DOUGLAS COLLEGE
COMMERCE AND BUSINESS ADMINISTRATION

SafeSight

A Full-Stack Predictive Workplace Safety Management System with reference to

Fairmont Waterfront

CSIS 4495 002: APPLIED RESEARCH PROJECT

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1. Introduction

Workplace health and safety is a critical domain within Human Resource Management, particularly in high-risk service industries such as hospitality. Hotels operate complex environments where employees are exposed to physical, operational, and ergonomic hazards across departments including Housekeeping, Food and Beverage, Engineering, and Front Office. Effective management of workplace safety is essential to protect employees, ensure regulatory compliance, and maintain operational efficiency (Cooper, 2000).

In British Columbia, organizations are required to comply with occupational health and safety regulations enforced by WorkSafeBC, which mandate accurate incident reporting, investigation, and documentation (WorkSafe BC, 2025). Despite these requirements, many organizations continue to rely on manual or fragmented systems for managing safety data, limiting visibility into incident trends and reducing the ability to proactively address workplace risks.

This research is positioned within the domain of digital workplace safety management systems, combining HR information systems, data visualization, and predictive analytics SafeSight is a proposed full-stack workplace safety management platform designed specifically for the operational environment of the Fairmont Waterfront. The system aims to support HR and departmental managers by digitizing incident reporting, improving compliance with WorkSafeBC requirements, and providing real-time visibility into workplace safety trends. By combining role-based portals, data visualizations, and predictive analytics, SafeSight enables proactive identification of safety risks and supports informed decision-making within the hotel's hospitality operations.

1.1 Overview of the Background

Organizations across various industries are increasingly adopting digital systems to manage workplace operations, including health and safety management. Traditionally, workplace safety incidents have been recorded using paper-based forms or basic spreadsheet systems, which often result in delayed reporting, inconsistent data, and limited analytical capability. These limitations reduce an organization's ability to identify patterns, assess risks, and take preventive action.

In the hospitality industry, the complexity of operations and the diversity of job roles further increase safety management challenges. Employees frequently work under time pressure, handle

equipment, and perform repetitive physical tasks, making them more vulnerable to workplace injuries. As a result, hotels must manage large volumes of safety-related data while ensuring timely communication between HR teams, managers, and regulatory bodies.

Advancements in web technologies, data visualization, and predictive analytics provide new opportunities to modernize workplace safety management (Stone, et al., 2015)

. Full-stack web applications enable centralized data collection, role-based access through HR and manager portals, and real-time visualization of safety performance. Additionally, predictive analytics allows organizations to move beyond reactive reporting by forecasting potential risks and supporting proactive safety interventions.

This research builds on these technological advancements by proposing a full-stack, role-based workplace safety system that integrates incident management, regulatory reporting, and predictive insights within a single platform.

1.2 Research Context

This research is situated within the growing need for organizations to adopt digital solutions that improve workplace health and safety management while ensuring regulatory compliance. In British Columbia, employers are legally required to follow occupational health and safety standards established by WorkSafeBC, which include timely incident reporting, investigation documentation, and continuous monitoring of workplace risks.

In practice, many organizations particularly in the hospitality industry continue to manage safety incidents using manual processes or fragmented digital tools. These approaches limit data integration, delay reporting, and provide minimal analytical insight for HR professionals and managers. As a result, safety management is often reactive, focusing on incidents after they occur rather than preventing them.

At the same time, advancements in web technologies, data visualization, and predictive analytics have created opportunities to modernize safety management systems. Role-based web applications can support distinct user needs through HR portals and Manager portals, while centralized data storage enables real-time dashboards and automated reporting aligned with regulatory requirements.

Within this context, this research proposes the development of SafeSight, a full-stack, web-based workplace safety platform designed to support incident management, visual analytics, predictive risk assessment, and WorkSafeBC reporting. The system is developed as an applied case study within a hospitality environment, demonstrating how integrated digital solutions can enhance proactive safety management and informed decision-making.

1.3 Problem Statement

In high-pressure luxury hospitality environments like the Fairmont Waterfront, workplace safety management is frequently undermined by a reliance on manual, fragmented, or disconnected systems. These legacy processes create critical "data silos" between frontline staff, department managers, and HR teams, resulting in significant communication latency and a lack of centralized visibility into incident trends. This infrastructure deficit hinders the immediate identification of hazards and delays the production of mandatory WorkSafeBC compliance documentation, often leading to administrative burnout and potential regulatory penalties. Without integrated, role-based digital tools or predictive insights, safety management remains purely reactive, leaving the organization vulnerable to recurring injuries and operational inefficiencies. To address these gaps, SafeSight provides a unified full-stack platform designed to automate reporting, visualize risk trends, and transition the hotel’s safety posture to proactive, data-driven prevention.

Research Questions

1. How can a full-stack, role-based safety system improve the speed and accuracy of incident reporting and monitoring?
2. In what ways do interactive dashboards and data visualizations support managerial safety decision-making?
3. To what extent can predictive analytics identify future workplace safety risks based on historical patterns?
4. How can automated reporting modules streamline compliance with WorkSafeBC statutory requirements?

2. Literature Review

Workplace health and safety management has increasingly shifted from manual record-keeping to digital systems that support incident reporting, monitoring, and regulatory compliance (Shah, 2026). Previous studies highlight that effective safety management systems play a critical role in reducing workplace injuries, improving compliance, and supporting proactive risk prevention. With advancements in web technologies, data visualization, and predictive analytics, organizations now have opportunities to enhance traditional safety practices through integrated digital platforms.

Hoteliers normally follow local regulations when designing a hotel's safety and security systems, but which system features hotel internal staff perceive to be the most important and which they expect to find in place remain open questions (Chan & Lam, 2013).

The Evolution of OHSMS in Global and Canadian Contexts

The concept of an Occupational Health and Safety Management System (OHSMS) has matured significantly since its inception in the late 1990s. Early frameworks, such as the OHSAS 18001 and various regional guidelines (British Standard Institution, 1996; ILO, 2001; Gallagher, et al., 2003), established the baseline for managing physical hazards. However, the transition to ISO 45001:2018 marked a paradigm shift, moving safety from a "siloed" administrative task to a core leadership responsibility.

