
INCIDENT HIGHLIGHTS

DATE:

July 29, 2019

TIME:

11:40 p.m.

WORKER:

45-year-old semi-truck driver

INDUSTRY/NAICS CODE:

Specialized Freight (Except Used Goods) Trucking, NAICS 484230

EMPLOYER:

Interstate trucking, bulk transportation

SAFETY & TRAINING:

Business had a written Accident Prevention Program (APP).

SCENE:

Sawmill, outdoor tarping station

LOCATION:

Eastern Washington

EVENT TYPE:

Crush - Struck by

REPORT#: 52-52-2022

REPORT DATE: 4/12/2022

Driver Crushed Under Tires of Rollaway Chip Truck

SUMMARY

Near midnight on July 29, 2019, a 45-year-old semi-truck driver died when he was crushed under the tires of his rollaway chip truck. The driver was at a sawmill in Washington State picking up a load of woodchips for a pulp mill in British Columbia. It was his second and last load of the night. He parked his truck on a road at a fall protection tarping station that he used to access the top of his trailer to level his load. The road had a 2% downhill grade, and the driver did not set his parking brake before he left the cab.

While the driver was walking on top of his load near the back of his trailer, his truck began to roll forward. He ran on his load toward a ladder at the front of his trailer that went down to a walkway behind the tractor. He fell to the road at some point after he went over the edge of his trailer to climb down the ladder. The only other driver at the mill was parked behind him but left without seeing the incident. Around two hours later, another truck driver pulled into the worksite and found the fatally injured driver crushed to death under his tractor's left front drive tires.

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CONTRIBUTING FACTORS

Key contributing factors identified in this investigation include:

- Parking brake requirements in APP not followed.
- Inadequate truck parking brake policy in APP.
- Lack of rollaway response procedure in APP.
- Ineffective worksite and driver safety audits.
- ...[LEARN MORE>](#) (p.19)

RECOMMENDATIONS

Washington FACE investigators concluded that, to help prevent similar occurrences, employers should:

- Develop parking brake policies in APP that require using the safest rollaway prevention and response practices.
- Install electronic parking brake systems that automatically apply the parking brake when the driver has not set it before exiting the cab.
- Ensure that safety supervisors can travel to conduct safety audits at shipper and customer sites located across national borders.
- Request shippers and customers to perform recurring worksite safety audits.
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DEFINITIONS

APP	Accident Prevention Program
BC	British Columbia
CDL	Commercial Driver's License
CSHO	Compliance Safety and Health Officer
CTPAT	Customs Trade Partnership Against Terrorism
CVIP	Commercial Vehicle Inspection Program
DOSH	Division of Occupational Safety and Health
DRA	Driver Risk Analysis
eDVIR	Electronic Driver Vehicle Inspection Reports
ESC	Electronic Stability Control
GVWR	Gross Vehicle Weight Rating
JHA	Job Hazard Analysis
L&I	Washington State Department of Labor & Industries
NIOSH	National Institute for Occupational Safety and Health
OSHA	Occupational Safety and Health Administration
PPE	Personal Protective Equipment
SHARP	Safety & Health Assessment & Research for Prevention
TSCBC	Trucking Safety Council of British Columbia
USDOT	United States Department of Transportation
WA	Washington State



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WASHINGTON STATE FACE PROGRAM INFORMATION

The Washington State Fatality Assessment and Control (WA FACE) program is one of many workplace health and safety programs administered by the Washington State Department of Labor & Industries' Safety & Health Research for Prevention (SHARP) program. It is a research program designed to identify and study fatal occupational injuries. Under a cooperative agreement with the National Institute for Occupational Safety and Health (NIOSH grant# 5 U60OH008487), WA FACE collects information on occupational fatalities in WA State and targets specific types of fatalities for evaluation. WA FACE investigators evaluate information from multiple sources. Findings are summarized in narrative reports that include recommendations for preventing similar events in the future. These recommendations are distributed to employers, workers, and other organizations interested in promoting workplace safety. WA FACE does not determine fault or legal liability associated with a fatal incident. Names of employers, victims and/or witnesses are not included in written investigative reports or other databases to protect the confidentiality of those who voluntarily participate in the program.

Additional information regarding the WA FACE program can be obtained from:

[WA FACE program website](#)

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INTRODUCTION

In July of 2019, the Washington State Department of Labor & Industries' (L&I) Division of Occupational Safety and Health (DOSH) notified the Washington State Fatality Assessment and Control Evaluation (WA FACE) Program of the fatality of a semi-truck driver who was crushed under the tractor tires of his rollaway chip truck.

