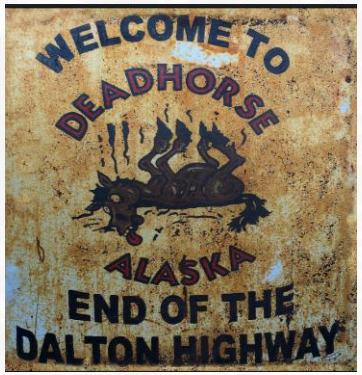
# Ensuring Lone Workers are safe in the field

Presented by: Amy McNaughton (Aion North Group)

# Who am I and where have I worked

- +10 years in exploration/operational mining
    - Rio Tinto
    - SSR Mining
    - Exxon
    - Goldcorp
- Worked on 3 continents
- Helicopter support remote drilling locations
- Managing camps of 75+ people
- Moved into HSE Software +10 years
- Focus on helping mining companies improve their tracking in a useable way for site personnel



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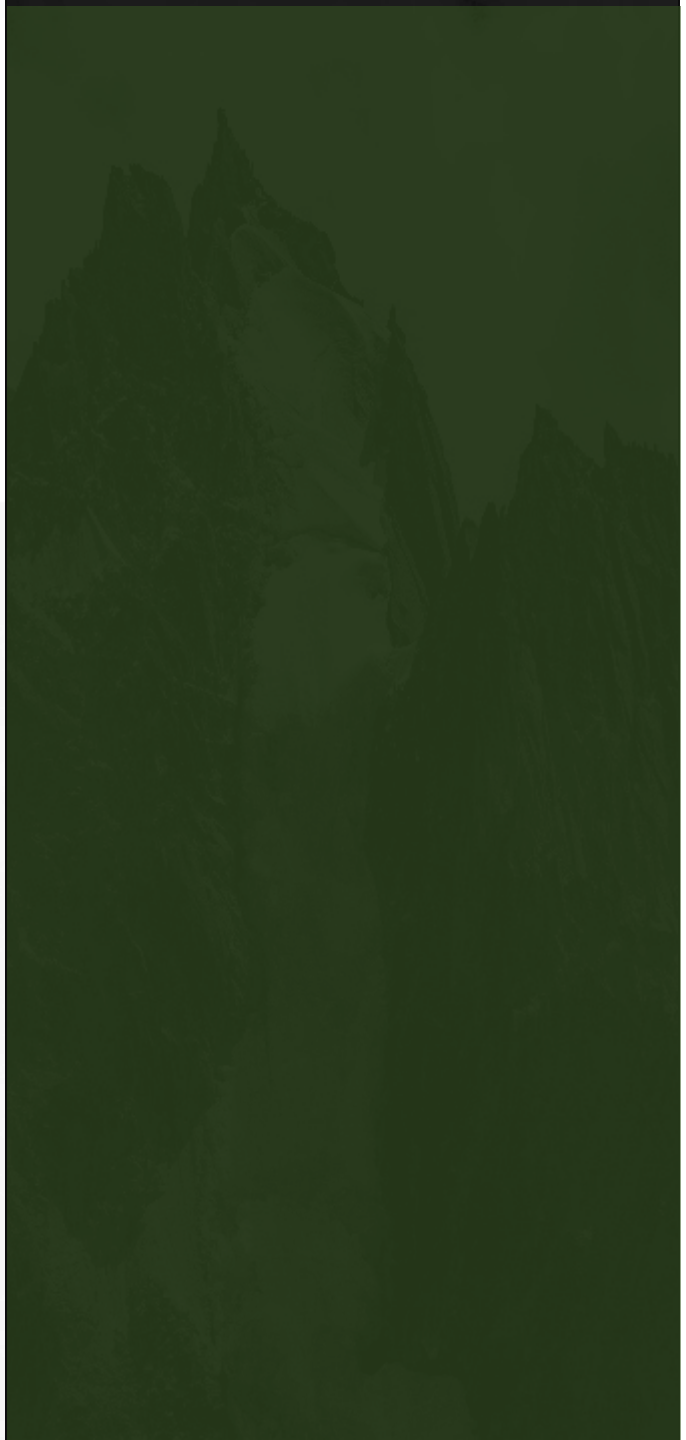
# Current Remote Worker Landscape

# The Current HSE Challenge for Lone Workers

- High-risk environments
- Remote and isolated workers
- Delays in incident reporting
- Reactive vs proactive safety models



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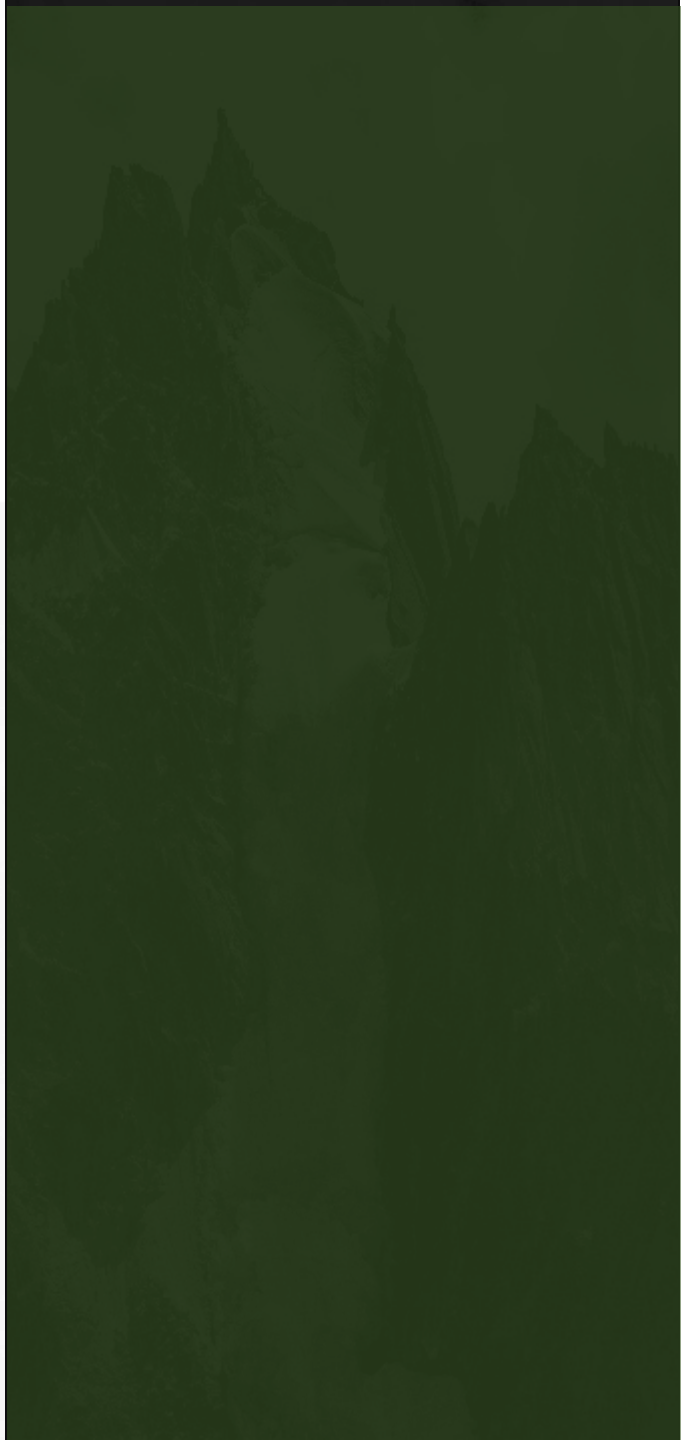
# Canada Mining Safety Overview