Contextualizing OHSMS for the Canadian Hospitality Sector

For a landmark Canadian institution like the Fairmont Waterfront, the application of OHSMS is no longer just about meeting WorkSafeBC regulations; it is about organizational resilience. In the current post-pandemic landscape (2020–2026), the definition of "occupational health" has expanded to include,

- **Psychological Safety & Mental Wellbeing:** Research indicates that 87% of Canadian hospitality workers have experienced burnout post-pandemic (Future Skills Centre, 2024). Modern OHSMS must now integrate mental health resources to address the high-pressure nature of luxury service.

- **Musculoskeletal Injury (MSI) Prevention:** As high-end hotels return to peak occupancy, the ergonomic risks for housekeeping and guest services specifically regarding repetitive tasks remain a primary focus of Canadian safety audits (WorkSafeBC, 2025).
- **Integration with HRM:** Recent literature suggests that OHSMS is most effective when fused with Human Resource Management (HRM). This "total worker health" approach aligns safety performance with employee retention, which is critical given the persistent labor shortages in the Vancouver hospitality sector (The HUB International, 2026).

2.1 Identification of Research Gaps and the SafeSight Rationale

While the theoretical frameworks for OHSMS are well-established, a critical review of current safety practices in high-end hospitality specifically within the Canadian regulatory context of WorkSafeBC reveals four primary limitations. These gaps form the empirical justification for the development of the SafeSight full-stack system.

The Temporal Gap: Latency in Incident Response

Existing safety management often relies on fragmented communication channels (e.g., paper logs, emails, or verbal reports). In a high-traffic environment like the Fairmont Waterfront, this creates a "latency gap" where hazards remain active between the time of discovery and the time of management notification. Research suggests that "stale data" is a leading contributor to secondary accidents (Nelson, et al., 2013). SafeSight aims to address this by implementing a real-time full-stack architecture that synchronizes field reports with management dashboards instantaneously.

The Integration Gap: Stakeholder Silos

A significant limitation in current hotel operations is the "siloing" of safety data. HR departments, Department Managers (e.g., Housekeeping, F&B), and Safety Officers often utilize disparate systems to track the same incident. This lack of integration leads to data duplication and inconsistent reporting. SafeSight addresses this by providing a unified "Single Source of Truth," allowing multi-level access to a centralized database that serves the specific needs of each stakeholder from HR compliance to operational hazard mitigation.

The Regulatory Friction Gap: WorkSafeBC Compliance

According to Workers Compensation Act (2026) and WorkSafeBC (2025) Compliance with the Workers Compensation Act requires rigorous documentation and strict filing deadlines (e.g., Form 7 or Preliminary Investigation Reports). The administrative burden of manually transcribing incident data into regulatory formats often leads to "compliance fatigue," where accuracy is sacrificed for speed. SafeSight introduces an automated reporting module designed to map internal incident data directly onto WorkSafeBC-compliant templates, thereby reducing administrative overhead and ensuring 100% filing accuracy.

The Analytical Gap: Descriptive vs. Prescriptive Output

Current OHSMS implementations are largely descriptive they record what happened in the past but offer little insight into how to prevent future occurrences (Lindholm, et al., 2024). There is a lack of localized systems that provide active recommendations. SafeSight seeks to bridge this gap by transitioning from a passive record-keeping tool to a prescriptive analytics platform. By analyzing historical incident trends within specific Fairmont departments, the system generates actionable safety recommendations and heatmaps to guide preventative maintenance and training.

2.2 Research Hypotheses

This research aims to verify the following testable predictions through the development of SafeSight.

- Hypothesis 1 (H1): The implementation of a full-stack, real-time reporting system will reduce the time between incident occurrence and management notification by at least 70% compared to manual/paper-based methods.
- Hypothesis 2 (H2): Automated report generation will significantly decrease the rate of human error and missing data fields in WorkSafeBC documentation.
- Hypothesis 3 (H3): The use of heatmaps and predictive analytics will enable department managers to identify high-risk areas (e.g., the kitchen or loading docks) before recurring incidents occur, leading to a measurable decrease in "Lost Time" accidents.

2.3 Research Assumptions

For this study to be valid, the following conditions are assumed,

- Stakeholder Participation: It is assumed that staff and managers at the Fairmont Waterfront will provide honest and timely data when using the SafeSight interface.
- Data Consistency: It is assumed that historical incident data provided by the hotel for the predictive module is accurate and representative of typical operations.
- Infrastructure Reliability: It is assumed that the hotel's existing internal network can support a web-based, full-stack application without significant downtime.
- Technical Literacy: It is assumed that the target users (HR, Managers, and Staff) possess the basic digital literacy required to navigate a role-based dashboard.

2.4 Potential Benefits of SafeSight

The successful development of SafeSight offers significant advantages to the Fairmont Waterfront.

For HR and Senior Management

- Unified Oversight: A single dashboard providing a "bird's-eye view" of safety across all departments.
- Reduced Liability: Faster, more accurate WorkSafeBC filing reduces the risk of fines and increases the hotel's standing during external audits.

For Department Managers (F&B, Housekeeping, Maintenance)

- Reduced Admin Burden: Automating the "paperwork" allows managers to spend more time on guest experience and staff training.
- Data-Driven Decisions: Instead of guessing where the risks are, managers can use SafeSight heatmaps to allocate resources or safety signage to specific "hotspots."

For the Fairmont Waterfront Organization

- Brand Excellence: Reinforces Fairmont’s reputation as a "Top Employer" in Canada by demonstrating a cutting-edge commitment to employee wellbeing.
- Financial Savings: By predicting and preventing injuries, the hotel reduces costs associated with worker compensation claims and temporary staffing.

3. Proposed Research Project

3.1 Research Design

The research design for SafeSight follows a Mixed-Methods Experimental Approach, combining System Development Life Cycle (SDLC) methodologies with Qualitative and Quantitative Evaluation. This design is selected to ensure that the system is not only technically robust but also operationally effective within the specific context of the Fairmont Waterfront.

Applied Design Research (ADR)

The study utilizes an Applied Design Research framework, which focuses on solving a specific organizational problem through the creation of a technological artifact, the SafeSight Full-Stack System. The design is iterative, allowing for the refinement of the dashboard and reporting modules based on simulated hospitality scenarios.

The Prototyping Model (Technical Design)

From a software engineering perspective, the project adopts an Evolutionary Prototyping Model. Unlike a traditional Waterfall approach, this design allows for the incremental development of role-based features.

