

Guide

Crash investigations

Investigations are an important part of every successful safety program. They help uncover underlying factors and conditions that cause or contribute to crashes. This enables your organization to take targeted actions to prevent similar crashes and avoid injuries and other costs.

Organizations that investigate both crashes and near-misses show their dedication to worker safety. When either event happens, it shows that road safety improvements need to be made.

This guide provides employers with step-by-step information on conducting investigations. It includes examples of diagrams and drawings to help you understand what to look for and document. You can use the guide on its own, or as part of our [Investigating Motor Vehicle Incidents](#) online course.

Table of contents

Step 1: Respond to the incident.....	1
Step 2: Gather information	2
Step 3: Map the sequence of events.....	7
Step 4: Determine underlying causes	8
Step 5: Recommend corrective actions.....	10
Step 6: Write your report.....	11
Step 7: Implement corrective actions	13

Disclaimer

The information contained in this document is for educational purposes only. It is not intended to provide legal or other advice to you, and you should not rely upon the information to provide any such advice. We believe the information provided is accurate and complete; however, we do not provide any warranty, express or implied, of its accuracy or completeness. Neither WorkSafeBC, nor the Justice Institute of British Columbia, nor Road Safety at Work, nor the Insurance Corporation of BC (ICBC) shall be liable in any manner or to any extent for any direct, indirect, special, incidental or consequential damages, losses or expenses arising out of the use of this form.

May 2022

Conducting an investigation for your organization

Follow these steps when an employee who drives for work is in a crash or near-miss. The steps can be adapted to fit your organization's capabilities and resources.

Step 1: Respond to the incident

If you're personally involved

The first thing you should do is to check yourself and your passengers for injuries. If you or someone else is able, do the following:

- Secure the scene. Take steps to help ensure no further harm comes to you or anyone around you. For example, put out emergency triangles or flag down another driver to help
- Contact 911
- Provide first aid or other care to injured people
- Notify your supervisor
- Begin collecting information (*see Step 2: Gather information*)

If you're a manager or supervisor

As soon as you're aware of a crash, check your organization's Emergency Response Plan to see if you or another representative should go to the crash scene.

It might not always be safe or effective to do that. For example, if the crash is weather-related, the risks of travelling to the crash scene might outweigh the benefits. If it's a considerable distance to the crash site and it's not a serious incident, it might be cleared by the time you could get there and you might not be able to gather much useful information.

If you're part of the emergency response or investigation team

When you get to the scene, take the following steps:

1. Verify the scene is safe and secure
2. Help provide first aid or care for others
3. Begin or assist with collecting information
4. Cooperate with enforcement officers and first responders
5. Report the incident to authorities as needed (e.g., police, insurance company, WorkSafeBC, Provincial Emergency Program, etc.)

Step 2: Gather information

Look for information that describes the sequence of events that happened before, during, and after the crash. Good information helps investigators re-create those events accurately and understand what happened. Crash scenes can be chaotic so it is important to be prepared and know what information to collect, and how to collect it.

What to do first

An employee who is already at the crash scene often will be able to gather important information. To help them, download our *What to do if You're Involved in a Crash* checklist. Keep a copy in all work vehicles.

If you send a company representative or a third party to gather information at the scene, have them follow these steps upon arrival:

- Park on the shoulder or a side road so the vehicle doesn't restrict visibility or access
- Check the area for hazards and only enter if it's safe to do so
- Wear appropriate safety gear (hi-vis vest, protective eyewear, footwear, headwear, gloves)
- Identify who you are and why you are there
- Cooperate with police and emergency responders. Be careful not to move or destroy potential evidence

Examine the site

The first thing to do is to survey the scene to get an overall perspective. This will help you identify the information you want to gather, and help you build a plan for doing that.

Look closely for clues. What looks unusual? What do tire tracks tell you? Look inside the vehicle(s). Is it well-organized or cluttered with items that may have obstructed the driver? Is there a phone with a half-finished text? If you think it can help piece the events together, take a photo or make notes.

