About Blackline GPS & me

- Chief Technology Officer

- Co-founded Blackline GPS in 2004

- First employee safety monitoring products launched in 2008

blacklinegps

Questions for you to consider

- Have you wondered if you were going to return home from work?

- Do you consider yourself a lone worker?

- How long would it take for your company to find you?

- Does your company do everything it can to protect employees working alone?

blacklinegps

Work alone safety survey results

- Survey results from Orange in the UK:

  - Nearly half of people consider themselves a lone worker

  - Nearly 80% of lone workers spend half of their time away from the office

  - Over 60% feel negative regarding their company's response time capability

  - Nearly half believe their employer can do more regarding work alone safety

orange™

blacklinegps™

100+ years of safety profession

blacklinegps

Canada's safety roots

- Trans Canada railroad construction, 1880s

What is modern safety?

- Personal Protective Equipment

- Safety Policies

- Safe Work Practices

- Hazard Mitigation

- Employee Training

blacklinegps

What's progress have we made?
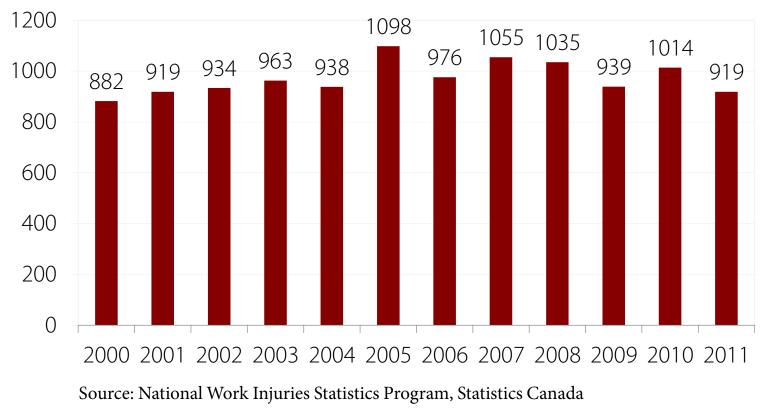
Work-related Injuries, Canada, per 1000 employees

Source: National Work Injuries Statistics Program, Statistics Canada

blacklinegps

What's progress have we made?

Fatalities in Canada

Year	Fatalities
2000	882
2001	919
2002	934
2003	963
2004	938
2005	1098
2006	976
2007	1055
2008	1035
2009	939
2010	1014
2011	919

Source: National Work Injuries Statistics Program, Statistics Canada

blacklinegps™

US fatal injury categories

- Transportation incidents: 39%

- Assaults and violent acts: 18%

- Contact with objects and equipment: 16%

- Falls: 14%

- Exposure to harmful substances or environments: 9%

- Fires and explosions: 4%

U.S. Bureau of Labor Statistics, 2011

What can industry do?

- Improve:
  - Personal Protective Equipment
  - Safety Policies
  - Safe Work Practices
 - Hazard Mitigation
  - Employee Training
  - Oversight, auditing, & continuous improvement
- Is this enough?

blacklinegps

Where will statistics trend?

- What can industry achieve in the next 5, 10, 20 years?

- Accidents, health incidents, and assaults will still occur

- Is the next best solution improvement on detection & response?

Viable options?

- Employers can:
  - Use buddy systems
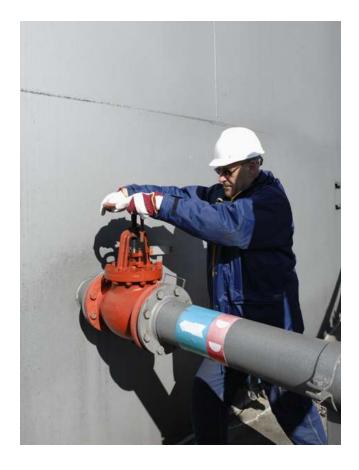 - Use check-in systems
- What else is possible?

blacklinegps

Who is most at risk?

- Employees working alone

- Employees predisposed to health concerns

- Employees working in high risk environments

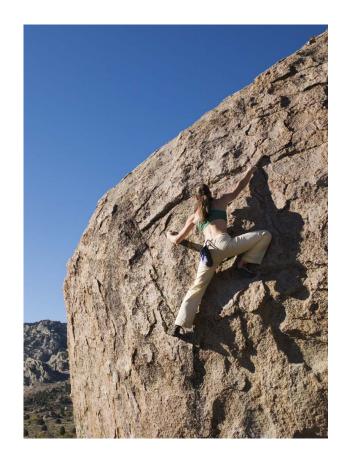**blacklinegps**

What is a Lone Worker?