- **Initial Prototype:** Focuses on the core Incident Reporting form used by department managers.
- **Refinement:** Incorporates the Managerial Dashboard and HR Oversight views.
- **Final Iteration:** Integrates the Predictive Analytics and WorkSafeBC Auto-Reporting modules. This design ensures that the final product aligns with the complex, multi-layered hierarchy of a luxury hotel.

Evaluative Design

To measure the success of the system, the research design incorporates two specific testing lenses:

1. **Quantitative Analysis:** Measuring System Efficiency by comparing the time taken to generate a WorkSafeBC report manually versus using SafeSight's automated module.

2. **Qualitative Analysis:** Utilizing User Acceptance Testing (UAT) and surveys with simulated users to evaluate the Perceived Usefulness and Ease of Use of the dashboards metrics derived from the Technology Acceptance Model (TAM).

3.2 Research Objectives

The primary goal of this research is to develop and evaluate SafeSight. The specific objectives are:

- Objective 1: System Development to design and develop a full-stack, role-based web application (SafeSight) that allows for real-time incident logging and provides tailored interfaces for Department Managers, and HR Personnel.
- Objective 2: Visualization & Decision Support To create interactive dashboards and heatmaps that visualize safety data trends, enabling Fairmont managers to identify high-risk zones and time-periods within the hotel.
- Objective 3: Predictive Modeling to implement a predictive analytics module that analyzes historical incident data to forecast potential safety "hotspots" and provide prescriptive recommendations for hazard mitigation.
- Objective 4: Compliance Automation to develop an automated report generation engine that maps internal system data directly onto WorkSafeBC preliminary and full investigation templates, reducing administrative time by at least 50%.
- Objective 5: Evaluation to evaluate the effectiveness of SafeSight through a simulated deployment at the Fairmont Waterfront, measuring improvements in reporting latency and user accessibility.

3.3 Research Methodology

The development of SafeSight follows a four-phase technical roadmap based on the System Development Life Cycle (SDLC). Each phase is designed to ensure the system is both technically robust and practically useful for hospitality safety management.

Phase 1: Domain Analysis & Requirements Gathering

The goal of this phase is to align the software's architecture with the specific operational flow of the Fairmont Waterfront.

- Gap Analysis: Reviewing current manual reporting logs (simulated) to identify where data is lost or delayed.
- Stakeholder Mapping: Defining role-based permissions (Department Managers, and HR) to ensure data security and relevance.
- Regulatory Alignment: Analyzing WorkSafeBC Form 7 and Preliminary Investigation requirements to map system data fields to legal templates.

Phase 2: Full-Stack System Architecture & Development

Following the Three-Tier Architecture model, the system will be built to ensure scalability and real-time performance.

- Frontend (Presentation Layer): Developing a responsive UI. This includes the incident reporting portal for staff and the interactive dashboards for managers.
- Backend (Application Layer): Building a Node.js/Express server to handle business logic, authentication, and the automated report generation engine for WorkSafeBC reports.
- Database (Data Layer): Implementing a MySQL relational database to store historical incident logs, user profiles, and corrective action statuses.

Phase 3: Predictive Analytics & Data Visualization

This phase transforms raw incident data into "Safety Intelligence."

- Data Cleaning & Integration: Standardizing historical data to remove irregularities and prepare it for analysis.

- Predictive Modeling: Utilizing Regression Analysis and pattern-matching algorithms (via Python/Flask) to identify correlations between incident types, locations (e.g., Fairmont Kitchen vs. Lobby), and specific time shifts.
- Visualization Engine: Developing Heatmaps and trend charts that allow HR to visualize "hotspots" in real-time.

Phase 4: Testing, Evaluation, and Validation

The final phase validates whether SafeSight actually solves the problems identified in the problem statement.

- System Testing: Conduct unit and integration testing to ensure all role-based permissions and auto-reporting modules function without bugs.
- Performance Benchmarking: Quantitatively measuring the time saved by using the WorkSafeBC Report versus manual data entry.
- User Acceptance Testing (UAT): Feedback will be gathered to assess the Perceived Ease of Use and Perceived Usefulness, ensuring the system is intuitive for non-technical hotel staff.

3.4 Data Collection Methods

This research utilizes a triangulation strategy, synthesizing three distinct data layers to ensure the system is grounded in industry reality while remaining compliant with regional standards.

- Secondary Quantitative Data: The primary foundation consists of a longitudinal dataset of 478 historical incident reports derived from the OSHA Severe Injury database. This data has been filtered specifically for NAICS Code 721110 (Hotels and Motels) to ensure industry relevance (OSHA, 2026).

- Regulatory Benchmarking: Baseline metrics and safety KPIs (Key Performance Indicators) are derived from WorkSafeBC Industry Statistics for the "Tourism & Hospitality" subsector. This ensures the dashboard aligns with British Columbia's reporting standards.

- Simulated Primary Data: The full-stack application serves as a primary collection tool. Through an integrated REST API, the system allows for the entry of real-time incident logs,

certifications, and audit results, which are stored in a MySQL relational database for ongoing analysis.

3.4.1 Sample Size

The study focuses on a specialized sample of the hospitality workforce, specifically tailored to the operational environment of the Fairmont Waterfront.

- Dataset Size: 478 occupational injury records.
- Categorization: Data is segmented into core hotel departments: Housekeeping (highest frequency of injuries), Food & Beverage (burns and lacerations), Maintenance (falls from heights/mechanical risks), and Guest Services/Security (slips and trips).
- Geographic Context: While the historical data is industrial, it is mapped to the physical zones of the Fairmont Waterfront to simulate a localized safety environment.

3.5 Data Analysis Techniques

This research will use descriptive and predictive data analysis techniques to identify workplace safety risks and trends. Descriptive analysis will be applied to historical safety data to examine patterns related to incidents, frequency, severity, and contributing factors. Data visualisation techniques such as charts and dashboards will be used to present insights in a clear and user-friendly manner.

Predictive analysis will be used to support risk forecasting. Machine learning techniques will be applied to historical data to predict potential safety risks and incident likelihood. This will help organisations take proactive actions rather than relying only on past incident reports. Basic classification and regression models will be used to keep the system practical and suitable for real-world adoption.

3.5.1 Technology Stack Identification

The proposed system will be developed as a web-based platform to ensure accessibility and ease of use across different devices.

Operating System / Platform

The system will be developed on a web platform and can run on common operating systems such as Windows.

