



# Documented Business Benefits from Implementing a Behavior Based Safety Process



Dominic Cooper, Lucas Finley, John McClure, & Dartan Frend  
BSMS Inc, Franklin, IN 46131

BBS Process Element	KPI	Business Benefit	Documented Hard Data Results	Source
Safety Leadership Training	# of Managers Trained	Increased trust, moral, and respect between management and workforce	Managerial commitment impacted 35% on employee safe behavior.	ASSE-0307-013. Cooper, M.D. (2006). The Impact of Management's Commitment on Employee Behavior: A field Study. ASSE- MEC 7 <sup>th</sup> Professional Development Conference & Exhibition, Kingdom of Bahrain, March 18- 22. <a href="http://www.behavioural-safety.com/articles/Impact_of_Management_Commitment.pdf">http://www.behavioural-safety.com/articles/Impact_of_Management_Commitment.pdf</a>
	% Senior, Mid, Frontline Management Support	Increased management involvement in safety	Management's commitment to the behavioral safety process accounted for approximately 31% of the variance in the observed % safe score.	Cooper, M.D. (2006). 'Exploratory analysis of the effects of managerial support and feedback consequences on behavioral safety maintenance', <i>Journal of Organizational Behavior Management</i> , 26(3),1-41. <a href="http://www.behavioral-safety.com/articles/managerial_support_and_feedback_consequences_on_behavioral_safety_maintenance.pdf">http://www.behavioral-safety.com/articles/managerial_support_and_feedback_consequences_on_behavioral_safety_maintenance.pdf</a>
	Corrective Action Rate	Increased completion of corrective actions	Increased safety behavior by 21.5%.	Cooper, M.D. (2010). Safety Leadership In Construction: A Case Study. <i>Italian Journal of Occupational Medicine and Ergonomics: Suppl. A Psychology</i> , 32(1), pp A18-A23. <a href="http://www.Behavioral-safety.com/articles/Safety_Leadership_in_Construction.pdf">http://www.Behavioral-safety.com/articles/Safety_Leadership_in_Construction.pdf</a>
Workgroup Participation	Participation Rate	Workforce involvement in safety	Engaged employees are 5 times less likely to have a safety incident.	Employee engagement and participation in safety - Harter, J K., Schmidt, F. L. , Killham, E. A., & Asplund, J. W (2006). Q12 <sup>®</sup> Meta-Analysis. Gallup Consulting
Observation Contact Rate	# of Observations Required/ Completed	Increased observation frequency equals safer behavior and lower incident rates	Evidence suggests the greater the contact rate, the larger the impact on incident rates.	Cooper, M.D. (2009)' Behavioral Safety: Process Design Considerations'. <i>Professional Safety</i> , 54 (2), 36-45. ASSE <a href="http://behavioral-safety.com/articles/behavioral_safety_interventions_a_review_of_process_design_factors.pdf">http://behavioral-safety.com/articles/behavioral_safety_interventions_a_review_of_process_design_factors.pdf</a>
Define Feedback Types That Will Be Used	# of Feedback Channels Used	Improved communications company-wide	A combination of posted, verbal and written feedback presented and discussed at weekly briefings is the most effective method.	Cooper, M.D. (2009)' Behavioral Safety: Process Design Considerations'. <i>Professional Safety</i> , 54 (2), 36-45. ASSE. <a href="http://behavioral-safety.com/articles/behavioral_safety_interventions_a_review_of_process_design_factors.pdf">http://behavioral-safety.com/articles/behavioral_safety_interventions_a_review_of_process_design_factors.pdf</a>