- An employee working beyond sight and sound of others

blacklinegps

What are the challenges?

- If an incident occurs how does an employer know to act?

- How long does it take to discover the incident?

- Who is nearby to assist?

blacklinegps™

What can happen to employees?

- Injuries
- Health incidents
- Assaults

WORK INJURY CLAIM FORM

What area of the worksite were you working in when you were injured?

blacklinegps

Let's talk about health incidents

- Can employers help to prevent health incidents?

- Aging workforce

- Decreased overall social health and wellness

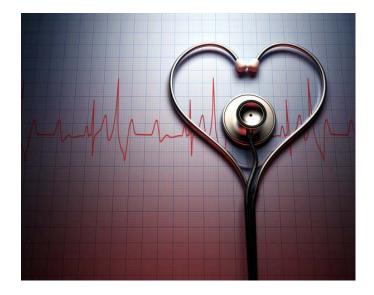- Diabetes, stroke, heart attack, & cardiac arrest

blacklinegps™

Heart attacks - Canada

- There's one heart attack every 7 minutes

  - 16,000 people die from heart attacks every year

  - Most outside a clinical setting

blacklinegps

Cardiac arrest - Canada

- There's one cardiac arrest every 12 minutes

  - Survival rate drops 10% for every 1 minute of no defibrillation when out of a clinical setting

  - CPR + AED may increase survival to 75%

- Fast action saves lives!

blacklinegps™

Incidents in the news

- "Staffer dies at oil-sands project site"

- "Oil staffer found dead next to overturned ATV"

- "Accident at well in Colorado kills one worker, injuries three"

- "Worker Killed in Accident at Refinery in Port Arthur, Texas"

blacklinegps

Legislation

- Two primary components:
  - Work alone regulations
  - Corporate liability
- Canada, the United Kingdom, France, Spain, and Germany have work alone regulations
- No work alone legislation in the United States

blacklinegps

Alberta – Part 28, OHS code

- An employer must, for any worker working alone, provide an effective communication system consisting of

  - (a) radio communication,

  - (b) landline or cellular telephone communication, or

  - (c) some other effective means of electronic communication

- that includes regular contact by the employer or designate at intervals appropriate to the nature of the hazard associated with the worker's work.

blacklinegps™

What about OSHA in the United States?

- "There is no general OSHA Standard that deals with the situation of an employee 'working alone' except in specific situations such as emergency response, interior structural firefighting, or working in permit required confined spaces."

Richard Fairfax, Director of Enforcement Programs, OSHA, Feb 22, 1999

OSHA®

blacklinegps™
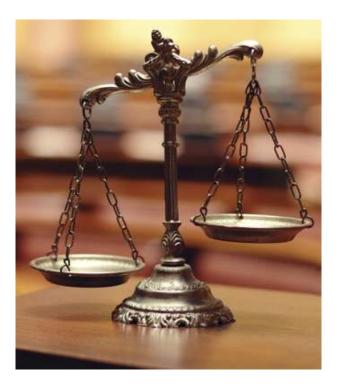
Corporate liability, Canada

- Bill C-45 – the Westray Bill

- Legal duty for all persons "directing the work of others" to take reasonable steps to ensure the safety of workers and the public.

- Affects all organizations types, federal, provincial, and municipal

- Executives can be charged criminally

blacklinegps

Bill C-45 violations

- Fines of up to $25,000 are possible against individuals

- Fines of up to $500,000 can be levied against companies
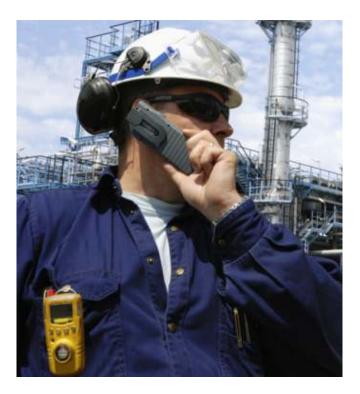
- Jail time – as much as a life sentence

blacklinegps

Injury and wrongful death lawsuits

- "$700,000.00 Recovery – Commercial Vehicle Accident / Work Injury (Fractured Pelvis, Other Internal Injuries)," Grossman Law Offices

- "Jury awards widow $3 million for wrongful death," Akron Beacon Journal, April 9, 2012

blacklinegps

How to comply with legislation?