Programming Languages / Frameworks

- **Frontend:** HTML, CSS, and JavaScript will be used to build the user interface. Chart.js will be used for data visualisation.
- **Backend:** Node.js with Express.js will be used to handle server-side logic and API requests.
- **Prediction Module:** Python will be used with Flask and scikit-learn to develop and expose machine learning models for risk prediction.

Database

MySQL will be used as the relational database to store user data, safety records, incident reports, and historical data required for analysis.

Frontend and Backend

The frontend will provide dashboards and reports for users, while the backend will manage data processing, authentication, and communication with the prediction module through REST APIs.

3.5.2 System Architecture

The system follows a layered architecture to improve scalability, maintainability, and performance.

Layer	Technology
Frontend	HTML, CSS, JavaScript, Chart.js
Backend	Node.js, Express.js
Database	MySQL
Prediction	Python (Flask + scikit-learn)
APIs	REST
Version Control	GitHub

3.6 Expected Results

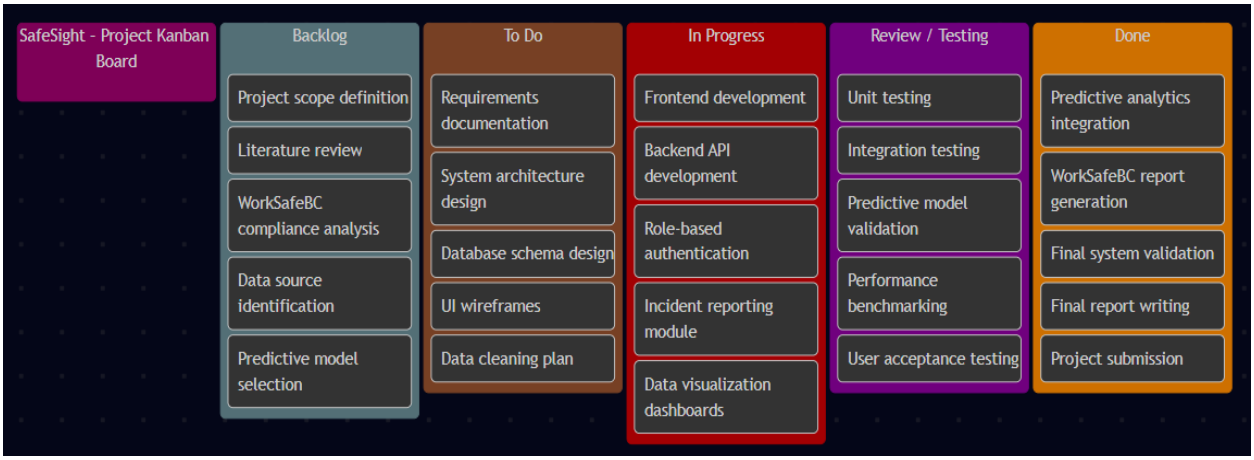
The expected outcome of this research is the development of SafeSight, a full-stack, role-based workplace safety platform with HR and Manager portals. The system is expected to improve the accuracy and efficiency of incident reporting, provide clear visualizations of safety trends, and support predictive identification of high-risk departments.

Additionally, the system is expected to demonstrate how automated reporting can support compliance with WorkSafeBC requirements. The research findings will contribute practical insights into how full-stack and predictive technologies can be applied to workplace safety management in hospitality environments, supporting proactive decision-making and improved employee safety.

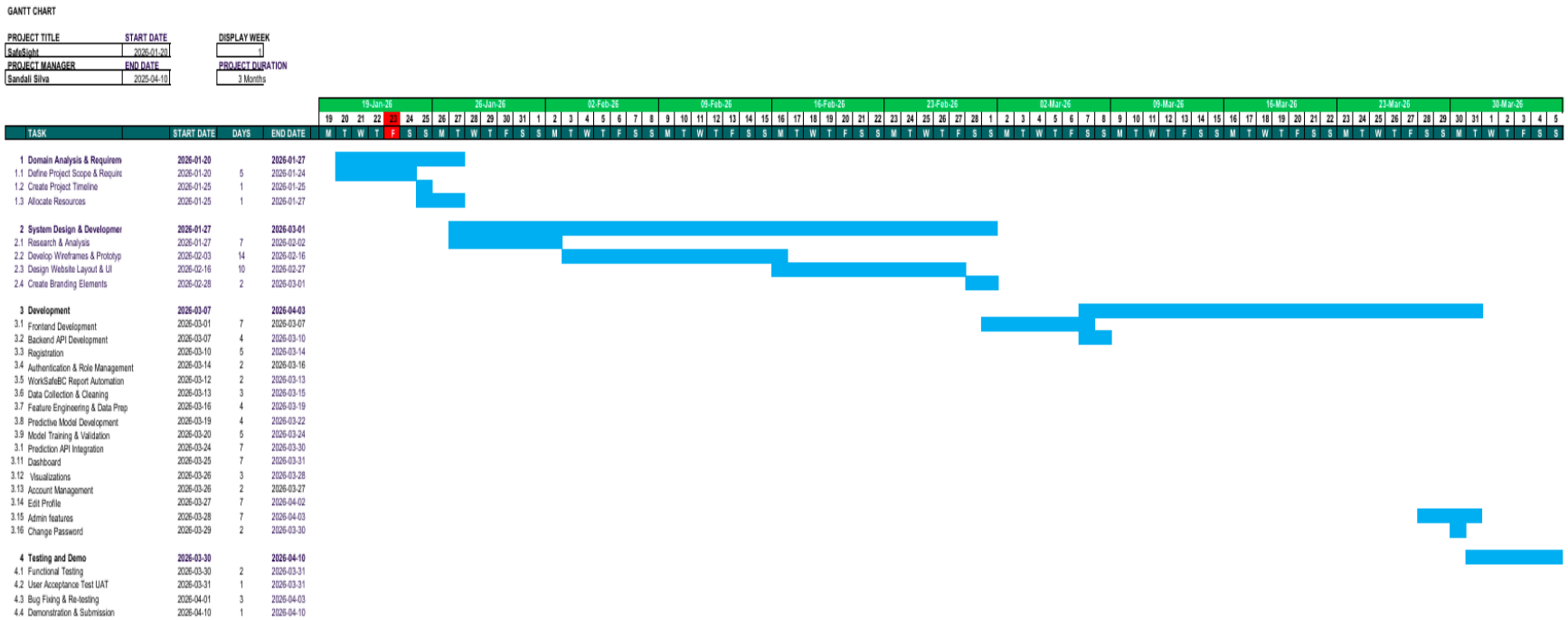
4. Project Planning and Timeline

To ensure structured progress and timely completion, this project follows a defined timeline supported by both a Gantt chart and a Kanban board, outlining key phases, milestones, deadlines, and deliverables.