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BBS Process Element	KPI	Business Benefit	Documented Hard Data Results	Source
Goal Setting	Target Set by Workgroup	Increased ownership in health and safety (workgroup)	Increased ownership of health and safety issues and finding solutions through on-the-floor staff	Huntsman Petrochemicals <a href="http://www.hse.gov.uk/business/casestudy/huntsman.htm">http://www.hse.gov.uk/business/casestudy/huntsman.htm</a>
Observation Process	% Senior, Mid, Frontline Management Support	Increased team approach to safety	Managerial commitment impacted 35% on employee safe behavior.	ASSE-0307-013. Cooper, M.D. (2006). The Impact of Management's Commitment on Employee Behavior: A field Study. ASSE- MEC 7 <sup>th</sup> Professional Development Conference & Exhibition, Kingdom of Bahrain, March 18- 22. <a href="http://www.behavioural-safety.com/articles/Impact_of_Management_Commitment.pdf">http://www.behavioural-safety.com/articles/Impact_of_Management_Commitment.pdf</a>
	# of Weekly Feedback Meeting		All employees proactively contribute to safety management	Huntsman Petrochemicals <a href="http://www.hse.gov.uk/business/casestudy/huntsman.htm">http://www.hse.gov.uk/business/casestudy/huntsman.htm</a>
	% Safe Score	Improved overall safety awareness	Employee's perceptions of safety showed positive statistically significant changes over a 12-month period of implementing BBS.	Cooper, M. D., & Phillips, R.A. (2004). Exploratory analysis of the safety climate and safety behavior relationship. <i>Journal of Safety Research</i> , 35(5), 497-512. <a href="http://www.behavioural-safety.com/articles/Exploratory_analysis_of_the_safety_climate_and_safety_behavior_relationship.pdf">http://www.behavioural-safety.com/articles/Exploratory_analysis_of_the_safety_climate_and_safety_behavior_relationship.pdf</a>
			Improved awareness of the influence of behavior on individual's safety	Huntsman Petrochemicals <a href="http://www.hse.gov.uk/business/casestudy/huntsman.htm">http://www.hse.gov.uk/business/casestudy/huntsman.htm</a>
	% Safe	Improvement in safety behavior	Data collected over 70 weeks shows safety behavior improved by 45%	Cooper, M.D. (2006). 'Exploratory analysis of the effects of managerial support and feedback consequences on behavioral safety maintenance', <i>Journal of Organizational Behavior Management</i> , 26(3),1-41. <a href="http://www.behavioral-safety.com/articles/managerial_support_and_feedback_consequences_on_behavioral_safety_maintenance.pdf">http://www.behavioral-safety.com/articles/managerial_support_and_feedback_consequences_on_behavioral_safety_maintenance.pdf</a>
	TRIR, DART, LTIR, TIR	Reduction of Injury	1st 12 months, injuries reduced 24.75%, 2nd 12 months, injuries reduced 25%	
	# of Incidents And Near-Misses Reported	Increased incident and near-miss reporting	In terms of reported accidents (minor and major), there was a slight increase in phase 2 (from 63-69), but reductions in phase 3 (n=57) and again in phase 4 (n=46).	Cooper, M. D., & Phillips, R.A. (2004). Exploratory analysis of the safety climate and safety behavior relationship. <i>Journal of Safety Research</i> , 35(5), 497-512. <a href="http://www.behavioural-safety.com/articles/Exploratory_analysis_of_the_safety_climate_and_safety_behavior_relationship.pdf">http://www.behavioural-safety.com/articles/Exploratory_analysis_of_the_safety_climate_and_safety_behavior_relationship.pdf</a>