- Mining is consistently among the higher-risk sectors in Canada
- ~52 fatalities annually in mining, quarrying, and oil extraction (Canada-wide example year)
- Thousands of workers operate in remote and northern regions
- High exposure to:
  - Heavy equipment
  - Underground hazards
  - Isolated environments

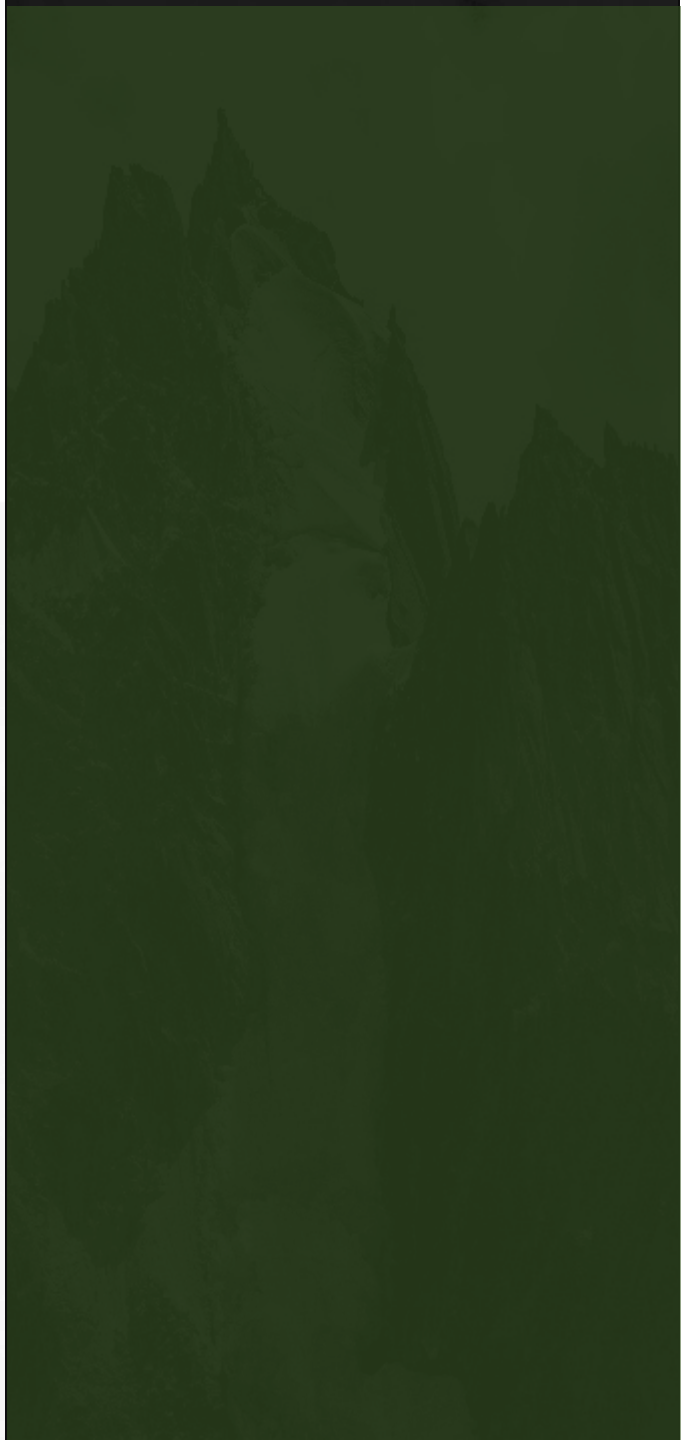
# Ontario Mining Incident Trends

- Fatalities (Ontario mining sector):
  - 1–3 per year (recent trend)
- Critical injuries increasing:
  - 36 → 102 annually (2019–2025 trend)
- Over 200 complaints reported annually
- Work refusals consistently recorded each year



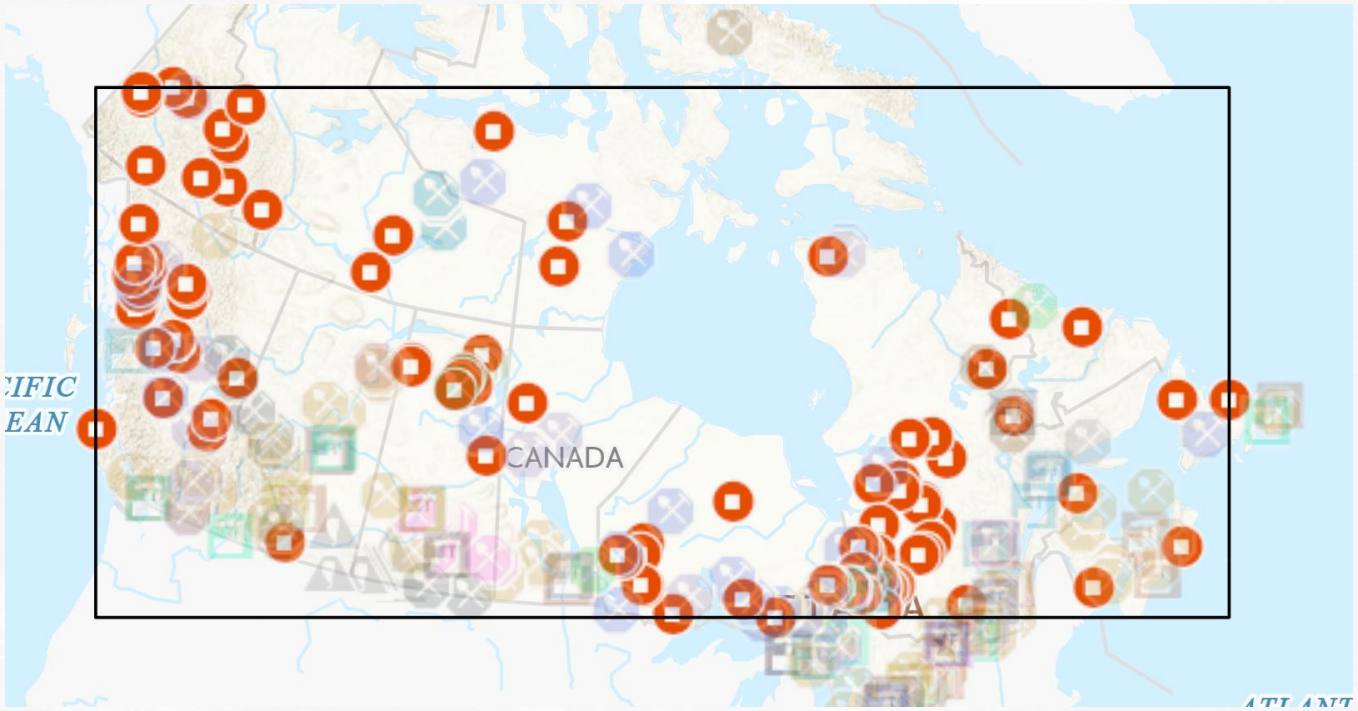
# Key Insight: Canada Mining + Lone Worker Risk