4.1 KANBAN



4.2 Gantt Chart



GANTT CHART

PROJECT TITLE	START DATE	DISPLAY WEEK
SafeSight	2026-01-20	1
PROJECT MANAGER	END DATE	PROJECT DURATION
Sandali Silva	2026-04-10	3 Months

	TASK	START DATE	DAYS	END DATE
1	**Domain Analysis & Requirem**	**2026-01-20**		**2026-01-27**
1.1	Define Project Scope & Requirc	2026-01-20	5	2026-01-24
1.2	Create Project Timeline	2026-01-25	1	2026-01-25
1.3	Allocate Resources	2026-01-25	1	2026-01-27
2	**System Design & Developmer**	**2026-01-27**		**2026-03-01**
2.1	Research & Analysis	2026-01-27	7	2026-02-02
2.2	Develop Wireframes & Prototyp	2026-02-03	14	2026-02-16
2.3	Design Website Layout & UI	2026-02-16	10	2026-02-27
2.4	Create Branding Elements	2026-02-28	2	2026-03-01
3	**Development**	**2026-03-07**		**2026-04-03**
3.1	Frontend Development	2026-03-01	7	2026-03-07
3.2	Backend API Development	2026-03-07	4	2026-03-10
3.3	Registration	2026-03-10	5	2026-03-14
3.4	Authentication & Role Management	2026-03-14	2	2026-03-16
3.5	WorkSafeBC Report Automation	2026-03-12	2	2026-03-13
3.6	Data Collection & Cleaning	2026-03-13	3	2026-03-15
3.7	Feature Engineering & Data Prep	2026-03-16	4	2026-03-19
3.8	Predictive Model Development	2026-03-19	4	2026-03-22
3.9	Model Training & Validation	2026-03-20	5	2026-03-24
3.1	Prediction API Integration	2026-03-24	7	2026-03-30
3.11	Dashboard	2026-03-25	7	2026-03-31
3.12	Visualizations	2026-03-26	3	2026-03-28
3.13	Account Management	2026-03-26	2	2026-03-27
3.14	Edit Profile	2026-03-27	7	2026-04-02
3.15	Admin features	2026-03-28	7	2026-04-03
3.16	Change Password	2026-03-29	2	2026-03-30
4	**Testing and Demo**	**2026-03-30**		**2026-04-10**
4.1	Functional Testing	2026-03-30	2	2026-03-31
4.2	User Acceptance Test UAT	2026-03-31	1	2026-03-31
4.3	Bug Fixing & Re-testing	2026-04-01	3	2026-04-03
4.4	Demonstration & Submission	2026-04-10	1	2026-04-10

4.3 Research Project Timeline and Milestones (SafeSight)

Phase	Duration (Weeks)	Key Activities	Milestones	Deliverables
Phase 1: Domain Analysis & Requirements Gathering	3–5	• Gap analysis of simulated manual incident logs • Stakeholder mapping (HR, Managers) • WorkSafeBC Form 7 and regulatory requirements analysis	• Gap analysis completed • Roles and permissions defined • Compliance mapping finalised	• Requirements Specification Document • Stakeholder & Role Matrix • Regulatory Alignment Document
Phase 2: Full-Stack System Architecture & Development	6–8	• Three-tier system architecture design • Frontend development (incident reporting & dashboards) • Backend API and authentication setup • MySQL database design and implementation	• Frontend prototype completed • Backend APIs operational • Database schema implemented	• System Architecture Diagram • Functional SafeSight Core Platform • Database Design Documentation
Phase 3: Predictive Analytics & Data Visualization	9–11	• Data cleaning and standardisation • Predictive modelling using regression and pattern analysis	• Clean dataset ready • Prediction model implemented	• Predictive Analytics Module • Data Visualization Dashboards • Model Validation Report

		• REST API integration for predictions • Dashboard visualizations (heatmaps, trends)	• Dashboards fully functional	
Phase 4: Testing, Evaluation & Validation	12–14	• Unit and integration testing • Performance benchmarking vs manual reporting • User Acceptance Testing (UAT)	• System testing completed • Performance metrics collected • User feedback analysed	• Testing & Evaluation Report • Performance Benchmark Results • UAT Summary
Final Documentation & Submission	15–16	• Final system refinement • Research documentation and presentation	• Final system approved • Research submission ready	• Final Research Report • SafeSight Prototype • Future Recommendations

Project Contract

This Project Contract outlines the agreement between the student researcher and the client regarding the scope, deliverables, and timeline of the SafeSight research project.

Project Title

SafeSight: A Full-Stack Predictive Workplace Safety Management System with reference to Fairmont Waterfront

Client

Padmapriya Arasanipalai Kandhadai (Priya): Instructor

Student Researcher

Sandali Silva

The student agrees to:

- Complete the project scope and deliverables as outlined in the approved Gantt Chart and Project Timeline.
- Submit all required project reports and maintain regular communication with the instructor.
- Attend at least 80% of scheduled classes and meetings as per the Course Outline.
- Contact the instructor via email and request online meetings when clarification is required before the next class.

The instructor agrees to:

- Attend scheduled class sessions and provide academic guidance and consultation.
- Respond to student emails in a timely manner and arrange online meetings when necessary.

Student

Name and Signature: Sandali Silva : 

Date: 24.01.2026

Professor

Name and Signature: Padmapriya Arasanipalai Kandhadai (Priya) _____

Date: _____

5. Acknowledgement

I would like to express my sincere gratitude to my instructor, Padmapriya Arasanipalai Kandhadai (Priya), for providing the initial idea for this project and for guiding me in refining the scope to ensure its academic and practical relevance.

I would also like to acknowledge Fairmont Waterfront for serving as the organizational context for this project. The operational environment of the hotel provided a realistic and relevant foundation for designing and evaluating the SafeSight workplace safety management platform.

(All organizational references used in this project are for academic purposes only.)

6. References

British Standard Institution, 1996. *BS 8800: guide to occupational health and safety management systems. ,* London: British Standards Institution.