Washington State FACE investigators reviewed the DOSH compliance safety and health officer's (CSHO) enforcement case file in lieu of interviewing the employer due to their decision not to participate. Documents reviewed during the course of this investigation included the DOSH inspection summary report, the worker's death certificate, co-worker interviews, incident scene photos, surveillance camera footage, diagrams, and police report.

EMPLOYER

The employer was a long-haul interstate trucking company that specialized in truckload transportation of bulk wood residuals, such as wood chips, sawdust, and shavings from sawmills to pulp mills. With 31 semi-trucks and 49 truck drivers, the almost 60-year-old company was one of the largest cross-border wood residuals haulers in the Pacific Northwest of Canada and the United States. The employer's drivers worked in double shifts that began at various times and lasted 10 to 13 hours, Monday through Friday. Drivers could also work on Saturdays, if they were in compliance with hours of service regulations. The drivers were paid hourly wages. In 2019, the employer's truck drivers traveled a total of 996,894 miles. The employer was a previous recipient of WorkSafeBC and the Trucking Safety Council of British Columbia's (TSCBC) Certificate of Recognition.

The employer was one of five subsidiaries in a conglomerate headed by a privately held, family-owned parent corporation based in British Columbia (BC), Canada. The conglomerate provided bulk transportation services in the forestry, pulp and paper, petroleum, chemical, mining, and construction industries. The subsidiaries contracted additional trucking companies and provided dispatching for a combined fleet of around 350 trucks and over 500 drivers. Trucking operations took place around-the-clock from freight hubs across the Pacific Northwest.

WRITTEN SAFETY PROGRAMS and TRAINING

At the time of the incident, the employer had a formal, written accident prevention program (APP), or safety program, that was designed to comply with national and local workplace and commercial vehicle safety laws enforced in BC and Washington State (WA) [[SOR 1986](#); [WAC 2001](#); [WSP 2022](#)]. The program was formatted as a worker handbook by the conglomerate's parent company for use by the employer and two other trucking companies in the group. The 80-page handbook consisted of four chapters that covered general health and safety policies, job-specific safe work practices, operation and maintenance procedures, and safety awareness guidelines for management and workers. Chapter subsections specified requirements for safety committee and tool box meetings, personal protective equipment (PPE), new worker orientation, safety training, job performance evaluations, disciplinary procedures, and other areas. The program had a vehicle parking and backing out policy that required truck drivers to set their parking brake securely each time they exited the cab. The company paid bonuses to drivers as an incentive to encourage safe driving. Progressive discipline was used for drivers who showed patterns of risky driving. Truck drivers were instructed to report incidents and injuries to dispatchers, who were on duty 24-hours a day.

The employer's APP required truck drivers to perform daily vehicle pre-trip and post-trip inspections according to Schedule 1 of Canada's National Safety Code Standard 13 and Part 4 of BC's Motor Vehicle Act [[NSC 2009](#); [B.C. Reg. 2021a](#)]. The employer also participated in the U.S. Customs and Border Control's voluntary Customs - Trade Partnership Against Terrorism (CTPAT) program that required trucks bound for the United States to pass a 17-point safety and security inspection [[CTPAT 2013](#)]. The inspections checked the condition of major structural, mechanical, and electrical



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vehicle systems, including tractor and trailer air brake systems. Drivers submitted electronic Driver Vehicle Inspection Reports (eDVIR) to management after finishing their inspections.

The employer compiled weekly Driver Risk Analysis (DRA) reports to identify, coach, and retrain unsafe drivers. The DRA reports gathered data from electronic stability control (ESC) systems installed on trucks that recorded risky driving events, such as excessive speed and hard braking. The employer reviewed driving abstracts each year to identify drivers with traffic violations. Safety supervisors conducted in-cab ride along observations and driver performance audits at customer sites to evaluate drivers periodically throughout their employment. The employer provided copies of its safety rules to customer sites on an annual basis. Bi-monthly safety audits took place at worksites to help ensure truck drivers were following APP requirements. The employer conducted fewer audits at worksites in the United States than in Canada, with only four performed at the incident sawmill in a six month period around the incident date due to a lack of having safety supervisors with work visas. The fatally injured driver was never audited or evaluated in the three months between completing the employer's new driver training program and the incident. Out of nine instances where the employer applied progressive discipline to risky drivers in the year leading up to the incident, only one occurred in WA. The driver died as a result of not following the employer's parking brake requirement at the incident site.