- Buddy system – additional staff coverage where there's risk

- Periodic in-person check of personnel

- Periodic telephone radio or phone check-in system

- Automated, electronic monitoring

blacklinegps

We need to do more than regulations

- Make a difference!

- Don't just comply

- Being a better employer can help attract talent

blacklinegps

Traditional incident discovery

- ## No safety monitoring solution:
  - Someone notices that a coworker is missing

- ## Check-in System:
  - A coworker has not recently checked in

blacklinegps

What's the best an employer can do?

- When a safety or health incident occurs, employers must:
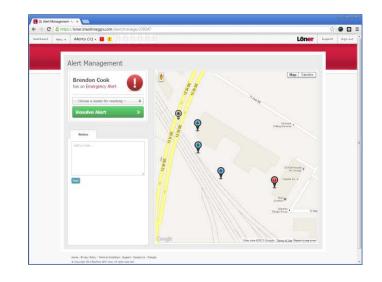 - Detect the event
  - Act immediately!

Real-time employee safety monitoring

- Not your daddy's safety monitoring!

  - Some industries use a 2-hour check-in

  - A lot can happen in 1 or 2 hours!

blacklinegps
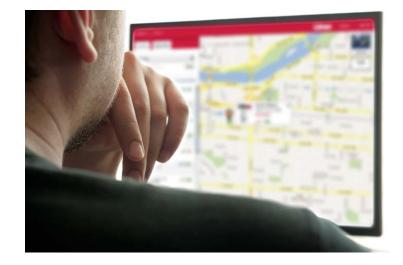
What is real-time monitoring?

- Person-worn technology used to:
  - Know near instantly that an incident has occurred
  - Know who is affected
  - Know where the employee is located
  - Know who is nearby

blacklinegps

A new best safety practice

- Complements other safety programs

- Does not prevent, but is triggered when incidents occur

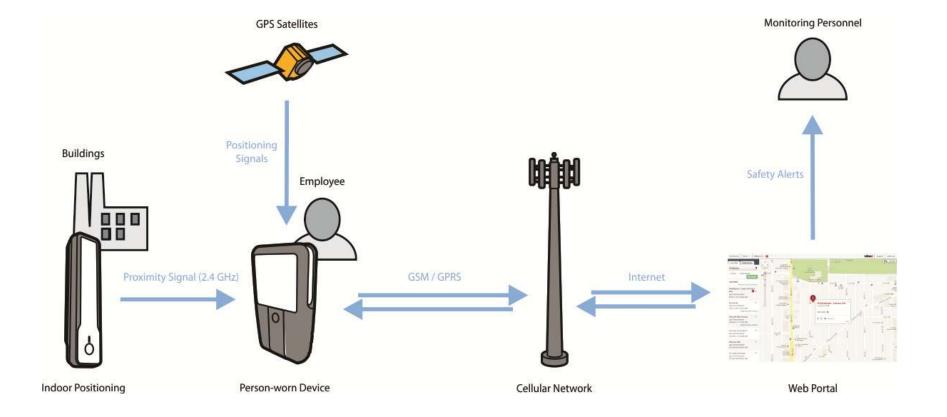- Delivers value when PPE, training, policies, and hazard mitigation have failed!

blacklinegps

What is the goal?

- Making a difference in the outcome of an employee – for the better!

blacklinegps

How real-time safety monitoring works

GPS Satellites

Monitoring Personnel

Buildings

Positioning Signals

Employee

Proximity Signal (2.4 GHz)

GSM / GPRS

Internet

Safety Alerts

Indoor Positioning

Person-worn Device

Cellular Network

Web Portal

blacklinegps

How are improved outcomes achieved?

- Instant alerting enables immediate response – not hours (or days) later

- Precise employee location empowers an efficient, pin-point emergency response

- Reduces response time

- Reduces the risk of further injury

- Utilizes nearby resources

blacklinegps

Where to start?

- Categorize employee roles and activities

- Perform a risk assessment

- Build safe work processes

- Build a work-alone policy

- Build a work-alone safety protocol for when incidents occur

blacklinegps

Consider available vendors

Globalstar   Delorme   Delorme   Sonim   SafetyLine

Guardly   GEOTrac   Grace Industries   Blackline GPS

blacklinegps

Consider your requirements

- Dedicated device or smartphone app?