Look for clues that fall into these 3 categories:

Physical factors

Did mechanical, environmental, or other factors contribute to the incident? For example:

- Unfit or cluttered vehicle
- Unsecured load
- Worn tires
- Hazardous weather / road conditions
- Pothole, loose gravel, defective traffic control device

Human factors

Is there evidence that something a driver, passenger, or another road user did or did not do contributed to the crash? Were physical or mental conditions a factor? For example:

- Fatigue, or another form of impairment
- State of mind – hurrying, complacency
- Driving knowledge or abilities
- Distractions – phone, spilled coffee or food on floor
- Speeding, didn't stop for stop sign, tailgating, etc.

Organizational factors

Did you hear or see things that cause you to wonder if gaps or deficiencies in the organization's processes contributed to the incident? Think about:

- Policies or procedures
- Training
- Supervision

Developing your own initial theory of what happened can guide you to collect necessary information. However, don't let your theory (or anyone else's) lead you to ignore information that contradicts it. Look for facts.

Take photographs

Photographs are one of the best ways to document information. Take photos of:

- Position of vehicles involved
- Damage to vehicles (inside and outside)
- Locations of crash-related debris
- Injuries to any person (get consent before taking photos)
- Position of injured persons (if thrown from the vehicle)
- Viewpoints of any eyewitnesses
- Environmental conditions and factors (e.g., setting sun, icy patch of road, unsecured load, defective brake parts, etc.)

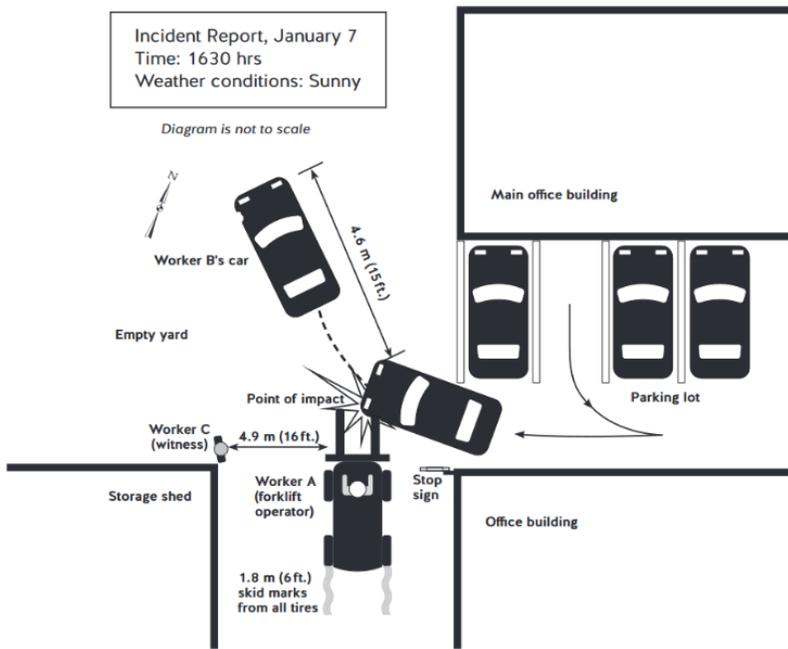
Take photos from multiple angles:

- Stand on a hill or other elevated area
- Take photos at multiple distances (25 m, 50 m, 100 m)
- Take photos from the eye level of the driver
- Include a common reference point or object to show scale or proximity to other objects

Make sketches

Sketches are valuable tools. A good site sketch provides an overall view of the crash scene and highlights key pieces of information. Start with a rough sketch to capture the information. Later, use the measurements you collect at the scene to build a scale diagram.

Online tools and videos are available by searching for “accident sketch.”