WORKER INFORMATION

The worker who was fatality injured in the incident was a 45-year-old semi-truck driver. He was an Asian foreign-born worker who lived in BC with his wife and child. The driver was hired by the employer in April 2019, two weeks after he finished a Canadian Class 1 Commercial Driver's License (CDL) training program at a professional truck driving school in BC. The program consisted of 96 hours of classroom instruction, 44 hours of drive time, and 35 hours of observation. The driver's CDL had an endorsement that allowed him to operate commercial trucks equipped with air brakes. The driving school's owner recommended the driver to the employer.

The employer required the novice driver to complete a four-week new driver mentoring and training program before allowing him to drive alone. The one-on-one, on-the-road training was led by two credentialed trainers who rotated instructional duties during the training period. The training covered tractor and trailer operation, fall protection, and loading and unloading procedures at mills. It also included several mill site orientations in BC and WA. The driver was trained to operate a Western Star semi-tractor with a TYCROP high-cube, quad axle, Super B-train chip trailer. Trainers reported having no outstanding problems with the driver during their time with him. The employer authorized him to drive independently after he passed a final evaluation that used a TSCBC-published checklist.

The truck driver worked Monday through Friday. His daily shifts began at 4:30 p.m. and ended 10 to 13 hours later. He operated a semi-trailer truck to load and deliver woodchips from a sawmill in northeastern WA to a pulp mill in southcentral BC. In addition to maintaining standard commercial driving requirements, his duties included loading, leveling, tarping, and unloading freight with the same equipment he used during his new driver training. The driver typically made two daily five-hour round-trip deliveries that involved traveling nearly 336 miles over cross-border secondary highways between mills. He met the required medical qualifications to safely perform his job.

EQUIPMENT

The chip truck in the rollaway incident was a BC-registered 2016 Western Star semi-tractor with a 2004 TYCROP high-cube, quad-axle, possum belly Super B-train chip trailer (Photo 1). The Gross Vehicle Weight Rating (GVWR) of the tractor and trailer was 105,500 lbs. At the time of the incident, the loaded truck had a total weight of 66,225 lbs. that was spread over four axles on the tractor and four on the trailer. The vehicle was 70 feet long from the tractor's front axle to the trailer's rear axle. The tractor was an airbag equipped day cab model with an automatic transmission. It had

an odometer reading of 388,739 kilometers (241,551 miles) when the fatality occurred. The trailer had an open top aluminum body, side roll tarp, top hinge tailgate with ladder at the rear, and a fall protection work platform with ladder mounted at the front. Driving hazards included the risk of collisions and rollovers, while job tasks performed on and around the truck entailed the risk of struck by incidents, crushing, strains and sprains, and slips, trips, and falls.



Photo 1: The fatally injured driver operated this 2016 Western Star semi-tractor with a 2004 TYCROP high-cube, quad-axle, possum belly Super B-train chip trailer.

The chip truck had a dual air brake system consisting of primary and secondary circuits for the drive and steer axles, respectively. The system used an engine-mounted compressor that pumped pressurized air into storage tanks installed on the tractor and trailer until it was needed to apply the service brake or to release the parking brake. The driver applied the tractor and trailer service brakes with a foot pedal. The parking brake was set and released by using a push-pull air brake valve control knob located on the truck cab dashboard. The parking brake had a yellow knob that was next to a red knob used for the trailer emergency brake (Photo 2). Pulling the yellow knob would set the tractor parking brake and the trailer emergency brake at the same time. Pulling the red knob would only set the trailer emergency brake, which was not intended for use as a parking brake but to protect the tractor's air supply if the trailer suddenly lost pressure due to a breakaway or broken air line. Safe air pressure range in the system was between 100 and 120 psi, which was indicated on a dashboard gage. The air compressor would automatically refill the storage tanks when the pressure dropped about 20 psi below safe operating range. Low air pressure between 20 and 45 psi would also make the knobs pop out and activate the parking brake. A warning light and buzzer would activate when air pressure dropped below 60 psi in any of the air storage tanks. The driver's pre-trip inspection included a test that checked the air brake

system's mechanical performance and warning features. The cab's dashboard instrument panel had transmission shift and parking brake indicators. The cab was also equipped with an alert system that emitted an audible signal when a driver left their seat without setting the parking brake.



