety culture improvement must be employee involvement. When you include the people in the creation of the process that is to govern them, you set yourself up for successful implementation and sustainment. In the ZIP Process, a cross-functional Safety Steering Team of approximately 10 employees uses the SPS data and qualitative interview feedback to select a specific process that either needs to be improved or created from scratch. They then commission a CI Team of another 8-12 employees to build, pilot and implement the process. Typical CI Team processes are safety meetings, peer-to-peer observations, new employee orientation, JSAs, hazard recognition, stop-to-fix, inspections, near miss/incident investigation, root cause analysis, job briefings, etc. Every process is built on the four steps of Caterpillar Safety Services' accountability model:

Define – Specific activities are defined for individuals at every level of the organization

Train – All employees receive instruction on the defined activities for which they will be held accountable

Measure – Quantitative and qualitative leading indicators are created from the defined activities

Recognize – Specific, timely, sincere and frequent recognition is prescribed in order to reinforce the quality completion of the defined activities

The Safety Issue Resolution Team (SIRT), was the first improvement process implemented after the completion of NLR Caterpillar's initial Safety Perception Survey. The purpose of the SIRT was to hone in on effective near miss/incident investigations and root cause analysis. Representatives from EHS, Engineering, Quality, Logistics and Operations formed teams for each value stream in the facility. Teams meet on a weekly basis to discuss injuries, near misses and CI cards generated by employees to determine root causes and implement corrective actions. A report-out is conducted weekly with all teams and the facility leadership

team to reach consensus on corrective actions before issues are closed. To date, more than 1,000 environmental and safety issues have been addressed with the SIRT process.

Upon completion of the second Safety Perception Survey, the first CI team created the Positive Interaction Process (PIP). The team's purpose statement is to, "Transform the current safety observations into an effective, on-going, Positive Interaction Process that actively involves all employees." A negatively perceived behavior-based safety observation process was already in place, but it was the CI team's job to transform those observations. As defined by the CI Team, a PIP can be completed anytime there is an opportunity to recognize an employee for a safe action or to express concern about a process that appears to be unsafe. Recognition should be specific, timely and sincere. If all of these are properly conveyed, an employee is much more likely to repeat this positive behavior. In the event of a potentially unsafe behavior, the focus is more around a coaching opportunity.

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A quality PIP includes 3 criteria:

1. Must be specific and positive
2. Must be clear evidence of a two-way discussion
3. Must start with an open-ended question for a coaching opportunity.

The roll-out of the process included a modified Safety Culture Excellence Workshop (SCEW) to introduce the PIP to the entire workforce. The SCEW, facilitated by a Caterpillar Safety Services Consultant, introduced the facility to the basics of safety culture and how to properly utilize recognition. The PIP training outlined the purpose, process and expectations for all employees. CI Team members conducted the training in large groups over several days. The PIP was fully implemented in February 2015. An example of a PIP can be as simple as recognizing an employee for not walking and texting, thanking an employee for stepping to the side to ensure they don't trip or have removed themselves from an unsafe area. Since the onset of the process, participation rates have exceeded 90% for all levels of employees.



As PIP became ingrained into NLR Caterpillar's culture, it was time to get back to the drawing board with the Steering Team. Employee training on job-specific hazard recognition was chosen as the next priority, based on the results from the second SPS. The second CI team created the Stop-Think-Act-Communicate (STAC) process. The purpose of the process, as defined by the CI Team, is to "Proactively involve all employees to drive a cultural change in safety by building a process to equip people to stop to identify hazards, think to understand risk, act safely to minimize risk, and communicate the hazard and mitigate the risk." STACs are completed by employees in their own work area and communicated to their teams in daily meetings. Employees are encouraged to recognize hazards before an incident occurs. For example, a manufacturing engineer walked into his work area without wearing a hard hat, required PPE for the area. He thought of the potential risk of falling debris with the roof work currently being completed. So, he turned around and obtained his hard hat. On his way back, the employee re-positioned the hard hat sign to a more visible location in hopes of preventing a reoccurrence by someone else.

## THE PRESENCE OF SAFETY OR THE ABSENCE OF INJURY

Traditionally, safety performance was measured by injury statistics. As safety professionals, we know that this method is arbitrary. Consider two companies whose employees both worked the same number of hours last year. An employee at Company A trips over a painted line in a parking lot and received a sprained wrist and accompanying prescription for pain meds. An employee at Company B ignores posted lock-out procedures, causing the fatality of a coworker. Based on OSHA recordkeeping standards, both companies have the same RIF statistics. Does that tell you anything about the safety culture at these two workplaces? Yet, we often use these lagging indicators as performance measures for managers or supervisors. Measuring someone by failures or unintended results is a powerful way to demotivate and disengage them. I once worked in an organization that had such a low RIF “goal” that when an employee got injured in January, the facility’s annual target was blown and they had no reason to put any effort into safety improvements for the rest of the year. What we learned to focus on at the NLR Caterpillar facility were the defined activities created for every employee of the organization by the CI Teams.