© WorkSafeBC, used with permission

Interview witnesses

Interviews are an essential source of information. Often, they are the only way to find out what happened and why. Speak with anyone involved in the incident or who saw it happen. People often can't recall every detail of the incident so interviewing multiple people helps you can stitch together a credible sequence of events. Keep in mind that once witnesses leave the scene you might not be able to find them, or they may soon forget what they saw or heard. Start talking with witnesses as soon as you can.

As you speak with them, ask questions that help you determine:

- When specific events happened and the order of events
- Where the incident occurred and where other vehicles, pedestrians, or active factors were at the time
- Where the witness was when the incident occurred
- What they saw and heard

When you leave the scene, consider who else you can interview. Supervisors or co-workers may have information about the driver's state of mind before they started driving.

Interviewing is a skill. Here are some tips to be more successful:

- Talk with observers as soon as possible. If they're injured or too upset to answer your questions, get their contact information and arrange to chat with them later
- Conduct interviews individually and privately without interference from others
- Don't demand information. Simply ask them to describe what happened
- Ask open-ended questions, like "What happened next?" or "Was that before or after ___?"
- Consider asking "Why do you think that happened?" or "What could have been done to avoid this incident?"
- Avoid interruptions. Let the interviewee finish before asking follow-up questions
- Periodically summarize and repeat details back to the person to make sure you have it right
- Offer to show them your notes so they can confirm you have captured their words correctly
- Give them your contact information. Ask them to call if they think of anything else
- Ask if they have any photos or videos of the incident they can share
- Thank them for their help

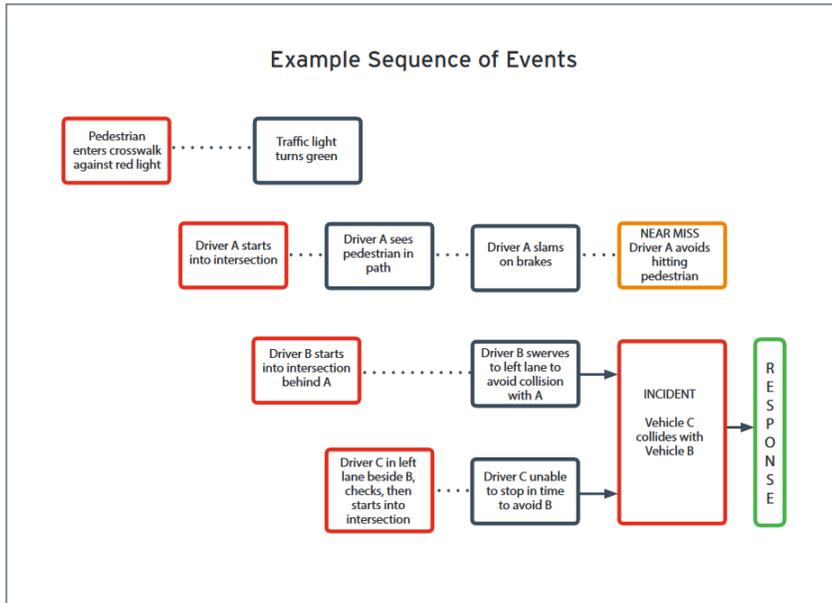
Check technology

Nearly all new cars sold in Canada today are equipped with Event Data Recorders (EDR). They track a range of data, including vehicle speed, steering and braking actions, acceleration, seatbelt use, and other information that can establish key facts and valid evidence. Vehicle owners can work with their local dealership to retrieve the data.

Dash cams are increasingly common. Check if vehicles involved in the crash have one. Also check with other motorists at the scene. They might have a dash cam that caught some or all the events.

Step 3: Map the sequence of events

Use the information you gathered to recreate the incident. Use a flowchart to create a timeline of events that shows what happened before, during, and just after the incident. The flow chart below provides a framework.