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BBS Process Element	KPI	Business Benefit	Documented Hard Data Results	Source
Observation Process (cont.)	Weekly Feedback Meetings, & Corrective Action Rate	Identify unsafe conditions in real time	Significant reductions in operating costs as workers identify and rectify plant problems themselves	Huntsman Petrochemicals <a href="http://www.hse.gov.uk/business/casestudy/huntsman.htm">http://www.hse.gov.uk/business/casestudy/huntsman.htm</a>
	# of Safe Behaviors Recorded & % Safe Progress Chart	Increase in productivity	Process plant availability increased by 5%	Huntsman's Quarries Ltd, <a href="http://www.hse.gov.uk/business/casestudy/huntsmans.htm">http://www.hse.gov.uk/business/casestudy/huntsmans.htm</a>
	# of Safe Behaviors Recorded	Increase workforce standards and performance	Many of the observers have increased communication and IT skills, and higher self-esteem/ confidence	Chep UK <a href="http://www.hse.gov.uk/business/casestudy/chep.htm">http://www.hse.gov.uk/business/casestudy/chep.htm</a>
Observation Contact Rate	# of Observations Required/ Completed	Accountability measures to ensure participation	Observation frequency is important in behavioral safety processes as it creates more reliable % safe scores, it is easier to account for variations in performance, it provides greater opportunity for feedback at the point of observation, and it changes the behavior of the observer	Cooper, M.D. (2006). 'Exploratory analysis of the effects of managerial support and feedback consequences on behavioral safety maintenance', <i>Journal of Organizational Behavior Management</i> , 26(3),1-41. <a href="http://www.behavioral-safety.com/articles/managerial_support_and_feedback_consequences_on_behavioral_safety_maintenance.pdf">http://www.behavioral-safety.com/articles/managerial_support_and_feedback_consequences_on_behavioral_safety_maintenance.pdf</a>
Feedback Meetings	# of Weekly Feedback Meeting	Identification of issues and solutions	Increased ownership of health and safety issues and finding solutions through on-the-floor staff	Huntsman Petrochemicals <a href="http://www.hse.gov.uk/business/casestudy/huntsman.htm">http://www.hse.gov.uk/business/casestudy/huntsman.htm</a>
Verbal Feedback	TRIR, DART, LTIR, TIR	Reduction of Injury	Observers provide verbal feedback at the point of observation to facilitate corrective actions. Research indicates 50-75% reductions in injuries are possible within a relative short period of time	Cooper, M.D., Phillips, R.A., Sutherland, V.J & Makin, P.J. (1994) 'Reducing Accidents with Goal-setting & Feedback: A field study'. <i>Journal of Occupational and Organizational Psychology</i> , 67, 219-240. <a href="http://www.behavioural-safety.com/articles/reducing_accidents_with_goal-setting_and_feedback.pdf">http://www.behavioural-safety.com/articles/reducing_accidents_with_goal-setting_and_feedback.pdf</a>
# of Observers Trained	# of Observers Trained	Increased Safety Awareness	Improved awareness of the influence of behavior on individual's safety	Huntsman Petrochemicals <a href="http://www.hse.gov.uk/business/casestudy/huntsman.htm">http://www.hse.gov.uk/business/casestudy/huntsman.htm</a>



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BBS Process Element	KPI	Business Benefit	Documented Hard Data Results	Source
Visible Leadership BBS	# of Managers Trained	Increase in employee morale and respect	Managerial commitment impacted 35% on employee safe behavior.	ASSE-0307-013. Cooper, M.D. (2006). The Impact of Management's Commitment on Employee Behavior: A field Study. ASSE- MEC 7 <sup>th</sup> Professional Development Conference & Exhibition, Kingdom of Bahrain, March 18- 22. <a href="http://www.behavioural-safety.com/articles/Impact_of_Management_Commitment.pdf">http://www.behavioural-safety.com/articles/Impact_of_Management_Commitment.pdf</a>
	Corrective Action Rate	Increased completion of corrective actions	Improved workforce safety behavior by around 21.5%	Cooper, M.D. (2010). Safety Leadership In Construction: A Case Study. <i>Italian Journal of Occupational Medicine and Ergonomics: Suppl. A Psychology</i> , 32(1), pp A18-A23 <a href="http://www.Behavioral-safety.com/articles/Safety_Leadership_in_Construction.pdf">http://www.Behavioral-safety.com/articles/Safety_Leadership_in_Construction.pdf</a>
	% Senior, Mid, Frontline Management Support	Increased management involvement in safety	Management's commitment to the behavioral safety process accounted for approximately 31% of the variance in the observed % safe score.	Cooper, M.D. (2006). 'Exploratory analysis of the effects of managerial support and feedback consequences on behavioral safety maintenance', <i>Journal of Organizational Behavior Management</i> , 26(3),1-41. <a href="http://www.behavioral-safety.com/articles/managerial_support_and_feedback_consequences_on_behavioral_safety_maintenance.pdf">http://www.behavioral-safety.com/articles/managerial_support_and_feedback_consequences_on_behavioral_safety_maintenance.pdf</a>
Visible Leadership PEER®	% Participation Rate	Increased management involvement in safety	Managerial commitment impacted 35% on employee safe behavior.	ASSE-0307-013. Cooper, M.D. (2006). The Impact of Management's Commitment on Employee Behavior: A field Study. ASSE- MEC 7 <sup>th</sup> Professional Development Conference & Exhibition, Kingdom of Bahrain, March 18- 22. <a href="http://www.behavioural-safety.com/articles/Impact_of_Management_Commitment.pdf">http://www.behavioural-safety.com/articles/Impact_of_Management_Commitment.pdf</a>