Chan, E. S. W. & Lam, D., 2013. Hotel safety and security systems: Bridging the gap between managers and guests. *International Journal of Hospitality Management,* 32(ISSN 0278-4319), pp. 202-216.

Cooper, M. D., 2000. Towards a model of safety culture. *Safety Science,* 36(2), pp. 111-136.

Future Skills Centre, 2024. *Mind Your Health,* Canada: https://fsc-ccf.ca/wp-content/uploads/2024/10/mind-your-health-2.pdf.

Gallagher, C., Underhill, E. & Rimmer, M., 2003. Occupational safety and health management systems in Australia: barriers to success. *Policy and Practice in Health and Safety,* 1(1), pp. 67-81.

ILO, 2001. *Guidelines on Occupational Safety and Health Management Systems,* International Labour Office, Geneva.: MEOSH/2001/2(Rev.).

Lindholm, M., Reiman, A. & Tappura, S., 2024. The evolution of new and emerging occupational health and safety risks: A qualitative review. *Work (Reading, Mass.),* 79(2), pp. 503-521.

Nelson, M. S., Wooditch, A. & Gabbidon, S. L., 2013. Is Criminology Out-of-Date? A Research Note on the Use of Common Types of Data. *Journal of Criminal Justice Education,* 25(1), pp. 12-16.

OSHA, 2026. *Occupational Safety and Health Administration.* [Online] Available at: https://www.osha.gov/severe-injury-reports [Accessed 15 01 2026].

Shah, F., 2026. *Digital Incident Management: The Case For Modernizing Safety Reporting.* [Online] Available at: https://www.cority.com/blog/digital-incident-management/ [Accessed 20 01 2026].

Stone, D. L., Deadrick, D. L., Lukaszewski, K. M. & Johnson, R., 2015. The influence of technology on the future of human resource management. *Human Resource Management Review,* 25(2), pp. 216-231.

The HUB International, 2026. *How Risk Management Maturity Leads to Resilience and Profitability,* Canada: HUB.

Workers Compensation Act (2026) [RSBC 2019] Chapter 1.

WorkSafe BC, 2025. *WorkSafe BC.* [Online] Available at: https://www.worksafebc.com/en [Accessed 20 01 2026].

Appendix 1: Work Log

Date	Number of Hours	Description	Remarks
January 9, 2026	3	Initial class of the CSIS 4495	Initial idea of the research project ofthe HRIS platform extension was extended to Prof. Priya and she gave the idea of Work Safety Dashboard
January 10, 2026	1	Research done on the worksafe practices and the availability of the similar dashboards	
January 12, 2026	0.3	Spoke to the HR of the Fairmon Waterfront to get the data	
January 15, 2026	0.5	searched about the technology that I have to use and created the Git hub Repo and sent the colloboration request to Prof. Priya	
January 15, 2026	3	Project discussion with Prof. Priya and Finalizing the scope	
January 20, 2026	2	Project Proposal draft	
January 21, 2026	1	Project Proposal draft	
January 22, 2026	0.5	Project Proposal draft	
January 24, 2026	2	Project Proposal draft	
January 25, 2026	2	Finalizing the research project	