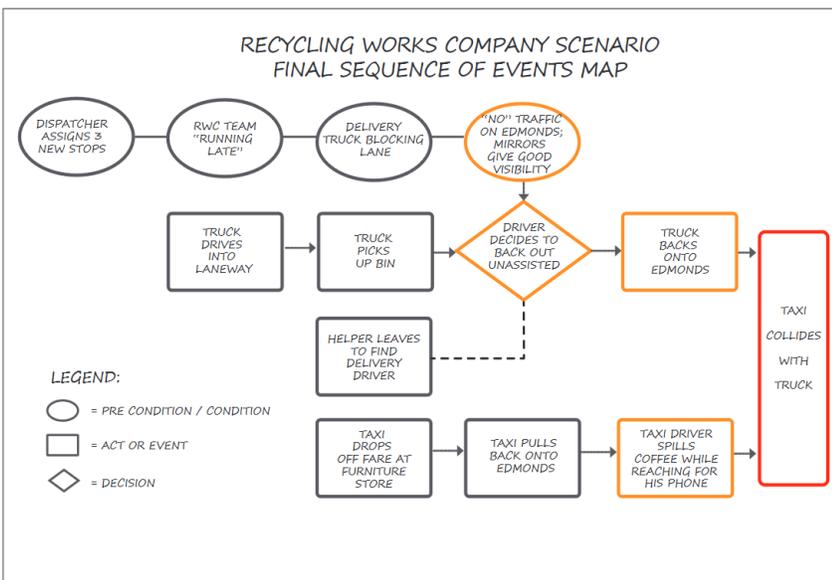


Start your timeline well before the incident. Often, critical decisions and key events that happen before the crash have significant bearing on the crash. Your sequence of events map should include all the facts you've gathered, even if you don't initially see it's relevance to the incident.

For each event, ask whether another event should have happened before or after it. For example, a left turn should be preceded by the driver activating the left turn signal. If something should have happened but didn't, make a note and find out why.

The sequence of events has 2 key purposes:

1. It's a visual summary of what happened. People can review the diagram to check that it matches what they saw.
2. It provides a framework for asking important questions.



Step 4: Determine underlying causes

Each fact established in the previous steps is an opportunity to ask, "why?" The sequence of events diagram helps the investigation team ask questions, discover facts, and test their theories.

It's an iterative process. Your first series of questions will help you see the immediate causes of the crash. Start with questions such as:

- Why did that happen?
- Why did the driver do that?
- Why do you think they did that?

You may discover the unsafe conditions, acts, or procedures that contributed to the incident. As you ask questions, you will think of others. Remember to explore details, even when they aren't obviously key facts.

By continuing to ask "why" investigators can achieve the primary goal of the investigation: Discovering the root or underlying / immediate cause(s).

What is an immediate cause?

Immediate causes are symptoms of the underlying causes. They are the unsafe or substandard acts, practices, or conditions that led directly to the incident. This could include:

- Losing control of vehicle on slippery winter roads
- Running a red light while hurrying to an appointment
- Giving an employee a driving assignment they don't have the necessary skills to safely complete

What is a root cause?

Root causes explain why the immediate causes happened. They are the organizational circumstances that allow unsafe conditions to exist, the conditions that facilitate unsafe decisions, and the fundamental reasons behind unsafe actions. Using the above immediate causes as examples, the underlying causes might include:

- Incomplete system (no process to make sure work vehicles have winter tires)
- Inadequate planning (trip planning process does not include checking highway conditions)
- Unrealistic work demands (drivers expected to arrive on time, no matter what)

- Incorrect procedure (driver not following distracted driving procedure)
- Incomplete system (no driver assessments to verify skills, or no orientation / training process in place)

Review our [Investigating Motor Vehicle Incidents](#) online course for more information.

Step 5: Recommend corrective actions

The main reason for examining crashes is to find out how to prevent similar crashes in the future. Corrective actions should address the underlying cause(s) you identified in the previous step, and identify what needs to be done.

Rather than drafting a long list of corrective actions, focus on the 1 or 2 essential things that need to happen to prevent a similar incident. Corrective actions can take a long time to complete.