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BBS Process Outcomes	KPI	Business Benefit	Documented Hard Data Results	Link to source
Injury Reduction	TRIR, DART, LTIR, TIR	Reduction of recordable, reportable, LTIs, restricted duty or transfer, first aid	50-75% reductions in injury rates are possible within a relatively short period with the impact lasting for many years	Cooper, M.D., Phillips, R.A., Sutherland, V.J & Makin, P.J. (1994) 'Reducing Accidents with Goal-setting & Feedback: A field study'. <i>Journal of Occupational and Organizational Psychology</i> , 67, 219-240. <a href="http://www.behavioral-safety.com/articles/reducing_accidents_with_goal-setting_and_feedback.pdf">http://www.behavioral-safety.com/articles/reducing_accidents_with_goal-setting_and_feedback.pdf</a>
			No OSHA (Occupational Safety and Health Administration) recordable injuries over the last 18 months	Huntsman Petrochemicals <a href="http://www.hse.gov.uk/business/casestudy/huntsman.htm">http://www.hse.gov.uk/business/casestudy/huntsman.htm</a>
			OSHA recordable injury rate falling from around 3 per 200,000 hours worked in 1997/8 to zero in 2002/3	Huntsman Petrochemicals <a href="http://www.hse.gov.uk/business/casestudy/huntsman.htm">http://www.hse.gov.uk/business/casestudy/huntsman.htm</a>
			Behavioral safety programs can reduce injury rates by more than 30% on average in the first year and by more than 90% by their eighth year.	Behavioral Safety Programs Help Employers Cut Workers Comp Costs, <a href="http://www.businessinsurance.com/article/20130310/NEWS08/303109964#full_story">http://www.businessinsurance.com/article/20130310/NEWS08/303109964#full_story</a>
			Chep UK improved productivity – helped by a reduction in the number of work days lost through injury falling from 550 in 1999 to 301 in 2003. Lost time incident rate fell from around 44 per 1,000,000 hours worked in 1999 to 11.8 in 2003. The savings from such improvements are around £285,000 per year (savings in lost staff time, production interruptions, civil claims, non-RIDDOR accidents averted etc.)	Chep UK <a href="http://www.hse.gov.uk/business/casestudy/chep.htm">http://www.hse.gov.uk/business/casestudy/chep.htm</a>
			"Good Safety is Good Business". In 1990, the CBI estimated that each accident, whether investigated or not, costs £1500	Safety & The Bottom Line: Proving The Financial Benefits Of Your Safety Initiatives <a href="http://www.behavioral-safety.com/articles/safety_and_the_bottom_line.pdf">http://www.behavioral-safety.com/articles/safety_and_the_bottom_line.pdf</a>



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Injury Reduction (cont.)	TRIR, DART, LTIR, TIR	Reduction of recordable, reportable, LTIs, restricted duty or transfer, first aid	The HSE estimates that for small businesses the ratio of insured to uninsured costs is between 1:2-36, but the average uninsured losses are about 10 times the amount paid in insurance premiums. Thus, for every £1 recovered from insurance, your company is absorbing an average £10 which can only come off your profits.	Safety & The Bottom Line: Proving The Financial Benefits Of Your Safety Initiatives <a href="http://www.behavioral-safety.com/articles/safety_and_the_bottom_line.pdf">http://www.behavioral-safety.com/articles/safety_and_the_bottom_line.pdf</a>
Insurance Cost Reduction	Reduction In Insurance Premiums	Cost Reduction in Insurance Premiums	B-SAFE has contributed to a 32% reduction in Huntsman's 2003 insurance premiums	Huntsman Petrochemicals <a href="http://www.hse.gov.uk/business/casestudy/huntsman.htm">http://www.hse.gov.uk/business/casestudy/huntsman.htm</a>
			A case study by DuPont showed the department's workers comp claims decreased 25% in the program's first year.	Behavioral Safety Programs Help Employers Cut Workers Comp Costs, <a href="http://www.businessinsurance.com/article/20130310/NEWS08/303109964#full_story">http://www.businessinsurance.com/article/20130310/NEWS08/303109964#full_story</a>
Return on Investment	# of Requested Public Disseminations	Increase in client sales and leads	Improved public image – Chep UK observers and managers have made presentations at a number of prestigious Behavioral Safety conferences	Chep UK <a href="http://www.hse.gov.uk/business/casestudy/chep.htm">http://www.hse.gov.uk/business/casestudy/chep.htm</a>