Photo 2: Industry standard push-pull air brake valve control knobs that are installed on semi-truck cab dashboards.

In addition to driver training, vehicle safety was achieved through trucking safety technology and software, preventive maintenance, and commercial motor vehicle inspection requirements. The trucks in the employer's fleet were equipped with a mandatory electronic stability control (ESC) system to help prevent skidding and rollovers due to sudden braking, slippery roads, and loss of steering control. The computer-controlled system used sensors to monitor wheel-speed, lateral acceleration, and steering angle to determine the correct braking forces for individual wheels. The system's monitoring capabilities provided vehicle performance data that management used to create weekly DRA reports to identify risky drivers.

Three months before the fatality occurred, the incident truck passed a mandatory semi-annual safety inspection per requirements of BC's Commercial Vehicle Inspection Program (CVIP) [[B.C. Reg. 2021b](#)]. Around the same time, the brake pads and drums on the tractor's rear drive axle were replaced by a commercial truck maintenance shop in BC. An air brake system regulator was also replaced about two weeks before the incident. Any equipment deficiencies had to be reported to the employer's maintenance staff for repairs. Unsafe trucks would not be dispatched until repairs were completed. The employer required lease operators' trucks in its fleet to maintain the same safety standards as its own trucks. On the day of the incident, the driver's pre-trip vehicle inspection report indicated that his truck had no major or minor defects. The incident investigation confirmed that his truck was in safe operating condition.

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INCIDENT SCENE

The incident scene was an outdoor fall protection tarping station at a customer's sawmill in rural northeastern WA. The tarping station was a steel fixed scaffold structure located at the north end of a pair of approximately 47-foot-high steel bulk storage bins where trucks would load woodchips (Photo 3). The bins and tarping station had an approximately 15-foot clearance height that allowed trucks to pass and park under them. The loading procedure began when a single tractor and trailer unit would drive slowly under the bins from the south end and park the trailer under them (Photo 4). Hardhat and eye protection requirement signs were posted on the bins. The bins had overhead, hydraulically operated, clam-shell type bottom gates that would open and release dried woodchips into the trailer. After setting the parking brake, the driver would exit the cab and climb an approximately 15-foot ladder up to a platform on the left side of the bin where hydraulic levers were located to control the flow of chips from the gates into the trailer. Pit-style scales in the road under the bins would weigh the truck as it loaded. The truck's engine would be left on to ensure the scale's accuracy. The driver would descend the ladder several times to slightly move the truck back and forth to spread and level the chips piled in the trailer. When the trailer load reached capacity, the driver would fill out a bill of lading and leave copies for the mill in a box next to the bins. The entire loading process would take from eight to fifteen minutes.



Photos 3 and 4: The left photo shows the fall protection tarping station extending north from the bulk woodchip storage bins. Arrow shows the path of chip truck travel from under the bin entrance and loading area to the tarping station exit in foreground. Right photo shows entrance to bin loading area. Arrow shows the bin's clamshell gates that released woodchips into trailers.



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After loading was completed, the truck would pull forward and park under the adjoining tarping station that extended approximately 50 feet from the bin loading area exit (Photo 5). Drivers were required to set their parking brake, shut off the engine, and put the ignition key in their pocket when exiting the cab to tarp the trailer. An approximately 16-foot caged ladder mounted to the station allowed truck drivers to access a platform with fall protection guardrails that was positioned above the right rear of the trailer (Photo 6). A second platform that was located at the north end of the station could be accessed from the ladder and platform installed on the front of the trailer (Photo 7). Guardrails extended from the platforms around the entire tarping station. The guardrails allowed the driver to walk off the platforms onto their load to level and tarp it with a reduced risk of falling. When tarping was finished, the driver returned to the cab, started the truck, dropped the trailer's rear tag axle, released the parking brake, and drove out to their delivery destination. The asphalt road under the tarping station had a 2% downward grade toward the station's exit. Drivers commented during the incident investigation that the slight grade would cause trucks to roll if their parking brake was not set. Leveling and tarping would typically take five to ten minutes to complete.



Photos 5 and 6: Top left photo shows tarping station extending north from bins toward exit. Bin hydraulic control platform with ladder on right. Top right photo shows caged ladder and first tarping platform that drivers used to access top rear of trailer.

Photo 7: Arrow in bottom left photo shows second tarping platform and entrance that drivers accessed by climbing their front trailer ladders. Guardrails around tarping station provided fall protection for truck drivers tarping on top of trailers.

