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Highlight

A cast of kids speaks out about workplace bullying p21

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Centre Pullout

On the front cover: B.C.'s pellet mills were in the news for all the wrong reasons in 2014. Today, the industry is cleaning up its act.

Dealing with dangerous dust particles

For some industries, a build-up of dust is a dangerous situation. Many dusts are combustible, which means they can ignite. If they do, fire can spread rapidly and could lead to an explosion.

In this edition, we come at this issue from two angles: First, a guide to combustible dust in any industry; then, a feature on how the wood pellet industry is combating the risk of combustible dust.

If you are learning about combustible dust for the first time, our Ask an Officer story (page 5) is a good first stop. It covers some of the most common combustible dusts across a wide range of industries.

Our cover story (page 7) shows what can be achieved when an industry steps up and owns the health and safety of their workplaces. The story features Pinnacle Renewable Energy, a company that went from fires breaking out in their mills to an overhauled safety-management system. We speak with management and their crew about how they, and the industry as a whole, are combating combustible dust.

Employers have a responsibility to not only understand the risks their workers face, but to mitigate those risks. Combustible dust is no exception. Read on to find out how you can understand and prevent the risk.

Terence Little
Editor-in-chief

WorkSafe

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WorkSafe Magazine is published by the WorkSafeBC (Workers' Compensation Board of B.C.) Communications department to educate workers and employers about injury and disease prevention, promote positive safety culture, and provide links to WorkSafeBC resources for safer workplaces.

WorkSafe Magazine is published six times a year. The yearly issues include January/February, March/April, May/June, July/August, September/October, and November/December. The magazine can be viewed online at worksafemagazine.com.

Contact us Email: worksafemagazine@worksafebc.com. Telephone: Editorial 604.233.4017. Subscriptions: 604.279.7572. Mailing address: *WorkSafe Magazine*, PO Box 5350 Station Terminal, Vancouver, B.C. V6B 5L5. Courier: WorkSafeBC Communications, 6951 Westminster Highway, Richmond, B.C. V7C 1C6.

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WORK SAFE BC

Contributors

Ryan Parton

Ryan is a Courtenay-based writer who has covered a variety of topics for *WorkSafe Magazine*, including hearing safety, asbestos, and confined spaces. In this issue he covers the sawmill industry and the dangers of combustible dust (page 7).

Kathy Eccles

Kathy has been a long-time writer for WorkSafeBC. Working out of her home office on Vancouver Island, she still enjoys tackling health and safety topics. In this issue, she visited a forward-thinking autobody shop that takes a family approach to protecting its workers from sensitizers (page 12).

Gail Johnson

A health-conscious certified group-fitness instructor, Gail has written about everything from occupational asthma to new treatments for burn victims. In this issue, she covers the science of nanomaterials (page 14).

Jackie Wong

Jackie is a journalist and workshop facilitator in Vancouver. Her writing on race, urban health, and social justice has been published in magazines across North America. It was inspiring for her to step inside the minds of B.C. high schoolers while writing about the annual student video contest (page 21).

Reducing the risk of combustible dust

Steve Tye
Occupational hygiene officer

Region: Richmond
Years on the job: 35

This month, WorkSafeBC occupational hygiene officer Steve Tye answers questions about the often overlooked hazard of combustible dust. Industry sectors that typically generate combustible dust — such as bakeries, metal foundries, and sawmill operations — need to recognize and control these risks, in order to prevent devastating workplace incidents.

Q. What is combustible dust and could it be in my workplace?

A. Combustible dust is a finely divided solid material that presents a fire or explosion hazard when dispersed and ignited in air. Wood dust is an obvious one, but there are many, many others, including:

- Agricultural products such as grain, sugar, cornstarch, flour, rice, and powdered milk
- Metals such as magnesium, aluminum, and zinc
- Materials such as plastics, textiles, rubbers, and various resins

The U.S. Occupational Safety and Health Administration (OSHA) has a helpful poster that lists many of the common sources of combustible dust on their website: www.osha.gov.