- Persistent fatalities despite safety improvements
- Rising critical injuries (Ontario trend)
- High proportion of incidents involve:
  - Equipment
  - Environment
  - Isolation
- Lack of real-time visibility remains a gap
- Strong need for:
  - Lone worker monitoring
  - Real-time alerts
  - Leading indicator tracking



# Why Leading Indicators Matter

- Lagging vs leading indicators
- Proactive vs reactive
- Examples: check-ins, hazards, fatigue



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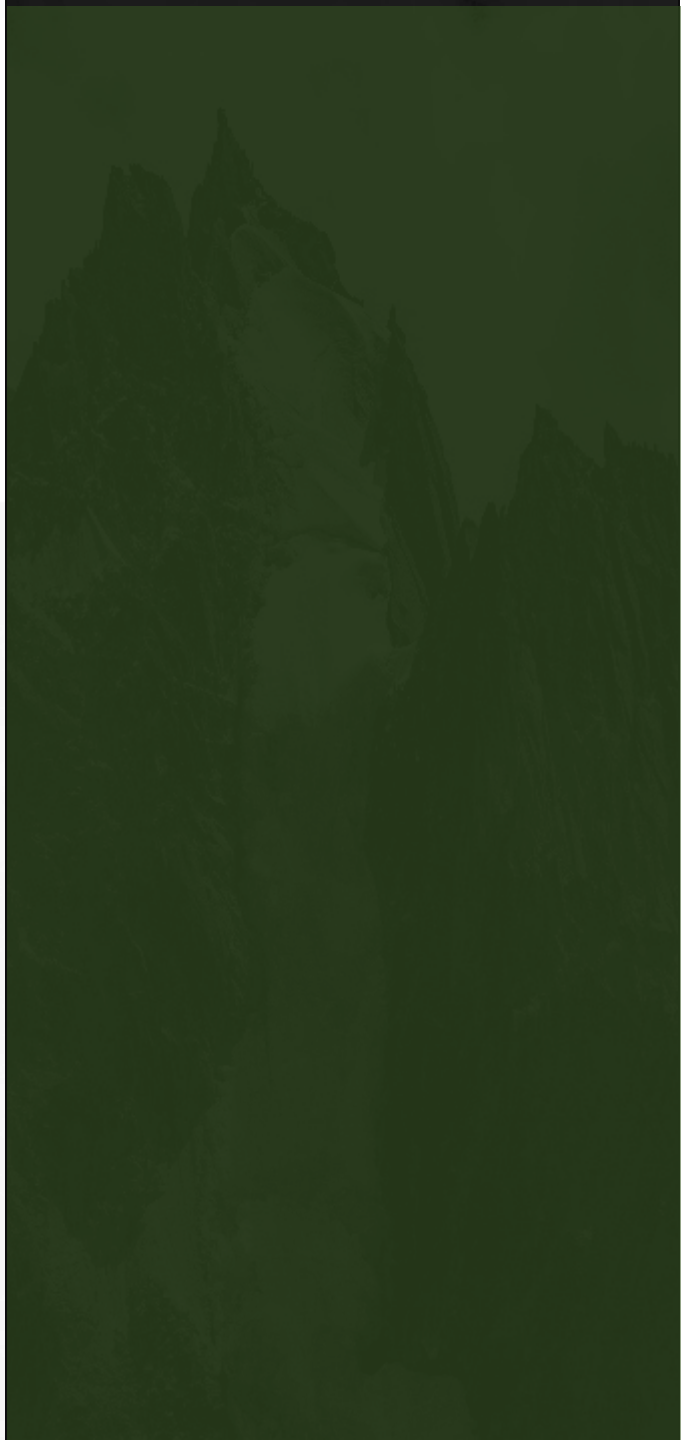
# Historical Trends