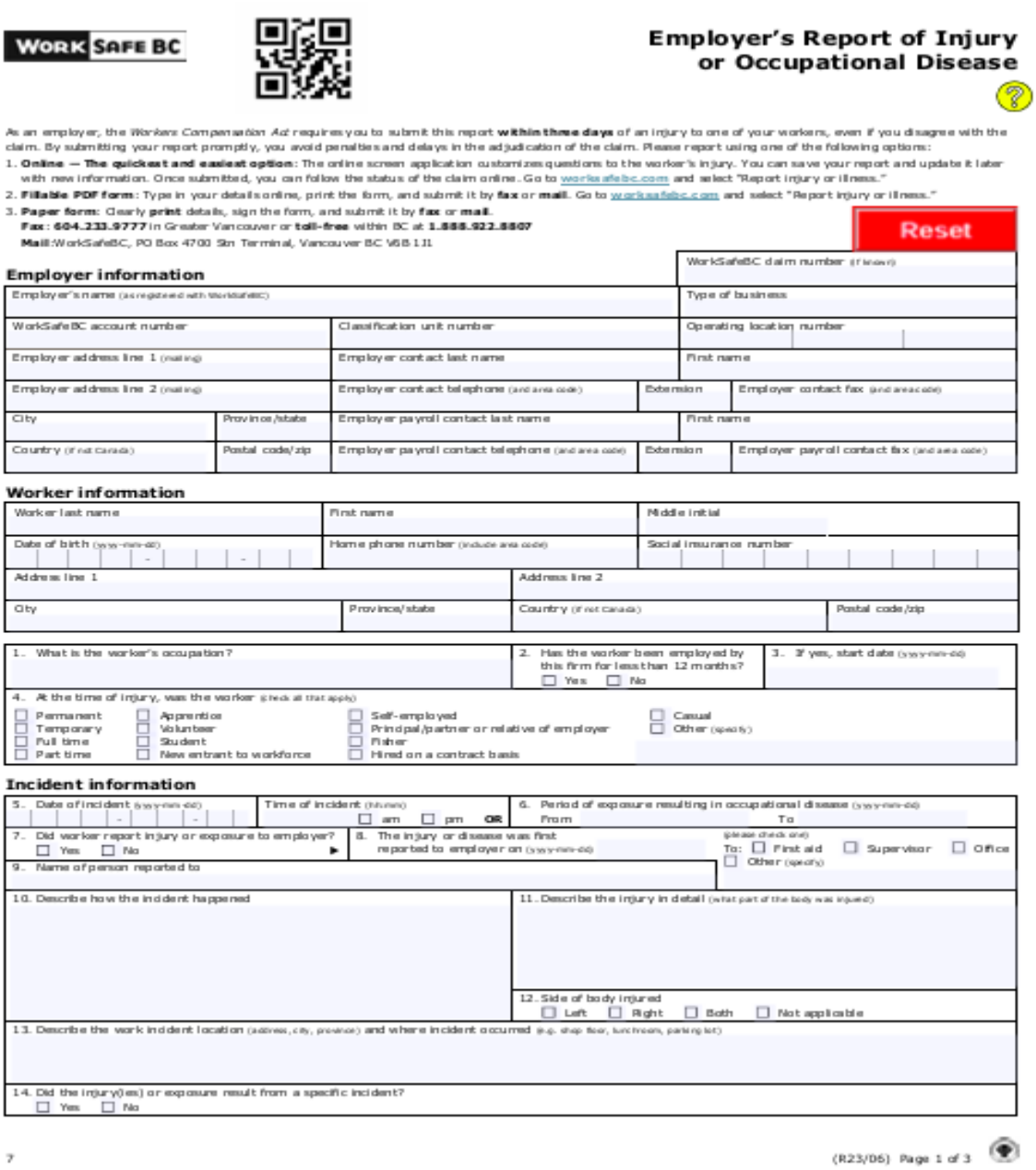
Appendix 2: AI Use Section

AI Tool Name	Version / Account Type	Specific Feature Used	Prompt Used (Summary)	Value Addition (Student Contribution)
ChatGPT	GPT-5.2 / Free	Idea generation & academic structuring	"Suggest HRIS add-ons related to workplace safety systems"	Evaluated relevance, selected only safety-focused HRIS features, and adapted them to Fairmont Waterfront context
ChatGPT	GPT-5.2 / Free	Comparative analysis	"List available work and safety systems used in hospitality"	Analysed limitations of existing systems and identified gaps SafeSight addresses
ChatGPT	GPT-5.2 / Free	Academic writing support	"Provide a format for a literature review"	Reorganised structure to meet postgraduate marking rubric and project scope
ChatGPT	GPT-5.2 / Free	Analytical framework explanation	"Explain types of gap analysis for information systems"	Selected operational and compliance gap analysis suitable for WorkSafeBC context
ChatGPT	GPT-5.2 / Free	Research methodology structuring	"Provide format of a research design"	Tailored design to technical system development rather than theoretical research
ChatGPT	GPT-5.2 / Free	Methodology guidance	"How to form a research design for technical development research"	Aligned SDLC phases with academic research expectations
ChatGPT	GPT-5.2 / Free	Research methods suggestion	"Data collection methods for technical research projects"	Selected simulated datasets and system-generated data relevant to safety analytics
ChatGPT	GPT-5.2 / Free	Research validation strategy	"Explain triangulation strategies in applied research"	Applied triangulation using system output, predictive results, and usability feedback

ChatGPT	GPT-5.2 / Free	Technology recommendation	“Identify technology stack for a full-stack predictive dashboard”	Finalised stack based on feasibility, course scope, and personal skill level
ChatGPT	GPT-5.2 / Free	Code generation	“Generate Mermaid code for Kanban timeline”	Validated task logic, adjusted timelines, and aligned with Gantt and PERT plans
ChatGPT	GPT-5.2 / Free	System design explanation	“Describe three-tier system architecture for a safety system”	Adapted architecture specifically for HR, manager, and reporting portals
ChatGPT	GPT-5.2 / Free	Formal document drafting	“Draft a project contract for academic proposal”	Simplified language, aligned with course outline, and customised for instructor
M365 Copilot	GPT-5 chat model / Free	Logo creation	"Create a logo for work safety dashboard name: SafeSight"	

Appendix 3: Form 7

Source (WorkSafe BC, 2025)



WORKSAFE BC

Employer's Report of Injury or Occupational Disease

As an employer, the *Workers Compensation Act* requires you to submit this report **within three days** of an injury to one of your workers, even if you disagree with the claim. By submitting your report promptly, you avoid penalties and delays in the adjudication of the claim. Please report using one of the following options:

1. **Online — The quickest and easiest option**: The online screen application customizes questions to the worker's injury. You can save your report and update it later with new information. Once submitted, you can follow the status of the claim online. Go to worksafebc.com and select "Report injury or illness."
2. **Fillable PDF form**: Type in your details online, print the form, and submit it by **fax** or **mail**. Go to worksafebc.com and select "Report injury or illness."
3. **Paper form**: Clearly **print** details, sign the form, and submit it by **fax** or **mail**.
   Fax: **604.233.9777** in Greater Vancouver or **toll-free** within BC at **1.888.922.8807**
   Mail: WorkSafeBC, PO Box 4700 Stn Terminal, Vancouver BC V6B 1J1

Reset

Employer information

WorkSafeBC claim number (if known)

Employer's name (as registered with WorkSafeBC) | Type of business

WorkSafeBC account number | Classification unit number | Operating location number

Employer address line 1 (mailing) | Employer contact last name | First name

Employer address line 2 (mailing) | Employer contact telephone (and area code) | Extension | Employer contact fax (and area code)

City | Province/state | Employer payroll contact last name | First name

Country (if not Canada) | Postal code/zip | Employer payroll contact telephone (and area code) | Extension | Employer payroll contact fax (and area code)

Worker information

Worker last name | First name | Middle initial

Date of birth (yyyy-mm-dd) | Home phone number (include area code) | Social Insurance number

Address line 1 | Address line 2

City | Province/state | Country (if not Canada) | Postal code/zip

1. What is the worker's occupation?
2. Has the worker been employed by this firm for less than 12 months? ☐ Yes ☐ No
3. If yes, start date (yyyy-mm-dd)

4. At the time of injury, was the worker (check all that apply)

☐ Permanent ☐ Temporary ☐ Full time ☐ Part time
☐ Apprentice ☐ Volunteer ☐ Student ☐ New entrant to workforce
☐ Self-employed ☐ Principal/partner or relative of employer ☐ Fisher ☐ Hired on a contract basis
☐ Casual ☐ Other (specify)

Incident information

5. Date of incident (yyyy-mm-dd)
Time of incident (hh:mm) ☐ am ☐ pm OR
6. Period of exposure resulting in occupational disease (yyyy-mm-dd) From To

7. Did worker report injury or exposure to employer? ☐ Yes ☐ No ▶
8. The injury or disease was first reported to employer on (yyyy-mm-dd)
(please check one) To: ☐ First aid ☐ Supervisor ☐ Office ☐ Other (specify)
9. Name of person reported to

10. Describe how the incident happened
11. Describe the injury in detail (what part of the body was injured)
12. Side of body injured ☐ Left ☐ Right ☐ Both ☐ Not applicable

13. Describe the work incident location (address, city, province) and where incident occurred (e.g. shop floor, lunchroom, parking lot)

14. Did the injury(ies) or exposure result from a specific incident? ☐ Yes ☐ No

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WORK SAFE BC

Employer's Report of Injury or Occupational Disease

If faxing form, please complete this section and fax both sides of page. Missing pages may result in delays in processing.