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Chip truck loading operations took place around the clock. Spotlights lit up the area during hours of darkness. The employer's required PPE in the area consisted of work boots, hardhats, safety glasses, high-visibility vests, and the fall protection tarping station. The entire loading area was fenced and had a speed limit of 10 mph, which was posted at the entry gate. Vehicles inside the fenced area were subject to inspection at any time. The sawmill was in charge of the area.

WEATHER

The incident happened around 11:40 p.m. The weather was clear with no wind and temperature of 58 degrees [[Weather Spark 2019](#)]. The sun set at 8:34 p.m. The weather was not a factor in this incident.

INVESTIGATION

On July 29, 2019, the chip truck driver started his usual night shift at 4:30 p.m. He was performing his regular job of loading and hauling woodchips from a sawmill in northeastern WA to a pulp mill in southcentral BC. The driver was operating a 2016 Western Star semi-tractor with a 2004 TYCROP high-cube, quad-axle, possum belly Super B-train woodchip trailer (Photo 1). He arrived at the sawmill at approximately 11:18 p.m., after completing his first 160-mile trip to and from the pulp mill. The driver was at the sawmill to pick up his second and final load of the night, destined for the same pulp mill. He had been to the sawmill a least 30 times before with no reported or documented incidents.

The truck entered the woodchip loading area after entering the sawmill southward through a fenced security gate near the property's northern boundary (Photo 8). Both sides of the gate had red plastic reflectors and private property, no smoking, and 10 mph speed limit signs posted. The asphalt road into the area was bordered by freight railroad tracks on the left and a small stand of pine trees on the right. Woodchip debris were scattered on the road surface. The fall protection tarping station and elevated bulk storage bins were situated about 110 feet from the entrance on the left side of the road. The road and loading areas were lit by spotlights mounted on various structures. The truck's tractor and trailer lights were kept on at all times. A security camera located south of the area monitored and recorded truck traffic.



Photo 8: View looking south at sawmill entrance's security gate. Incident truck is parked on left with the fall protection tarping station and bulk woodchip storage bins behind it.

As the truck drove through the area, the tarping station and bulk storage bins were on its left side. When the truck reached past the south end of the bins, it made a wide left turn and aligned itself with the entrance to the bins (Photo 4). The truck stopped for 20 seconds until the only other truck in the area, which was parked at the end of the tarping station ahead, exited the property. The driver was now alone in the area. He drove his truck slowly under the bins and parked it when the back half of its trailer was below the second bin at the far end. It is not known if he had set his parking brake under the bins. He exited the cab and climbed the ladder to the bin control platform where the hydraulic levers for the clamshell gates that released woodchips into the trailer were located (Photo 9). After the back of his trailer was loaded, the driver returned to his truck and reversed it to level the load and reposition the front half of the trailer under the first bin behind him. The driver parked the truck and went back to the bin controls to finish loading the trailer.



Photo 9: Bin control platform with ladder that truck drivers used to access hydraulic levers for clamshell gates that released woodchips into the trailer.

As he was loading, another chip truck owned by the same employer pulled into the site at 11:27 p.m. and parked approximately 20 feet behind his trailer. The second driver exited his cab to check the bins and wait for the first driver to finish loading. As he waited, he saw the first driver on the bin control platform and asked him for a flashlight to get a better look at the bins. The first driver then came down the bin ladder and repositioned and parked his truck under the bins for the last time. He also brought a flashlight to the second driver, and both drivers then determined that there

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were enough woodchips left in the bin to load the second driver. The first driver then climbed back up the bin ladder to finish loading his trailer. The second driver returned to his truck to open his tarp in preparation to load. When the first driver finished loading his trailer, he went back to his truck and drove it forward from the bins to the adjoining fall protection tarping station. The second truck then pulled forward and parked the front of its trailer under the first bin. This left approximately 30 feet of space between the front of the second truck and back of the first truck that was now parked at the tarping station (Photo 10).



Photo 10: Red arrow shows where the back of the fatally injured driver's trailer was located under the tarping station. Yellow arrow shows where the front of the second truck's tractor was located under the bins when the incident occurred. Approximately 30 feet of space separated the trucks. The road under the tarping station had a 2% downward grade toward the exit.