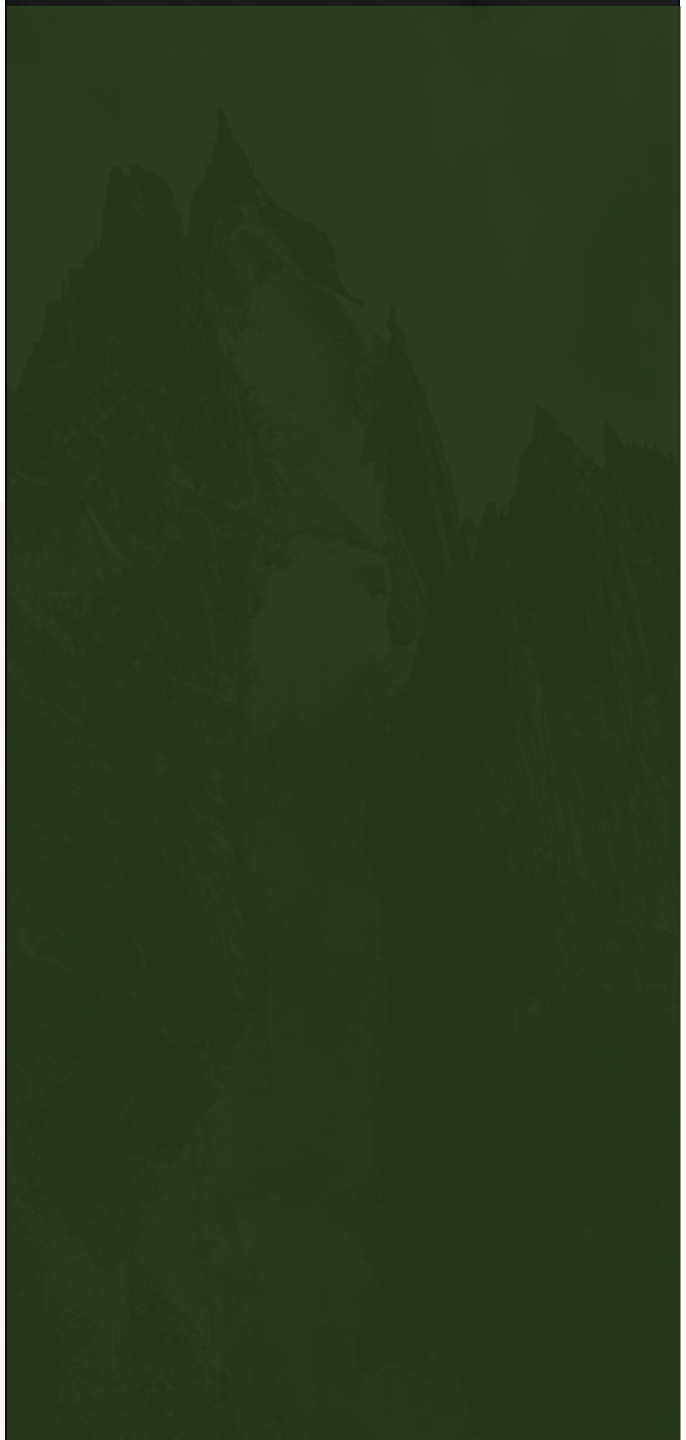
# 2005–2010: Manual & Reactive Tracking

- Paper logs and radio check-ins were primary tools
- Limited GPS adoption (high cost, low accessibility)
- Incident reporting delays: often hours to days
- <20% of field workers had connected mobile devices
- Safety visibility was largely supervisor-dependent



# 2010–2015: Early Digital & GPS Adoption

- Introduction of GPS tracking devices in vehicles and equipment
- Early mobile phones used for SMS-based check-ins
- Rise of “lone worker devices” (panic buttons)
- Smartphone adoption begins accelerating globally
- Still limited integration across systems

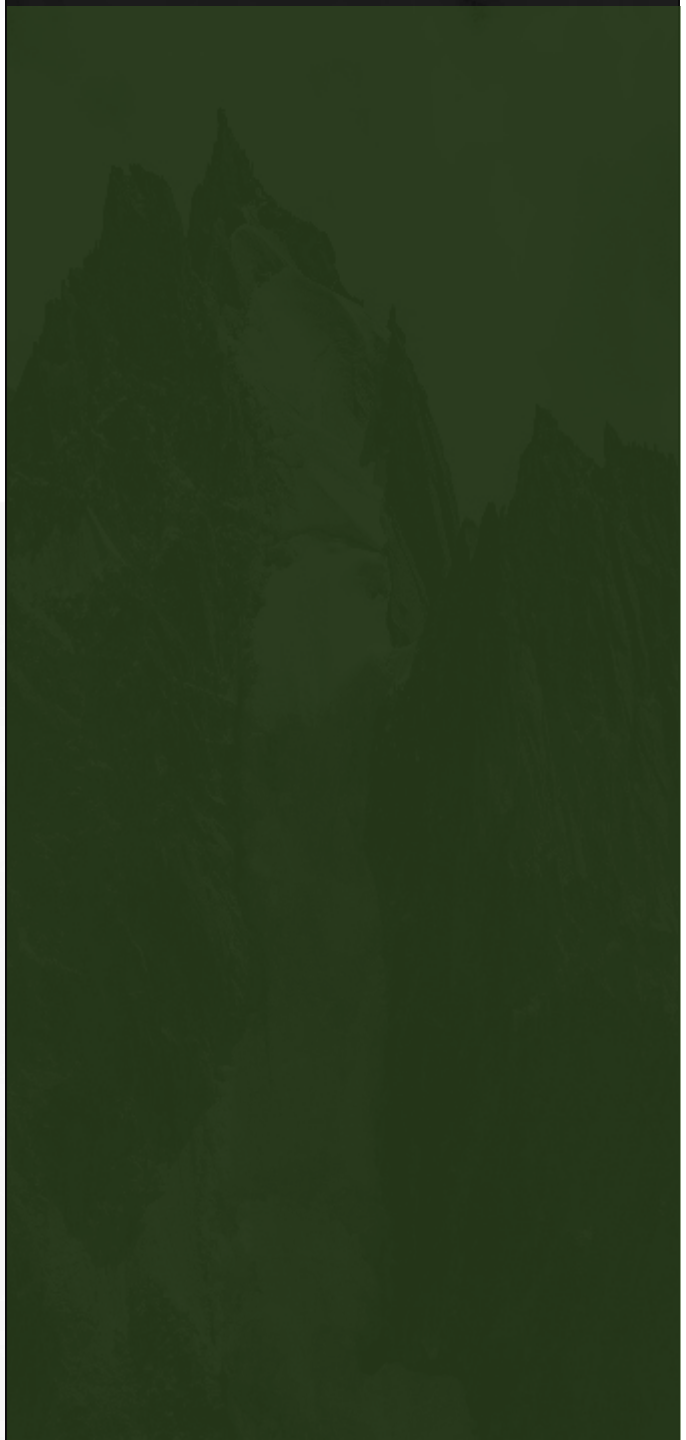


# 2015–2020: Mobile & Cloud Transformation

- Smartphone adoption exceeds ~70–80% in developed markets
- Cloud-based HSE platforms emerge
- Real-time reporting becomes possible
- BYOD (Bring Your Own Device) begins scaling
- ~44% of employees use personal phones for work