Q. How can dusts such as flour be dangerous to my staff?

A. Any workplace that generates or uses dust is potentially at risk. Materials such as flour can burn or explode if the particles in the air are the right size and in the right concentration. Less than a handful of fine dust can be enough to fuel an explosion under the right circumstances. The process happens rapidly and can produce extreme-pressure events that can blow out walls and destroy structures. It can be catastrophic for workers.

A lot of people call combustible dust "a hazard in plain sight." It's there, but the hazard is either underestimated or not understood. Serious dust explosions have occurred in many different types of workplaces and industries, including food production, chemical manufacturing, and pharmaceutical manufacturing. The first combustible-dust explosion I worked on was caused by metal dust.

Q. Our crew does housekeeping weekly. Shouldn't that eliminate combustible dust?

A. Not necessarily. In some circumstances, hazardous levels of dust can accumulate rapidly. Weekly cleanup may not be adequate. In addition, how you clean the dust can create an even greater hazard. Brooms or compressed air hoses can stir the dust particles into the air and worsen the situation. Use cleaning techniques that do not increase dust dispersion, such as vacuums that are approved for dust collection.

Q. We can see dust on our equipment. Where else is it commonly found?

A. There are many places people don't tend to look, and as a result there can be significant dust accumulations on or in them. Dust may migrate from its source to any horizontal surface, like pipes, ledges, beams, and light fixtures. Things that are at eye level or below are usually well attended to. But remember to look up. You may also have to take a flashlight and look in less obvious areas. In a multi-level workplace, dust can fall through cracks in the floor and accumulate on the ledges or fixtures below.

Q. What should I include in a combustible-dust program for my workplace?

A. Start with a risk assessment for fire and explosion. What activities produce combustible dust? Where can dust build up and become a fuel source? What are the possible ignition sources? Look for things like the potential for a spark, static electricity, or heat from a motor, or an overheated bearing on conveyors or similar equipment.

If you have any concerns that your dust may be combustible, have it tested by an accredited laboratory with the capability to test combustible dust.

Once you have identified the hazards, take steps to control them. The backbone of prevention is regular cleanup and maintenance to keep your workplace as dust-free as possible. Here are some points to cover in your program:

- Control the dust at its source with a dust collection system that is properly designed, engineered, and built to a recognized standard. The National Fire Protection Association standards at www.nfpa.org provide relevant guidance.
- Safely clean all surfaces that accumulate dust regularly.
- Regularly check and maintain your equipment to minimize the risk of creating unintended ignition sources.
- Educate and train workers on the hazards of combustible dust, and supervise them to ensure they follow cleaning schedules and safe work procedures.
- Audit your program to ensure it's effective.

Q. Where can I get more information?

A. The following resources can help you:

- The Manufacturing Safety Alliance of B.C. offers free online training for managers and employers at www.safetyalliancebc.ca.
- The Canadian Centre for Occupational Health and Safety has a fact sheet for common questions on combustible dust at www.ccohs.ca.
- The U.S. Chemical Safety Board has a video on preventing devastating explosions caused by non-wood combustible dust at www.csb.gov.
- Our website worksafebc.com also has many helpful resources, including guides and videos, hazard alerts and bulletins, and crew talks and toolbox meeting guides. Find them by searching for "combustible dust."

Looking for answers to your specific health and safety questions? Send them to us at worksafemagazine@worksafebc.com, and we'll consider them for our next Ask an Officer feature.

Riding high on safety: A turnaround at Pinnacle Renewable Energy is helping to advance pellet mill health and safety standards.

Owning safety in wood pellet manufacturing

By Ryan Parton

Three years ago, Pinnacle Renewable Energy was an unlikely contender to become a role model for occupational health and safety. In October, 2014, a fire broke out at their wood pellet plant near Burns Lake, B.C., injuring three workers. By 2015, fines and orders were stacking up, workers continued to be at risk from combustible dust, and Pinnacle was ready to make a change.