Consider organizational factors

These corrective actions focus on strengthening the organization's tools, such as:

- Leadership
- Supervision
- Driving policies, procedures, and practices
- Trip planning
- Orientation and training
- Employee workload, unrealistic expectations

Consider human factors

These corrective actions focus on improving driver practices or behaviours, such as:

- Building work schedules that avoid long driving assignments
- Decreasing employee fatigue by assessing employee workload
- Empowering employees to self-assess and report when they feel driving is too risky
- Ensuring staff are properly trained for, and comfortable with, their driving assignment

Consider physical factors

These corrective actions look at the equipment your employees use, such as:

- Are work vehicles properly equipped and fit for the purposes for which they are used?
- Will regular inspections and proper maintenance help make sure work vehicles can reliably meet expectations?
- Do work vehicles have the right safety features and emergency equipment?

When the incident isn't your driver's fault

Some investigations might show that your employee did everything right and the actions of a third party caused the crash. There still might be opportunities to reduce risks. Can you find safer routes? Can crash avoidance training help? Can you find ways to eliminate unnecessary driving?

Step 6: Write your report

There are several formats you can use. Choose one that works well for your organization. A well-structured [investigation form](#) can serve as a starting point. Your report should include the following sections.

Purpose and objectives

Explain why the organization conducted the investigation and what it expected to achieve. The core objective is to identify the root causes and find ways to prevent a similar incident. There may also be legal requirements, company policies, and other reasons to consider.

Incident description

Briefly describe the events that happened before, during, and immediately after the crash. This should include:

- A list of people and vehicles involved
- The sequence of events. Include suitable photos of the scene
- The date and time of the incident. State day of the week or "day 11 of 12-day shift"
- The location and address of the incident. Add descriptors if relevant (e.g., busy street, steep hill)
- Names and roles of people investigating the crash

It's often appropriate to exclude names and other personal information. Instead, identify individuals as Driver A, Pedestrian B, Observer C, etc.

Investigation methods

Identify names, positions, and qualifications of your investigation team. Explain site visits. Insert photographs, sketches, and diagrams that contribute to the explanation. Describe interviews conducted and summarize what was learned. If you conducted any simulations, tests, or reconstructions, include the results here.

Findings

Provide an overview of why the incident occurred. Summarize the immediate and underlying cause(s). Identify contributing factors. Ensure the readers can understand the logic used to develop the recommendations.

Recommendations

List the main recommendations aimed at preventing similar future events. Use a table that links each recommendation to the condition or finding that prompted it.

Appendix

Put information here that's important to the investigation but not essential to understanding the report. This could include:

- Raw data and statistics
- Supporting diagrams and photos
- Interview summaries
- A root cause analysis chart
- Copies of relevant documents

Step 7: Implement corrective actions

Your investigation team should review its report with management and present corrective actions. Management needs to act on the recommendations. Some can be easily implemented. Recommendations that address deep-rooted or systemic causes can take considerable time.

Use a tracking system to ensure corrective actions are done on time. Here’s an example of a table you can use:

Urgency	Corrective action	Assigned to	Target date	Completion date
Immediate	Review incident with team. Focus on: <ul style="list-style-type: none"> Underlying causes and circumstances that contributed to the incident What changes the company will make to prevent similar events 	Raj (safety coordinator) Include Michelle and/or Carl	March 30	March 19
Immediate	Request that owner of garbage bin relocate it to the back of restaurant	Tina (operations manager)	March 10	April 4
Near Term	Reinforce organization’s expectation that employees make safe decisions and follow procedures	Lorne (senior VP)	April 15	April 15
Near Term	Develop a process so that: <ul style="list-style-type: none"> Supervisors and dispatchers work with crews to build realistic routes and schedules Supervisors review route and schedule changes with the driver before assigning that work 	Tina (operations manager)	May 15	In Progress

As each corrective action is implemented, periodically check to see how effective it is. Are the actions achieving intended results? Is there need to make adjustments? This will ensure that safety measures remain in place and are still effective.