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Return on Investment (cont.)	Reduced Operating Costs	Increased Profit Margin	£250,000 per year saving in steam leaks through identifying and making repairs. This reduction in energy consumption directly reduces taxes incurred via the Climate Change Levy	Huntsman Petrochemicals <a href="http://www.hse.gov.uk/business/casestudy/huntsman.htm">http://www.hse.gov.uk/business/casestudy/huntsman.htm</a>
	Annual Cost Savings	Return on Investment	The operations manager's conservative estimate of savings on utility losses is £250,000 a year. B-SAFE helped control steam leaks, saving around 5te/hour of steam. The savings in utilities, combined with the £multi thousand saving in insurance premiums more than offset the annual cost of B-SAFE.	Huntsman Petrochemicals <a href="http://www.hse.gov.uk/business/casestudy/huntsman.htm">http://www.hse.gov.uk/business/casestudy/huntsman.htm</a>
			Some indicate the process pays for itself, while others suggest a ROI of 281% resulting from reductions in incidents, insurance premiums and workers' compensation.	Cooper, M.D. (2010). The Return on Investment of Behavior-Based Safety Processes. <i>Italian Journal of Occupational Medicine and Ergonomics: Suppl. A Psychology</i> , 32(1), pp A15-A17, <a href="http://www.behavioral-safety.com/articles/Return_on_Investment_of_behavior_based_safety.pdf">http://www.behavioral-safety.com/articles/Return_on_Investment_of_behavior_based_safety.pdf</a>
			Good safety and health programs can save \$4 to \$6 for every \$1 invested. That's because injuries and illnesses decline. Workers' compensation costs go down. Medical costs decrease. There are other, less quantifiable benefits as well - reduced absenteeism, lower turnover, higher productivity and increased morale.	OSHA - Safety Pays <a href="https://www.osha.gov/Region7/fallprotection/safetypays.html">https://www.osha.gov/Region7/fallprotection/safetypays.html</a>
			Over 60 percent of those surveyed report that each \$1 invested in injury prevention returns \$2 or more	Liberty Mutual Press Release <a href="http://www.libertymutualgroup.com/omapps/ContentServer?cid=1138358195557&amp;pagename=LMGroup/Views/ImgView98&amp;kw=false&amp;c=cms_asset">http://www.libertymutualgroup.com/omapps/ContentServer?cid=1138358195557&amp;pagename=LMGroup/Views/ImgView98&amp;kw=false&amp;c=cms_asset</a>



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Return on Investment (cont.)	Annual Cost Savings	Return on Investment	<p>Those Behavioral Safety processes adopting a workgroup approach, daily observations, multiple feedback channels and participative goals provide an average RoI of \$1.6 million per 100 employees.</p> <p>The combination with the most significant losses (\$2 million plus) are those using 1-on-1, peer-to-peer observations with a minimal contact rate of less than once per week, and using only 1 or 2 feedback channels.</p> <p>According to results of a survey of 1440 companies, around 50% of all BBS processes use this loss producing combination.</p>	<p>Cooper, M.D. (2010). The Return on Investment of Behavior-Based Safety Processes. <i>Italian Journal of Occupational Medicine and Ergonomics: Suppl. A Psychology</i>, 32(1), pp A15-A17, <a href="http://www.behavioral-safety.com/articles/Return_on_Investment_of_behavior_based_safety.pdf">http://www.behavioral-safety.com/articles/Return_on_Investment_of_behavior_based_safety.pdf</a></p> <p><a href="http://www.behavioural-safety.com/free-behavioral-safety-resource-center/about-behavioral-safety/latest-bbs-survey-results">http://www.behavioural-safety.com/free-behavioral-safety-resource-center/about-behavioral-safety/latest-bbs-survey-results</a></p>
Operating Cost Reduction	Reduced Operating Costs	Reduction of associated costs: lost time, damage or loss of production and raw materials, overtime, temp labor, production delays, investigation time, legal fees, loss of business reputation	<p>Reduced accidents per employee by 50% and for 18 months eliminated any RIDDOR reportable accidents achieving a 100% improvement.</p> <p>Reduced employers' and public liability insurance costs by 30%.</p>	<p>Huntsman's Quarries Ltd, <a href="http://www.hse.gov.uk/business/casestudy/huntsmans.htm">http://www.hse.gov.uk/business/casestudy/huntsmans.htm</a></p>

Behavior-Based Safety processes can significantly improve a company's financial performance by reducing incident costs, insurance premiums and operating costs. Should you need assistance or wish to discuss how Behavior-Based Safety can increase your profit margins, please contact us at 1 (317) 736 8980 or email [info@bsms-inc.com](mailto:info@bsms-inc.com).