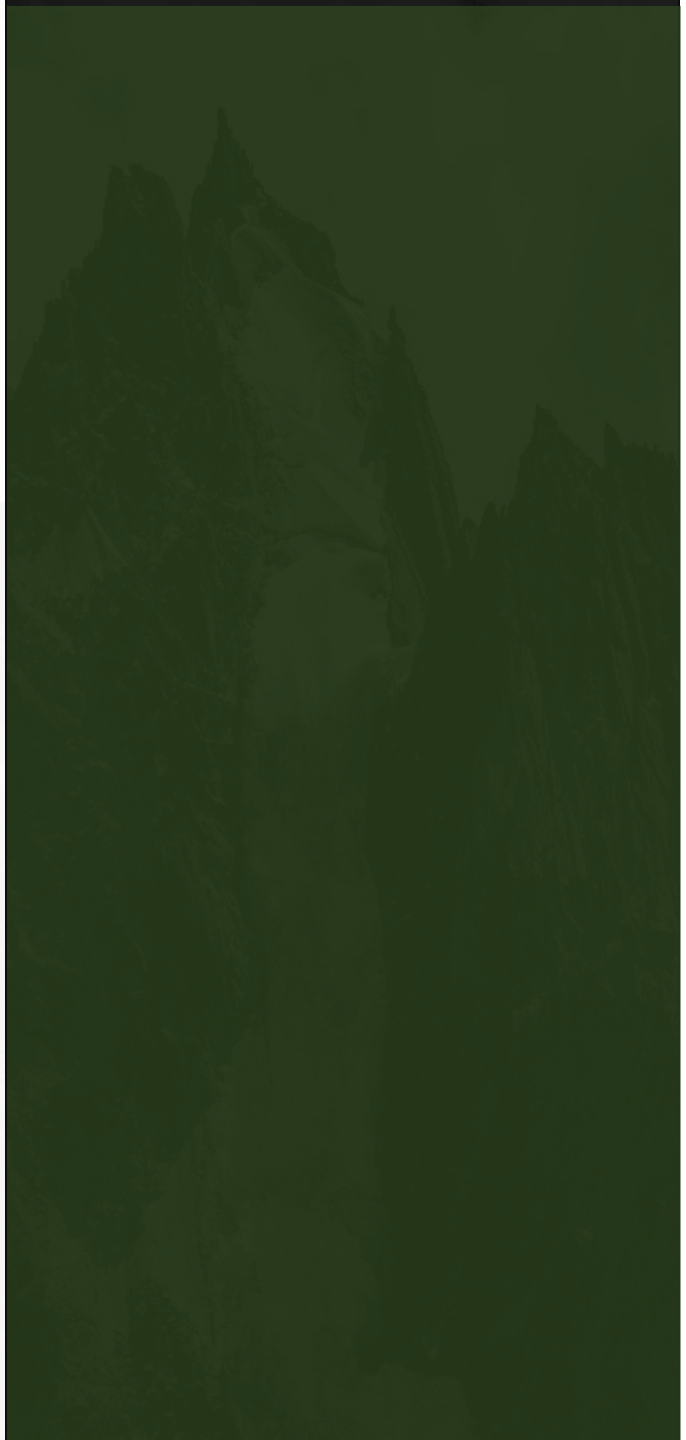
# 2020–2022: COVID Acceleration of Remote Monitoring

- Massive increase in remote work globally
- Rapid deployment of digital monitoring tools
- ~70% of employees report some form of electronic monitoring
- Increased use of:
  - Location tracking
  - Health monitoring
  - Digital check-ins
- Privacy concerns rise significantly



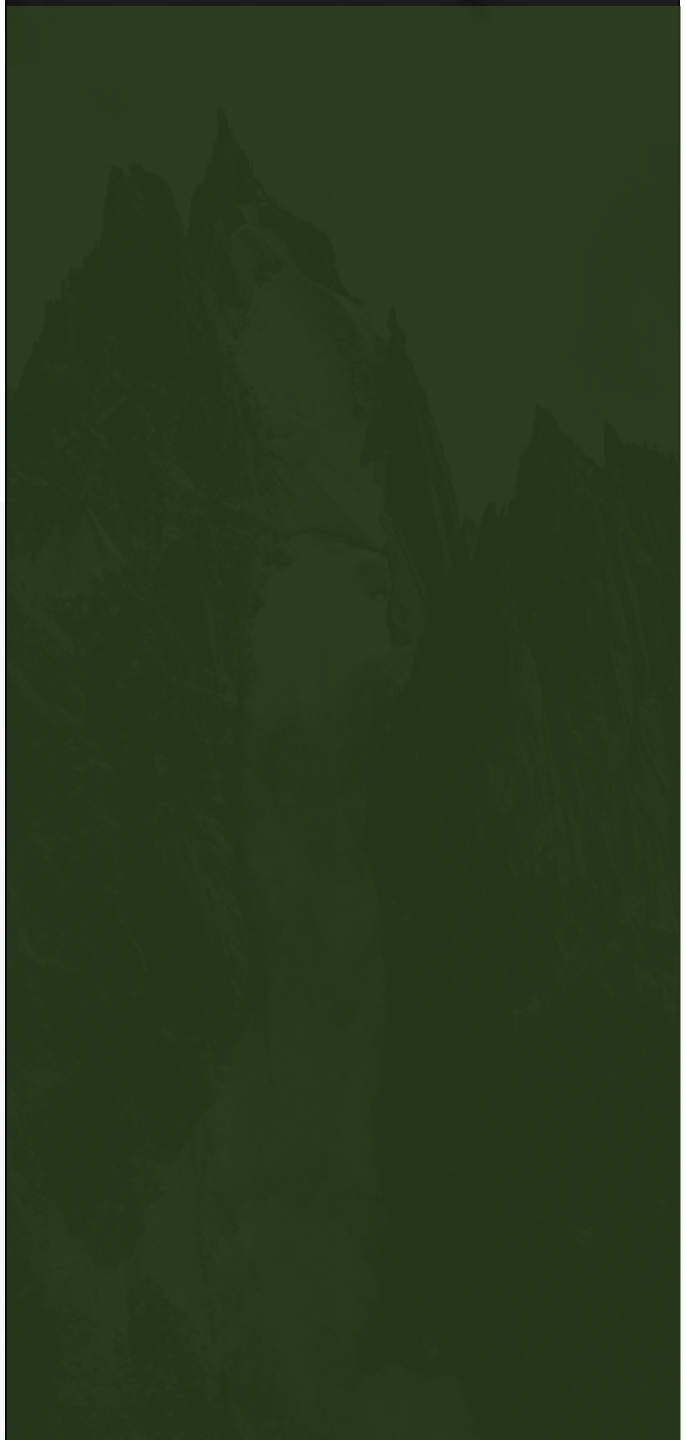
# 2022–Present: Connected Worker Ecosystems

- Integration of:
  - Mobile apps
  - Wearables
  - IoT sensors
  - Real-time location + condition monitoring
- Wearables track:
  - Movement
  - Fatigue
  - Environmental exposure
  - ~28% of workplaces report wearable usage among employees
  - Growth driven by Industry 4.0 technologies



# Key Shift: From Tracking → Predicting Risk

- Then:
  - “Where is the worker?”
- Now:
  - “Is the worker safe?”
  - “What risks are emerging?”
- Predictive analytics enabled by:
  - Real-time data
  - Behavior tracking
  - Environmental inputs
- Connected worker platforms provide decision support