The world's third-largest manufacturer of wood pellets — with seven pellet mills, one shipping terminal, and some 300 employees across British Columbia — Pinnacle had been assessed 10 monetary penalties for combustible dust and other violations over a span of less than two years. The organization possessed a culture that had, by some accounts, simply accepted that fires were "part of the business," says Pinnacle's chief executive officer, Rob McCurdy.

Before 2015, the entire wood pellet industry in B.C. struggled to be compliant with health and safety regulations. Pinnacle itself had several workplace incidents to which WorkSafeBC officers responded. In the summer of 2012, WorkSafeBC established a formal combustible-dust strategy in the aftermath of two devastating sawmill explosions. Though the strategy initially focused exclusively on sawmills, it was eventually expanded to include pellet mills, and other wood-product manufacturers.

The increased focus led to Pinnacle taking a bold risk in August of 2014: The company laid its deficiencies on the table and asked WorkSafeBC for help. It was the start of an innovative process that led to a remarkable transformation and a steadfast commitment to continual improvement.

And it all started when Pinnacle's executives decided to view their relationship with WorkSafeBC through a whole new lens.

A unique challenge

Pellet mills present a variety of occupational risks, from heavy machinery and confined spaces to combustible dust — a hazard that can be particularly problematic in this industry. Unlike most manufacturers, for whom dust is a byproduct of their processes, pellet mills use sawmilling residuals — essentially sawdust and wood shavings — as their raw material.

Combustible dust, therefore, is a key part of Pinnacle's manufacturing process, rather than an expendable byproduct. That dust is dried to a moisture content of 4 to 6 percent and often conveyed via ventilation systems, which could increase the risk of combustion. In the end, it will be made into wood pellets that are sold as fuel for applications such as home heating, industrial processes, and power generation.

"Pellet mills, in general, didn't appear to have a good handle on their health and safety risks," recalls Geoff Thomson, a Kamloops-based occupational hygiene officer and one of two WorkSafeBC officers assigned to the pellet mill initiative. When it came to Pinnacle, he noted, "There had been several accidents and a number of fairly serious orders written on several other issues besides combustible dust."

"I really thought Pinnacle was going to go down one of two roads," echoes Mike Tasker, the other occupational safety officer on WorkSafeBC's pellet mill inspection team. "They were either going to have a catastrophic event, like an explosion, and possibly hurt or kill some of their people, or we were going to end up imposing so many sanctions against them that they just couldn't operate."

Demonstrating a lockout procedure at Pinnacle Renewable Energy's Meadowbank/ Hixon pellet plant.

Pinnacle plant manager Greg Lobsinger and WorkSafeBC occupational safety officer Mike Tasker survey the Meadowbank/ Hixon worksite.

A bold solution

Within the offices of Pinnacle Renewable Energy, the signs that something needed to change did not go unnoticed.

"We realized we were struggling," admits Scott Bax, Pinnacle's senior vice-president of operations. "The officers were making it clearer and clearer with every visit the level of deficiencies we had with respect to our systems."

That, says Bax, is when he and McCurdy decided to take the bold step of writing a letter to WorkSafeBC's Prevention Services, asking for help in improving Pinnacle's performance. A second letter in November of 2014 outlined Pinnacle's new "Owning Safety" program, which identified the company's deficiencies, established priorities, and laid out a roadmap to progressive improvement.

Putting their deficiencies in ink for all to see was no easy task during a period in which Bax describes the relationship between Pinnacle and WorkSafeBC as "difficult," "acrimonious," and "confrontational."

"We had a lot of, I'll call it heartburn or indigestion, going down that road," he recalls. "But if you're going to change anything, it starts with you; it never starts with the other party."

"Some of the guys thought I was nuts," adds McCurdy. "They said, 'You're just giving WorkSafeBC something to hang yourself with.' And I said, 'Yes, I am, but I believe in what we're going to do and I know we're going to deliver on this.'"