- Are employees within cellular coverage?

- Is intrinsic safety certification required?

- Employees operate within facilities, outdoors, or both?

blacklinegps™

What features are needed?

- Automatic incident detection

- Manual incident request for help

- Positioning technologies – GPS or GPS+indoor

- Communications technology – cellular or satellite

- Monitoring toolsets and workflows

- Monitoring personnel – in-house or central monitoring

blacklinegps

Automatic safety monitoring features

- Fall detection
- No-motion detection
- Check-in detection

Manual safety monitoring features

- Emergency button or latch

- Silent emergency button

Communication technologies

- Cellular – robust
  - Excellent where networks are available
  - Affordable
- Satellite – can't communicate indoors
  - Requires a two-part solution for real-world operation
  - Expensive

blacklinegps

Positioning technologies
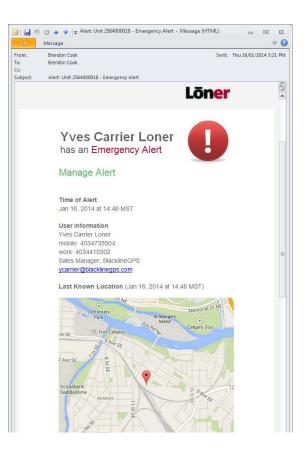
- Outdoor

  - GPS – very precise, poor indoors

  - Cellular - imprecise

- Indoor

  - Proprietary – precise, easy-to-install, cost-effective

  - Wi-Fi – precise, difficult-to-install, expensive

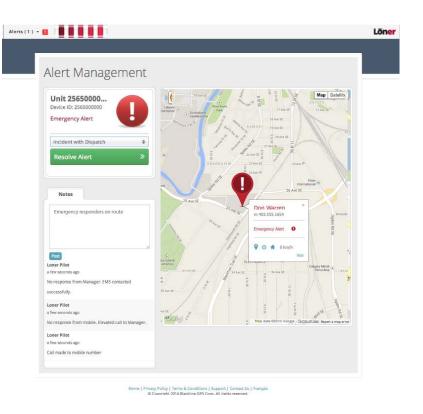**blacklinegps**

Safety alerting

- Alerts others via text message, email, web services

- Conveys incident awareness

- Empowers ownership of safety alerts

blacklinegps

Safety alert lifecycle management

- Comprehensive lifecycle management is crucial

- Acknowledgement of alert conveys ownership

- Safety protocol defines how to manage alerts

- Escalation process progressively includes others if employee not reached

- Alerts are resolved

Must be configurable & updateable

- Device settings must be configurable to accommodate all organizations from SMEs to multi-national enterprises

- Configurable alerting settings

- Over-the-air configurable

- Over-the-air firmware updates

blacklinegps™

Employee requirements

- **Employees must:**

  - Know when he / she is being monitored or not monitored

  - Be able to cancel pending alerts to reduce false alarms

  - Operate without distraction while driving

  - Operate without an impact upon their productivity
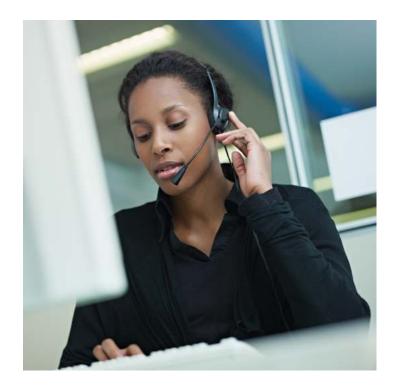

blacklinegps

Monitoring requirements

- Monitoring personnel must:

  - Know who is being monitored

  - Know when an alert occurs

  - Know who the workers are and how to reach them

  - Escalate calls based upon exception

  - Follow a pre-determined protocol upon receipt

  - Be available at all times

blacklinegps™

Monitoring responsibility

- Safety alert ownership is critical

- Internal monitoring by company personnel (supervisors, admin)