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# Technology Advancements

# The Rise of Wearables in Safety

- Wearables support:
  - Monitoring
  - Tracking
  - Training
  - Hazard alerts
- Used across mining, construction, and manufacturing
- Over 700,000 nonfatal injuries annually in industrial sectors highlight need
- Devices becoming smaller, cheaper, and more scalable

*"Traditional safety measures, reliant on manual monitoring, often fall short of preventing such tragedies. However, wearable technology is transforming mine health and safety by offering proactive, real-time solutions. Additionally, compliance with regulatory frameworks such as MSHA (Mine Safety and Health Administration) is critical for mitigating risks."*

*www.healthtechzone.com*

# Reducing Risk Through Leading Indicators

- 1 serious incident often preceded by:
  - ~300 near misses
  - ~3,000 unsafe acts/conditions
- Early intervention reduces injury severity by up to 50%
- Increased reporting = improved safety culture
- Continuous feedback loop for improvement


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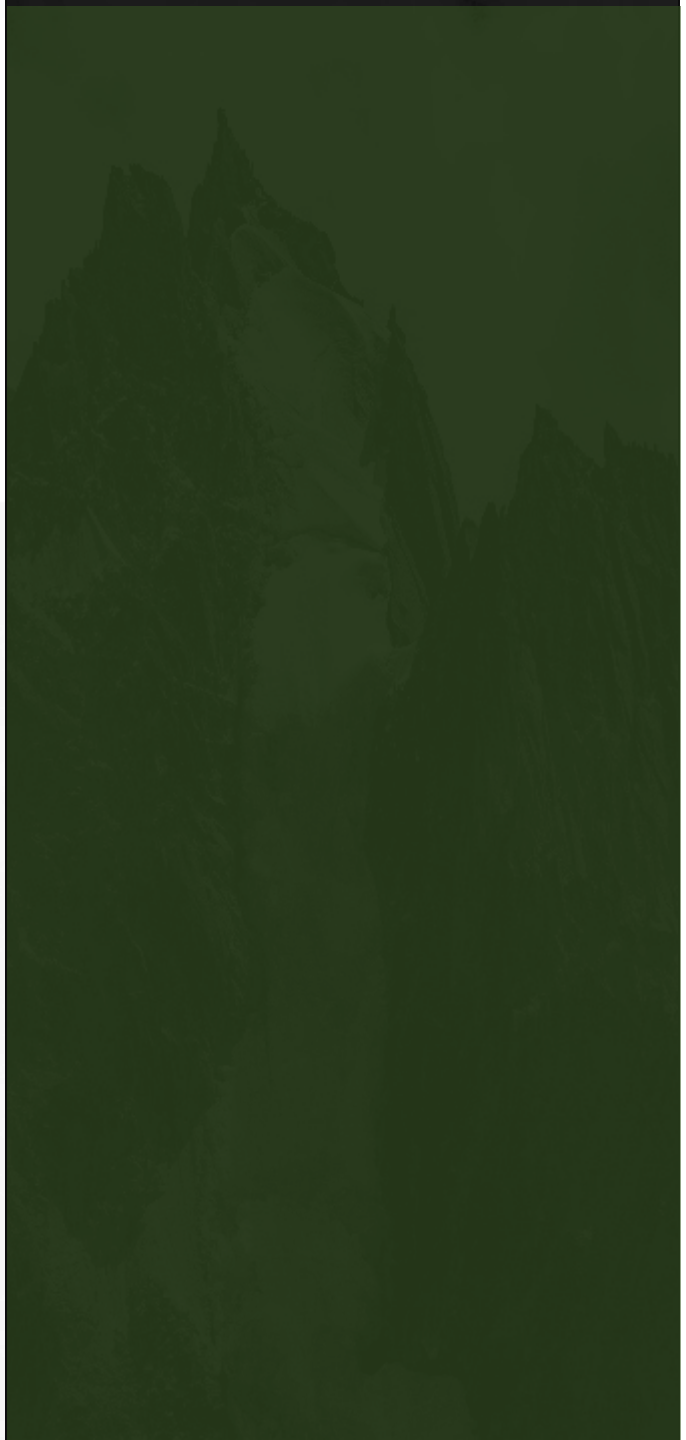
# Connecting to Technology

- Challenges identified:
  - Visibility
  - Response time
  - Fragmented data
- Solutions enabled by platforms like EcoOnline:
  - Real-time check-ins
  - GPS/geofencing
  - Centralized incident tracking
  - Leading indicator dashboards

*"Technology cannot replace on-site personnel, but it strengthens their reach. Remote-monitoring centres — when combined with trained on-site response teams. Mining operators should ask contract security providers how technology is integrated, how data is managed, and what real-time incident response protocols exist."*
www.westernalliance.ca