As the second driver began to load his trailer, the first driver exited his cab to drop off a copy of his bill of lading for the sawmill in a box next to the bins. Around the same time, the first driver also submitted load information to his dispatcher through an onboard fleet tracking system. The first driver then climbed the ladder to the tarping station platform and stepped onto his load to level it for tarping. The second driver returned to his cab, reversed his truck under the bins and made several brake applications to level his load. As he drove forward again, the first truck started to roll

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forward at approximately 1.2 mph under the tarping station while the driver was still on top of his loaded trailer. Security camera footage showed that as the first truck rolled, the driver ran on his load from the back of the trailer toward the front trailer ladder before going over the edge and out of view (Photo 11). The truck rolled approximately 30 feet down the road. When it stopped, the rear of the trailer was almost aligned with the tarping station exit (Photo 12 and Diagram). During interviews by the CSHO, the second driver said that he saw the first truck move at the tarping station but was not paying attention to see if the driver was on the load. He assumed that the first driver had finished tarping and was exiting to take a break or fill out paperwork. Thinking that he saw nothing unusual, the second driver parked his truck under the bins again and resumed loading his trailer. When he finished loading, he saw that the first truck was still stopped at the tarping station exit. Unable to pull his trailer fully under the tarping station, he backed out from the bins and drove forward along their left side until he was side by side with the first truck. He parked next to the first truck for seven minutes. He did not leave his cab or see the fatally injured first driver before he drove out of the mill gate at 11:51 p.m.



Photos 11 and 12: Left photo shows front trailer fall protection platform and ladder that driver ran toward while on top of the load at the back of the trailer. The trailer's air and electrical supply lines are seen suspended from the tractor to the trailer. Right photo shows approximately where the truck stopped after it rolled down the road's 2% grade.



Diagram. Incident scene. A) sawmill entrance gate, B) asphalt road, C) chip bin loading area where second truck parked, D) tarping station where first truck rolled away, E) location where rollaway truck crushed driver and stopped. Arrows show travel path of chip truck from sawmill entrance gate to chip bin and tarping station areas. Image courtesy of Google Maps.

A third truck from the same employer arrived at the sawmill at 1:51 a.m., nearly two hours after the rollaway occurred. As the truck pulled into the area, the driver saw the rollaway truck still parked with its lights on at the tarping station exit. The truck was not running because it was equipped with an idle shutdown system that stopped the engine after it idled in neutral for a few minutes. The third driver's attention seized on the rollaway truck's partially levelled load and what appeared to be a chock block laying nearby. He reversed his truck and from his cab window saw the first driver on the ground, partially crushed under the tractor's left front drive tires. The third driver parked his truck, exited the cab, and saw that the first driver was dead. He called his dispatcher and 911 to report the incident. After police arrived, an area manager and safety supervisor for the employer came to the scene and found that the rollaway truck's parking brake was not set. A body recovery team also arrived and had the employer's area manager back the truck off the dead driver's body. The truck had to be moved back four feet to free the body.



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Investigators concluded that when the truck began to roll, the fatally injured driver attempted to climb down the ladder at the front of the trailer or jump to the tractor's walkway below but at some point slipped and fell under the tractor's drive tires (Photo 13). The truck rolled because the driver left the truck running with the automatic transmission in neutral and parking brake disengaged (Photos 14-15). The transmission did not have a park position, a commonly excluded feature on semi-trucks that stresses the importance of consistently using the parking brake. As a result, gravity pulled the truck down the road's 2% grade toward the tarping station's exit. The employer conducted a post-incident truck and trailer air brake system inspection that found no defects in the brake system. A county sheriff's investigation determined that the incident did not involve any criminal element.



Photo 13: Red arrow in top left photo shows approximately where the dead driver's body was found crushed under the chip truck's left front drive tires. Yellow arrows show base of front trailer ladder and walkway between cab and trailer that the driver attempted to access as his truck rolled.

Photos 14 and 15: Bottom left photo shows chip truck's transmission shifter set to "N" neutral after the crushed driver was found. The transmission did not have a "P" park position. Bottom right photo shows dashboard instrument panel indicator showing that the truck's shifter was in neutral and parking brake disengaged when the incident occurred.