- Available 24/7 central monitoring increases overall quality

blacklinegps

Reporting

- Device use compliance

- Event reporting

- Time to acknowledge

- Time to resolve

- Incident reporting

blacklinegps™

Barriers to adoption

- No existing budget available

- Not all stakeholders bought in

- Too many other priorities and timing isn't right

- Appears complicated

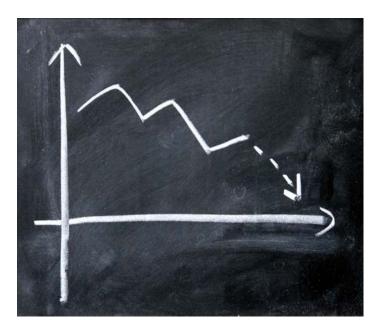- Change is difficult

blacklinegps

Real-time safety monitoring benefits

- Improved response time can improve outcomes

- Lost productivity returns

- Improved employee morale

- Improved awareness of safety at work

- Improved incident regulatory reporting

- Effective regulatory compliance

blacklinegps

Check-ins & productivity losses

5 check-ins/day
x 1 min/check-in
x 20 days/month
x $75/hour
_____

= $125 of lost productivity/month

- What about 3rd party call center costs for check-in systems?!

Compounding productivity losses

- Beyond individual employee productivity:

  - What about the impact of missed check-ins?

  - Employee are called out to find the individual

- What is the cost of multiple employees being called out to respond to false alarms?

blacklinegps

Additional benefit – fleet management

- Fleet tracking solutions are mature but can lack safety monitoring

- Safety monitoring systems can integrate with fleet tracking and in some cases replace them

- Organizations without fleet systems could help justify worker safety monitoring with additional fleet value

blacklinegps

Parting questions

- Safety is your company's top priority, correct?

- How does real-time employee safety monitoring fit within your organization?

Questions & answers

Thank you!

Brendon Cook

bcook@blacklinegps.com

www.linkedin.com/in/brendoncook

blacklinegps

Online resources

- Canadian work-alone legislation article, Gowlings, ASSE : http://www.ohslaw.ca/pdfs/NK%20article%20ASSE%20Feb%202011.pdf
- "Working alone: Make sure it's safe" JJ Keller's Safety Clicks
- Bureau of Labor Statistics, chart pack 2010, slide 4, fatal occupational injuries- http://www.bls.gov/iif/oshwc/cfoi/cfch0009.pdf
- OSHA provides for working alone in confided spaces: http://www.hg.org/workplace-safety-law.html
- General Working Conditions in Shipyard Employment - final rule, Section 1915.84: http://www.osha.gov/FedReg_osha_pdf/FED20110502.pdf
- NFPA 70E, Standard fro Electrical Safety in the Workplace, National Fire Protection Association
  http://www.nfpa.org/aboutthecodes/AboutTheCodes.asp?DocNum=70E&cookie_test=1
- A proposed rule for shipyard employment: https://www.federalregister.gov/articles/2007/12/20/E7-24073/general-working-conditions-in-shipyard-employment
- National Research Council Recommendations Concerning Chemical Hygiene in Laboratories (Non-Mandatory) - 1 (q) Working alone: Avoid working alone in a building; do not work alone in a laboratory if the procedures being conducted are hazardous (28). http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=standards&p_id=10107
- Automated External Defibrillators (AEDs), United States Department of Labor, http://www.osha.gov/SLTC/aed/index.html
- New York State Department of Transportation, Code: SB-00-6, Working in Proximity to Water, Procedures section, "Employees shall not work alone, where practical, in situations where a drowning hazard exists." https://www.dot.ny.gov/portal/page/portal/divisions/operating/employee-health-safety/repository/water.pdf?nd=nysdot
- American Water - (Using G4S solution) - http://www.waterworld.com/index/display/article-display/5433987013/articles/waterworld/water-utility_management/workforce-management/2012/february-2012/gps-device_monitors.html
- UCLA lab incident - http://viewer.zmags.com/publication/15af2966#/15af2966/1 , page 38
- New Zealand HSE 1992 Act - http://www.dol.govt.nz/workplace/knowledgebase/item/1374
- British Standard 8484 background: http://www.info4security.com/story.asp?sectioncode=10&storycode=4128169&c=1
- Orange UK lone worker statistics: http://business.orange.co.uk/documents/ice/business/orange_lone_worker_guide.pdf
- Safety Reminder for Real Estate Agents: Iowa REALTOR® Attacked While Showing Vacant Home: http://www.mymoby.com/safety/safety-reminder-for-real-estate-agents-iowa-realtor%C2%AE-attacked-while-showing-vacant-home/

blacklinegps