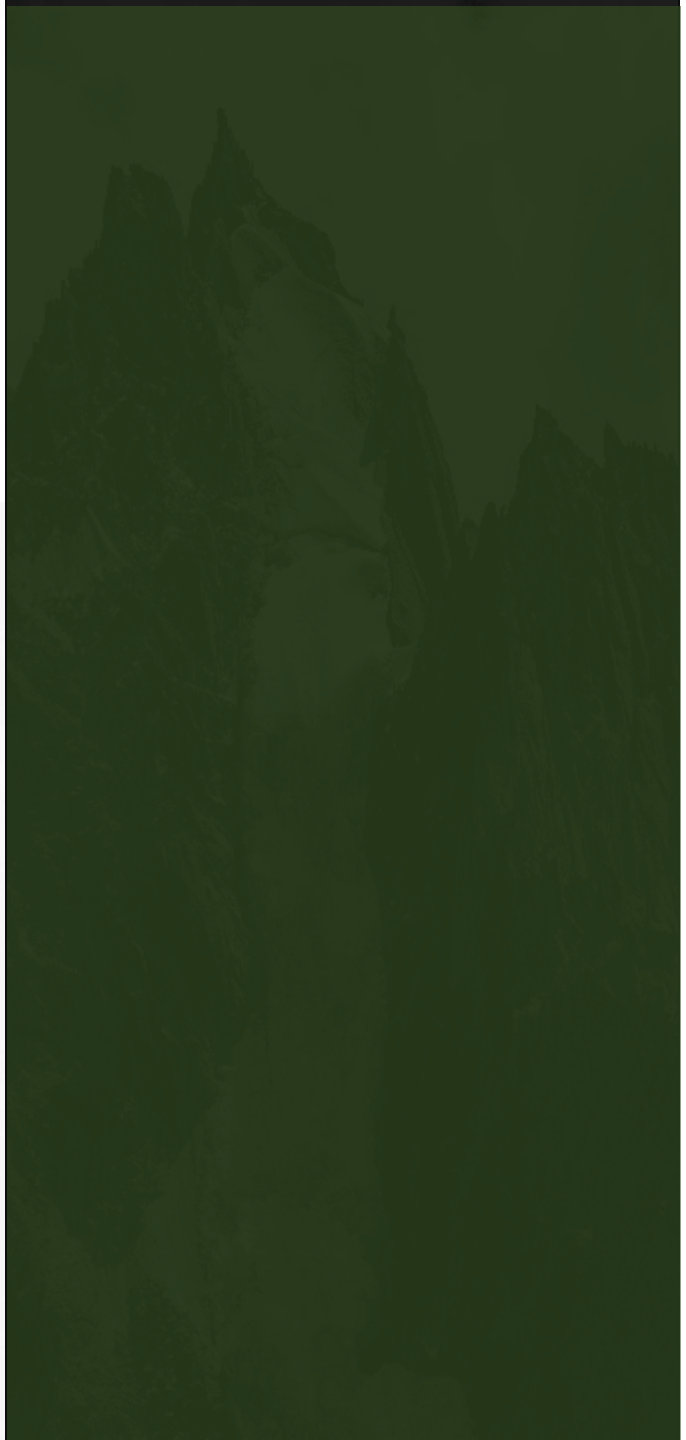
# The Future of HSE Technology

- AI can predict incident probability with increasing accuracy
- Wearables can monitor:
  - Heart rate
  - Fatigue
  - Motion/falls
- Integration with IoT sensors (equipment, environment)
- Automated alerts and decision support systems



# Where Companies Fit in This Evolution

- Mobile-first, cloud-based architecture
- Allows for:
  - Real-time lone worker check-ins
  - GPS/geofencing
  - Incident & hazard reporting
- Leverages existing devices (smartphones)
- Bridges gap between:
  - Traditional systems → connected worker ecosystem



# Lone Worker Tracking with Online tools

- Scheduled check-ins
- Automated alerts
- SOS/panic button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# Online Check-In Tools

- Simple mobile interface
- Configurable intervals
- Escalation workflows


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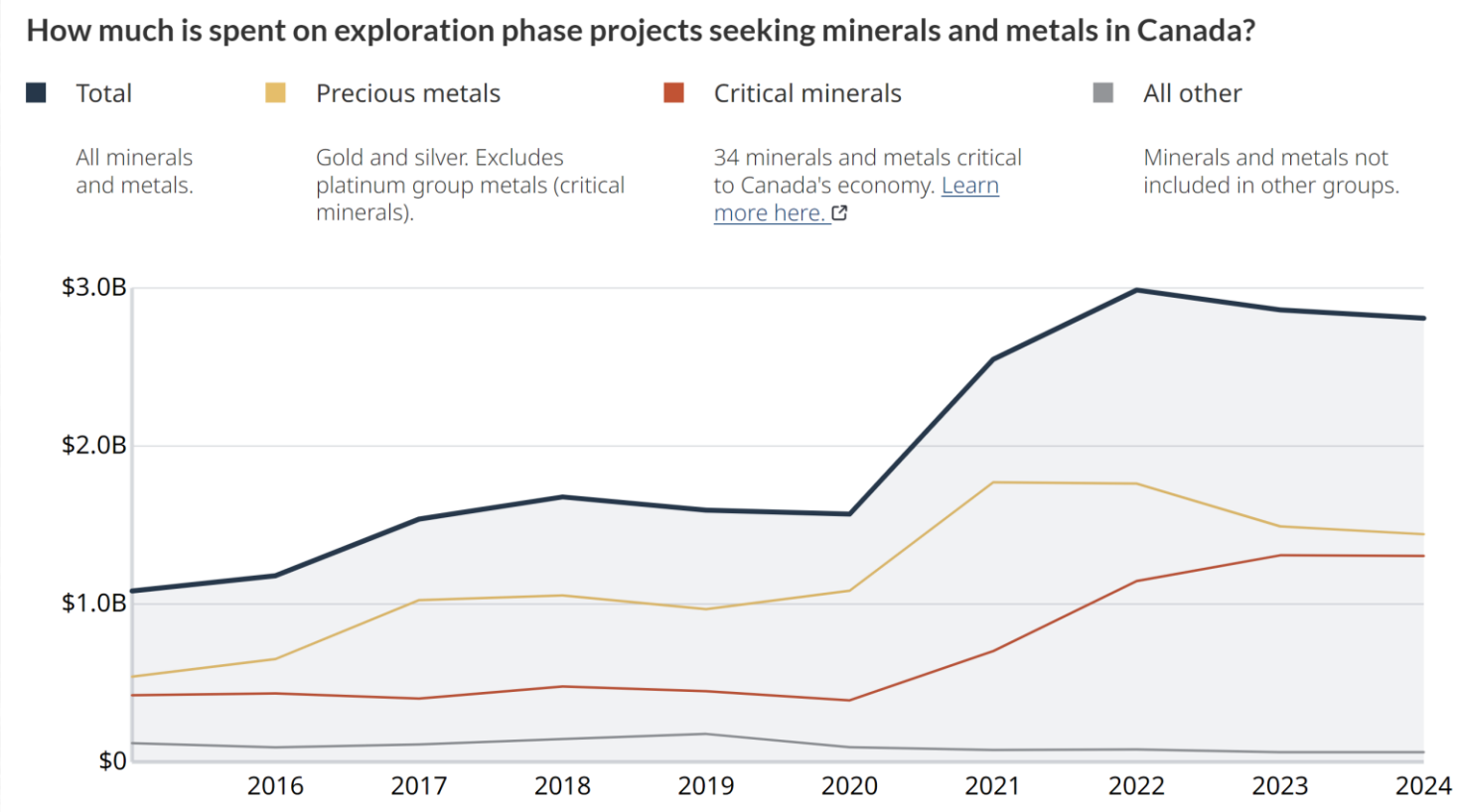
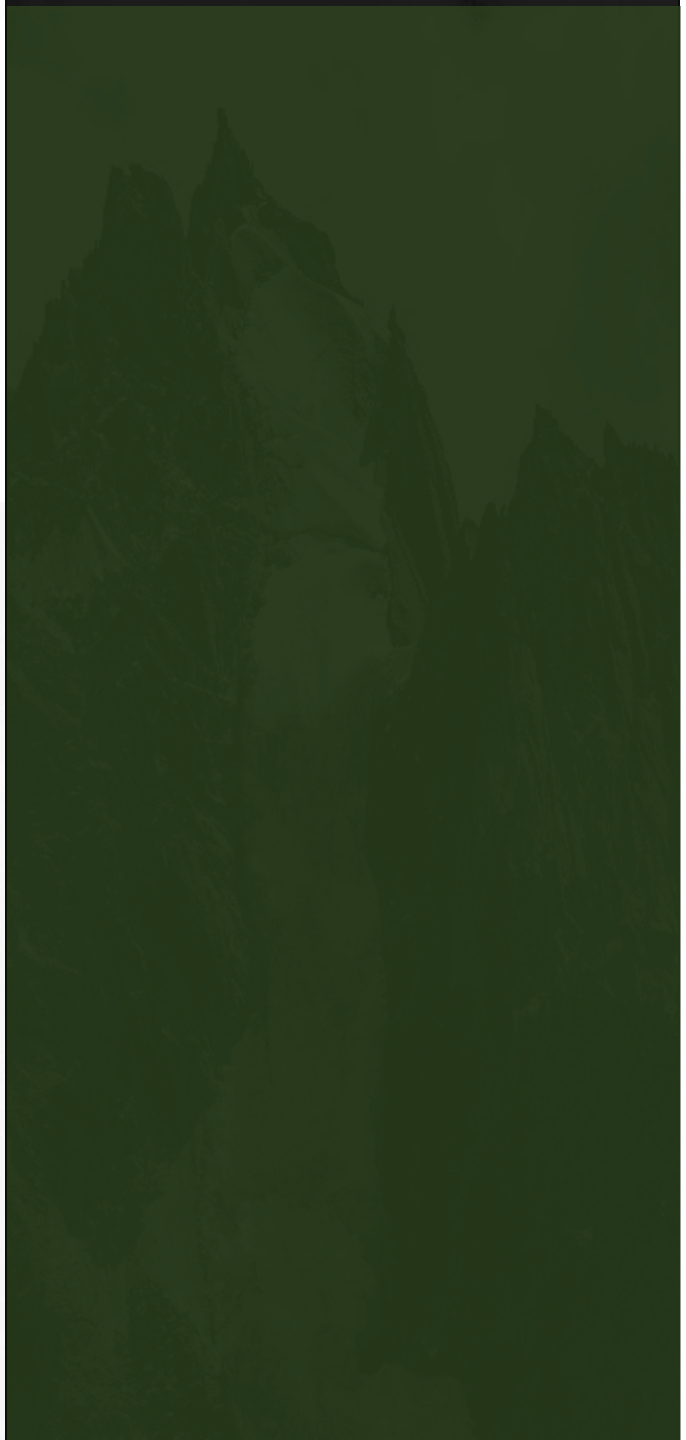
# Overcoming Challenges