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An area manager, safety supervisor, and driver trainer told the investigating CSHO that they trained truck drivers to follow the employer's APP requirement to set their parking brake each time they leave the cab. They stated that new drivers also learned about using the parking brake in their CDL training. The deceased driver's CDL and employer training records showed that he was trained and evaluated in the use of the parking brake. The trainers did not know why the fatally injured driver failed to set his parking brake at the tarping station. They also claimed to have had no way of checking to see if drivers were regularly setting their parking brake at the tarping station but indicated knowing that a truck would roll there if the brake was not set. A driver who was interviewed separately also knew that the tarping station road's 2% downward grade would immediately cause a truck to roll if its parking brake was not set. It is unknown if the fatally injured driver knew about the grade. Another driver stated that he would put his transmission in neutral and set the parking brake to prevent his truck from moving while loading at the bins.

The CSHO's interviews with drivers indicated some discrepancies between the employer's expectations for drivers to set their parking brake and drivers' actual parking practices. One driver said he believed that most other drivers disarmed their in-cab alert system that activated when a driver left their seat without setting the parking brake. It is not known if the deceased driver's truck had a disarmed alert system. An area manager and safety supervisor said that drivers were required to shut the truck off and put the ignition key in their pocket if they were going to enter the trailer. However, another driver said that removing the key was not a requirement.

CAUSE OF DEATH

According to the coroner's report, the semi-truck driver died of crush injuries of the head, neck, and torso.

CONTRIBUTING FACTORS

Occupational injuries and fatalities are often the result of one or more contributing factors or key events in a larger sequence of events that ultimately result in the injury or fatality. Washington FACE investigators identified the following unrecognized hazards as key contributing factors in this incident:

- *Parking brake requirements in APP not followed.*
- *Inadequate truck parking brake policy in APP.*
- *Lack of rollaway response procedure in APP.*
- *Ineffective worksite and driver safety audits.*

RECOMMENDATIONS/DISCUSSION

Recommendation #1: Develop parking brake policies in APP that require using the safest rollaway prevention and response practices.

Discussion: The chip truck driver could have avoided fatal injury if he had shut his truck off and followed his training and the employer's APP policy to set the parking brake before he left his cab. Instead, he exited the cab with the truck's transmission in neutral, the engine running, and parking brake released. These circumstances caused the loaded truck to roll down the tarping station road's 2% downward grade while the driver was still on top of the trailer leveling his load of woodchips. The investigation did not discover why the driver failed to set his parking brake or if he knew about the road's 2% grade. Another driver for the same employer stated in an interview by the CSHO that he knew it was especially necessary to set the parking brake at the tarping station because the 2% grade would immediately cause a truck to roll. It is unknown how this driver learned about the hazardous grade condition or if other drivers knew about it.



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The employer's APP had a written parking and backing out policy that required drivers to set their parking brake securely each time they left the cab. The policy also emphasized the importance of parking on firm, level and dry ground without unnecessary overhead obstructions. However, while such a policy should be in every trucking company's APP, employers can improve it with the safest parking brake practices possible to prevent deadly rollaways. In doing so, the policy should clearly require drivers to set the parking brake anytime they park, regardless of whether or not they exit the cab. This is a safer practice because a truck may be parked for reasons that do not involve the driver having to leave the cab, such as to fill out paperwork, use a phone, take a rest break, or use the sleeper berth. It is more likely in such situations for distraction and loss of situational awareness to occur that can lead a driver to forget to set their parking brake if they decide to leave their cab. If a driver in such a scenario exits the cab while their truck is parked on a slight, imperceptible grade, then they face a high risk of a deadly rollaway happening.

The parking brake policy should also require that when a truck will be left unattended, the driver must put their foot on the service break, place the transmission in neutral, set the parking brake, stop the engine, lock the ignition, and remove the key. If parked on any subtle or plainly visible grade, drivers must turn the truck's front wheels to the curb or side of the road and chock at least one tractor drive wheel on each side. This is a safer practice to adopt because an unattended truck parked on a slight grade with its parking brake disengaged can easily roll away if it is bumped by another truck or other mobile equipment. [\[B.C. Reg. 2021c; RCW 1980; WAC 2005\]](#). The policy should also require drivers to check their dashboard parking brake indicator, if equipped with one, before leaving their cab. The policy should clearly state that the employer will periodically check the operation of the parking brake alert system or other warning indicators installed on the truck and discipline any drivers who disarm or ignore them.