Worker last name	First name	Middle initial	WorkSafeBC claim number (if known)

Social insurance number	Personal health number (CareCard)	Date of incident (yyyy-mm-dd)	Date of birth (yyyy-mm-dd)
		- -	- -

15. Contributing factors — select **at least one**, and as many as applicable

- ☐ Lifting ☐ lb ☐ kg
- ☐ Overexertion
- ☐ Repetitive (activity repeated over and over again)
- ☐ Slip or trip
- ☐ Twist
- ☐ Fall
- ☐ Struck
- ☐ Crush
- ☐ Sharp edge
- ☐ Fire or explosion
- ☐ Harmful substances in the work environment
- ☐ Animal bite
- ☐ Assault
- ☐ Motor vehicle accident
- ☐ Unsure/other (please explain below)

16. Were there any witnesses? ☐ Yes ☐ No	17. Did the incident occur in British Columbia? ☐ Yes ☐ No
18. Were the worker's actions at time of injury for the purpose of your business? ☐ Yes ☐ No	19. Did the incident occur on employer's premises or an authorized worksite? ☐ Yes ☐ No
20. Did the incident happen during the worker's normal shift? ☐ Yes ☐ No	21. Was the worker performing their regular duties at the time of the incident? ☐ Yes ☐ No
22. Did the worker receive first aid? ☐ Yes ☐ No Date (yyyy-mm-dd) ▶	If yes, please provide first aid attendant name (if known)
23. Did the worker go to hospital, clinic, or visit a physician or qualified practitioner? ☐ Yes ☐ No Date (yyyy-mm-dd) ▶	If yes, please provide provider name (if known)
If yes, please provide provider address (if known)	
24. Are you aware of any recent pain or disability in the area of the worker's reported injury? ☐ Yes ☐ No	
25. Do you have any objections to the claim being allowed? ☐ Yes ☐ No ▶	If yes, please explain

Wage information

26. Did the worker miss any time from work beyond the date of injury or exposure? ☐ Yes ☐ No

If **no work was missed** and **no change** to duties/pay, proceed to bottom of page to sign, date, and submit this report.
If **work was missed** or if duties/pay have been **modified**, please answer **all** questions on this form.

27. Provide the **base salary** amount for this employment position at the time of injury
$ ☐ Hourly ☐ Daily ☐ Weekly ☐ Monthly ☐ Yearly

28. Does worker receive other amounts of compensation in addition to **base salary**? ☐ Yes ☐ No
Does worker receive vacation pay on every cheque? ☐ Yes ☐ No
If yes, vacation pay _____%

Please select check boxes for any of the following amounts worker receives in addition to **base salary** AND provide the amount for each:
- ☐ Tips and gratuities $_____
- ☐ Room and board $_____
- ☐ Shift differential $_____
- ☐ Other $_____
- ☐ Overtime $_____

29. If worker is disabled from work, will you continue to pay:
Base salary? ☐ Yes ☐ No
Other amounts of compensation in addition to **base salary**? ☐ Yes ☐ No
Will worker receive vacation pay on every cheque? ☐ Yes ☐ No
If yes, vacation pay _____%

Please select check boxes for any of the following amounts worker will continue to receive in addition to **base salary** AND provide the amount for each:
- ☐ Tips and gratuities $_____
- ☐ Room and board $_____
- ☐ Shift differential $_____
- ☐ Other $_____
- ☐ Overtime $_____

30. Provide the amount of **gross** earnings for the past 3 months or 12 weeks prior to the date of injury or exposure
$ ☐ 3 months ☐ 12 weeks

31. Does the worker have a fixed-shift rotation? ☐ Yes ☐ No

32. If no, please explain

33. If yes, show the normal work week by entering the paid hours

Sun	Mon	Tues	Wed	Thu	Fri	Sat

34. Did the worker continue to work past day of injury? ☐ Yes ☐ No	35. Last day worked (yyyy-mm-dd)	
36. Number of hours scheduled to work on last day worked	37. Number of hours worked on last day	38. Number of hours paid by employer on last day worked

WORK SAFE BC

Employer's Report of Injury or Occupational Disease

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Worker last name	First name	Middle initial	WorkSafeBC claim number (if known)

Social insurance number	Personal health number (CareCard)	Date of incident (yyyy-mm-dd)	Date of birth (yyyy-mm-dd)
		- -	- -

Return-to-work information

39. Has the worker returned to work?
☐ Yes ☐ No

40. If **Yes**: Date (yyyy-mm-dd)

Since the return to work, have the worker's duties, hours of work, work schedule, and/or rate of pay changed? ☐ Yes ☐ No

41. If **No**: Do you have any modified or transitional duties available?	42. If yes, please describe modified or transitional duties
☐ Yes ☐ No Have the modified or transitional duties been offered to the worker? ▶ ☐ Yes ☐ No	

Signature and report date

43. Employer signature	44. Employer title	45. Date of report (yyyy-mm-dd)

For assistance, please call our Claims Call Centre at 604.231.8888 or toll-free within Canada at 1.888.967.5377, M–F, 8:00 a.m. to 6:00 p.m.

Please note: If you have concerns with this claim, please contact the officer handling the claim at the WorkSafeBC office to make known your objections or you may submit a letter detailing your specific concerns. **Impartial advice on WorkSafeBC claims** — To ensure you have an opportunity to obtain impartial advice on WorkSafeBC claims matters, the BC legislature has provided impartial advisers. **Employers' Advisers** are available to provide independent advice or clarification on a WorkSafeBC claim related to your firm. For additional information on the Employers' Advisers, please refer to their website at **gov.bc.ca/employersadvisers** or email: **eao@eao-bc.org**.

Toll-free within Canada:
1.800.925.2233

Employers' Adviser Office locations:
Richmond, Langley, Kamloops, Kelowna, Nanaimo, Trail, Prince George, Victoria.

WorkSafeBC collects information on this form for the purposes of administering and enforcing the *Workers Compensation Act*. That Act, along with the *Freedom of Information and Protection of Privacy Act*, constitutes the authority to collect such information. To learn more about the collection of personal information, contact WorkSafeBC's FIPP Office, at PO Box 2310 Stn Terminal, Vancouver, BC, V6B 3W5, email FIPP@worksafebc.com, or call 604.279.8171.