- Common barriers:
  - Resistance to change (~20–30% initial pushback)
  - Connectivity concerns in remote areas
- Solutions:
  - Offline functionality
  - Simple UX design
  - Strong leadership support
  - Measurable adoption improvement within 3 months



# What This Means for Companies

- 20-year shift from reactive → predictive safety
- Dramatic increase in:
  - Visibility
  - Data availability
  - Response speed
- Remaining gap:
  - Turning data into action
- Opportunity:
  - Use leading indicators to prevent incidents
  - Engaging software and smart devices



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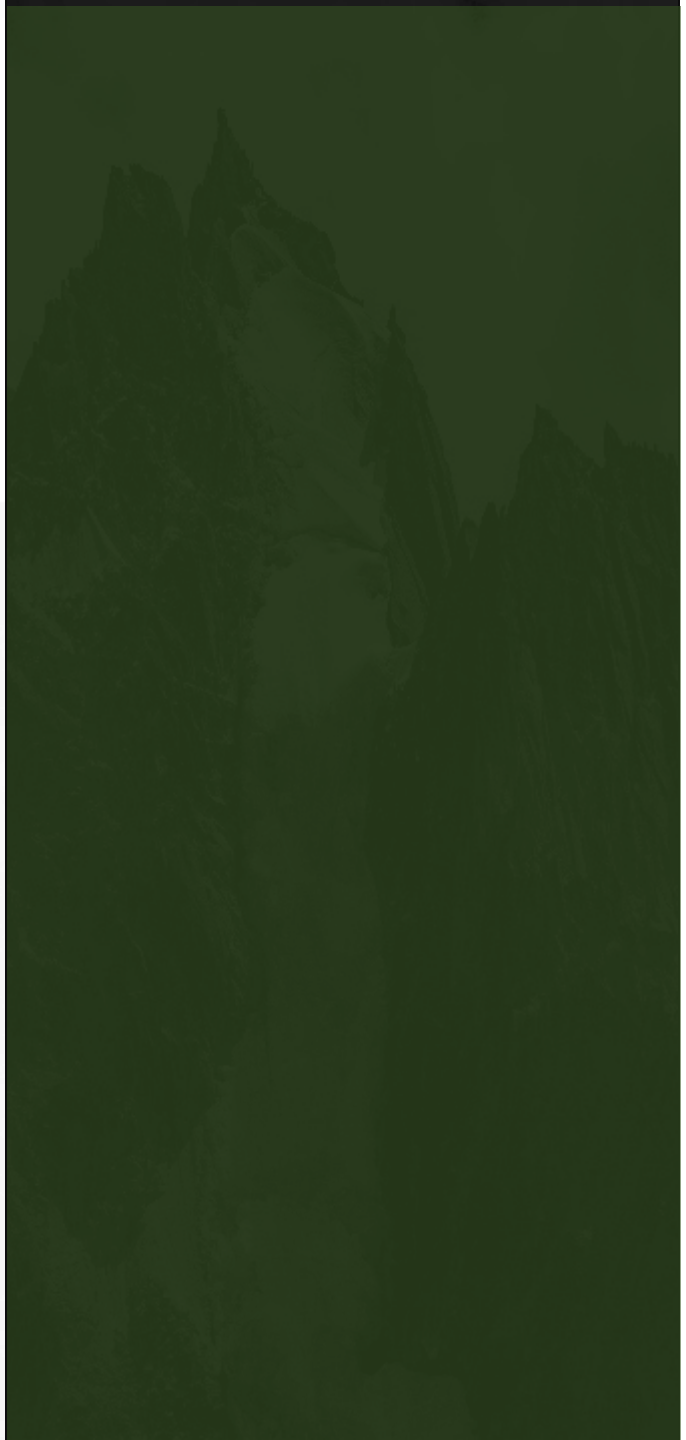
# Next Steps

- Assess
  - Identify gaps in visibility & response times
- Define
  - Track key indicators:
    - Check-ins
    - Near misses
    - Response time
- Pilot
  - Start with high-risk teams
  - Implement tracking (GPS, SOS, check-ins) using tools like EcoOnline
- Scale
  - Measure results
  - Standardize & expand across operations



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# Advancing Remote Worker Safety

Let's work together to keep your workers safe

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**Learn More**

ecoonline.com