The employer's parking and backing up policy did not include a procedure for how to respond if a rollaway occurs. A driver who sees or feels their truck begin to roll while outside of their cab may respond in various instinctive ways to try to stop it. However, such responses may be more likely to end in serious injury or death than in safely stopping the truck. Attempting to jump off or onto a rollaway truck can end in serious or fatal injuries caused by falling hard on the ground or being struck or crushed by the truck. If a driver is on top of a rollaway tractor or trailer, and the truck's movement does not present a risk of major injury or death to themselves or other people nearby, then they should not attempt to climb down or jump off as it may cause serious injury or death and not allow them to stop the truck anyway. If the driver is outside of or away from the rollaway truck, then they should not try to jump on or into it as it would be unlikely for them to establish three points of contact to safely enter the cab.

Recommendation #2: Install electronic parking brake systems that automatically apply the parking brake when the driver has not set it before exiting the cab.

Discussion: An employer's best efforts to establish safe parking brake practices through APP policies and safety training may not guarantee that a driver will never forget to set their parking brake when required. When this happens it can end in severe or fatal injuries and costly property damage. One of the surest ways to prevent this from happening is to equip trucks with commercially available electronic parking brake systems. These safety technology systems automatically apply the truck's parking brake when the driver has not set it or has mistakenly released it before exiting the cab. Current system designs replace the truck's parking and trailer brake control valve knobs with ergonomic electronic switches that are wired to servos inside the dashboard that set or release the brakes. Electronic interlocks automatically set the parking brake when sensors detect that a driver has left their seat or opened the door before applying the brake. The switches feature built-in LED indicator lights that show the status of the brake in applied or released positions. The technology can be integrated with existing fleet telematics systems to notify managers when a rollaway occurred or almost happened so they can respond appropriately. The employer should train drivers to understand that the



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automatic parking brake technology is a driver assistance system that does not replace the need to maintain safe driving and parking practices.

Recommendation #3: Ensure that safety supervisors can travel to conduct safety audits at shipper and customer sites located across national borders.

Discussion: The employer of the deceased chip truck driver was contracted by a Canadian customer to haul woodchips across the national border from a sawmill in northeastern WA to a pulp mill in southcentral BC. A safety supervisor told the investigating CSHO that not having a work visa prevented him from traveling from BC to conduct safety audits at the incident sawmill in WA. The legal travel obstacle resulted in the BC-based employer conducting far fewer audits at the incident sawmill, with only four having been done there in a six month period around the incident date. Out of nine instances of the employer applying progressive discipline to risky drivers identified during safety audits in the year leading up to the incident, only one occurred in WA.

If feasible, trucking businesses that are international carriers should make efforts to assist their designated safety representatives in obtaining legal travel documents that will allow them to regularly audit their drivers' performance at customer sites located across national borders. The ability to travel abroad can also allow employers to perform joint worksite Job Hazard Analyses (JHA) with shippers and customers that will help ensure safe work conditions for truck drivers in geographically distant worksites that are outside of their direct supervision or where less stringent safety rules are in place. Employers should contact the destination country's nearest embassy or consulate to learn about specific international business travel requirements.

Recommendation #4: Request shippers and customers to perform recurring worksite safety audits.

Discussion: The employer recognized that conducting safety audits at their shipper and customer sites was a good way to keep their drivers safe at work. The employer also sent copies of their safety rules to their customer sites on an annual basis. However, the BC-based employer's safety supervisor's legal inability to travel from Canada to shipper and customer sites in the United States undermined the effectiveness of audits. When an employer cannot directly perform audits or other site safety visits it becomes vital for them to request shippers and customers to conduct them on a recurring basis to identify workplace hazards that can harm drivers. Hazard identification methods, such as Job Hazard Analyses (JHA), safety inspection checklists, and hazard photos; and control solutions to prevent identified and assessed hazards can be developed through information sharing between the employer, shipper, and customer. If the employer, sawmill, and pulp mill engaged in such a process, then they may have been able to develop collaborative solutions to greatly reduce the risk of a truck rollaway occurring at the tarping station. They could have worked together as business stakeholders to design effective signage for the tarping station that warned drivers about the 2% grade and reminded them to set their brake before leaving their cab. The employer and sawmill could also have explored road engineering solutions to eliminate the road's downward grade to make it safer for trucks to park on. The outdoor tarping station road's continuous exposure to truck traffic and erosive natural forces emphasized the need for site safety audits to recur over time to identify and address new changes that may be worsening road conditions and diminishing previously implemented hazard controls at the site.



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ADDITIONAL RESOURCES

CA/FACE [1994]. [Delivery Truck Driver Dies after being Crushed by a Truck while Making a Delivery to a Local Market](#). Sacramento, CA: California State Fatality Assessment and Control Evaluation Program.

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