Defined activities, PIPs and STACs are submitted to and tracked by all supervisors. All supervisors check to ensure that these are completed in a quality way, so we’re not just “checking the box.” An Excel tracking form, created by the first CI Team leader, houses the metrics. All managers have annual goals that include percent completion of PIPs and STACs, while production employees receive a quarterly bonus based on their completion rates.

## YOU CATCH MORE FLIES WITH HONEY THAN YOU DO WITH VINEGAR

The old adage is true, and applicable to safety culture. Our supervisory activities tend to focus on catching people doing things wrong and correcting the behavior. But our employees are working safely, following the correct processes, creating quality products the majority of the time. If you want to reinforce a specific behavior, simply taking the time to notice and acknowledge it with the employee helps ensure they repeat it in the future. Positive recognition of the activities defined by the CI Teams were incorporated into each process. If there is a benefit to safety culture improvement (besides safe, efficient employees), it's the synergistic effect of positive recognition. We had a Vice President of Operations from a major U.S. airline visit the facility on a benchmarking tour. After a brief overview of how the ZIP Process had been implemented, I invited the exec to go out to the factory floor and talk with any employee about their perception of the new way of doing things. As we entered the sub-assembly area, the VP called over a quiet older gentleman who was assembling a hydraulic manifold and asked him what he thought about the culture change initiative. After a few moments, he looked up and said with a smile, "Well, it's a nicer place to work." That stuck with me. Happier workers are more engaged workers.

Recognition is a crucial part to the CI Team's processes and key to their overall success. Recognizing employees for completing quality safety activities underscores their importance and gives leadership the opportunity to be visibly committed. Caterpillar NLR's leadership team brings the most significant PIPs and STACs to the monthly review meeting and, with the CI Team leader's help, everyone votes on the most impactful submissions. The general manager and other leaders give specific recognition, referencing the employee's impactful PIP and/or STAC. Employees are rewarded with small prizes, such as Cat® merchandise, children's safety glasses and seat-belt cutters. Photos of the recognized employees alongside leaders are posted on digital monitors throughout the facility and published in the weekly facility newsletter.

The Caterpillar NLR journey has been a true transformation; from being one of the worst-performing Caterpillar facilities to becoming a benchmark on sustainable safety excellence for the enterprise. By recognizing employees for safe actions and expressing genuine concern about unsafe actions, Caterpillar NLR has fostered an environment of caring for one another and positively impacting the safety culture. Furthermore, as Caterpillar NLR continues to facilitate S.T.A.R.T. training, add Safety Steering Team members and create new CI teams, the culture will draw ever closer to excellence – whereby everyone does all things safely, both inside and outside of work.

As for me, the safety skeptic? The employees proved me wrong. By following a proven and sustainable process for achieving a zero-incident culture, my own perceptions were altered. Not only have I become an advocate for the ZIP Process within Caterpillar, but I have taken the process to organizations in other industries across the continent. From mining to forestry, electric power generation & transmission to construction, I have parlayed my first-hand experience to empower others who are committed to improving safety in their own workplace. It is challenging. It is tiring. It is also the best job in the world.

## ABOUT THE AUTHOR

### JUSTIN GANSCHOW



Justin has nearly 15 years of experience in the Environment, Health and Safety field. He has first-hand experience implementing the Zero-Incident Performance (ZIP™) Process at a Caterpillar manufacturing facility, resulting in a 74% reduction in Recordable Incident Frequency rates and a very engaged workforce.


Since joining Caterpillar Safety Services as a consultant and account manager, he has served organizations in the construction, logging,

manufacturing, mining, aggregates, waste/recycling and utilities industries. He is passionate about empowering front-line employees, involving supervisors and engaging leaders in the safety culture improvement process. With experience in Six Sigma, the Caterpillar Production System and facilitating Continuous Improvement Teams, Justin has proven experience with continuous improvement models and methodologies. He is a frequent presenter at safety industry conferences, such as the American Society of Safety Engineers, and other industry events, where he brings the safety culture journey to life by sharing his own experience as a practitioner, leader and champion of the Caterpillar approach.

Justin is a Certified Hazardous Materials Manager (CHMM) and Certified Safety Professional (CSP). He has a Bachelor of Science in Environmental Science – Biology and a Master of Science in Biology from Bradley University.

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For more information about the Zero-Incident Performance (ZIP) Process, or Caterpillar's journey to world-class safety, email [safetyservices@cat.com](mailto:safetyservices@cat.com) or call:

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