And deliver they did.

Pinnacle's earnest request for assistance kicked off a series of regular conference calls between company representatives and WorkSafeBC. Baseline and follow-up inspections were undertaken at pellet mills throughout the province, and Pinnacle itself began the process of reinventing its organizational culture.

Pinnacle hired a new director of health and safety, overhauled its safety management system, and actively focused on breaking down barriers to communication between the company's various sites. Pinnacle employees also took on active roles within the industry in order to better facilitate knowledge sharing. Scott Bax, for example, became chair of the Wood Pellet Association of Canada's safety committee; employee Steven Mueller also sits on that committee, as well as on the B.C. Forest Safety Council's Manufacturing Advisory Group.

"As an organization, we went all in," says Bax. "We fully committed to being better, and acknowledged that we

weren't experts. There were no sacred cows; everything was open for discussion and change."

The results of this unique working relationship have been nothing short of exemplary. Little more than two years after that initial letter, Pinnacle reports a 70 percent reduction in its medical incident rate and an 80 percent drop in lost-time accidents. By February 2017, each of its facilities had gone at least an entire year without a single lost-time accident.

"We're smashing our budgeting numbers and this has been the best year in Pinnacle's history," adds plant manager Greg Lobsinger. And employees are more engaged as well. "By working together, we had 100 percent employee buy-in."

"I've seen the crew morale improve," says millwright Jordan Fouty. "People are part of the process now. They're owning safety; they're being recognized for their involvement."

Thomson points to Pinnacle's own improved relationship with WorkSafeBC as evidence of success.

"They're not afraid to pick up the phone and call us to report a minor incident or to ask us questions," he says. "Before it was very much not that way. Pinnacle's leadership has embraced health and safety as a corporate value, and I think that's why you've seen so much success from them."

Safer pellet mills in all of B.C.

Since Pinnacle made this commitment, the formal, province-wide Pellet Mill Initiative has seen changes industry-wide. Other wood pellet manufacturers such as Pacific BioEnergy, Premium Pellet, and Princeton Standard Pellet have made great strides, and even pioneered some of their own innovative health and safety strategies, says Thomson.

> **"Pinnacle's leadership has embraced health and safety as a corporate value, and I think that's why you've seen so much success from them."**
>
> —**Geoff Thomson**, WorkSafeBC occupational hygiene officer

The story of B.C.'s wood pellet industry highlights the importance of not just recognizing weaknesses when it comes to occupational health and safety, but actually taking ownership for those shortcomings and actively working toward improvement. It also shows the immense value of viewing WorkSafeBC as more than just an enforcement agency, notes Bax.

"I don't think most industries or employers view WorkSafeBC as actual safety experts that can make them better; they see them as the necessary regulator," says Bax. "If you really want to be better from a safety perspective, WorkSafeBC is a powerful ally to help you get there."

Find out more

For more on this story, see the video on Pinnacle's journey to improvement at worksafebc.com/annualreport. WorkSafeBC also offers a wide variety of employer resources at worksafebc.com. For a free, online safety-certification program for supervisors, visit supervisingforsafety.com.

WorkSafeBC Ergonomics Forum

When: Tuesday, Oct 17, 2017 | 12:30 to 4:30 p.m.

Location: WorkSafeBC auditorium
6951 Westminster Hwy, Richmond, BC

October is Ergonomics Month and in recognition WorkSafeBC is hosting an ergonomics forum.

Join us for an afternoon of presentations and networking.

Register for the event at
worksafebc-ergonomics-forum-2017.eventbrite.ca

For more information, email
ergomonth@worksafebc.com

WORK SAFE BC

Asbestos is the No. 1 cause of death in the construction industry

WorkSafeBC is ramping up our direction to asbestos-abatement, demolition, and general contractors to stop exposing construction workers to asbestos, and to meet their legal obligation to manage asbestos safely and responsibly.

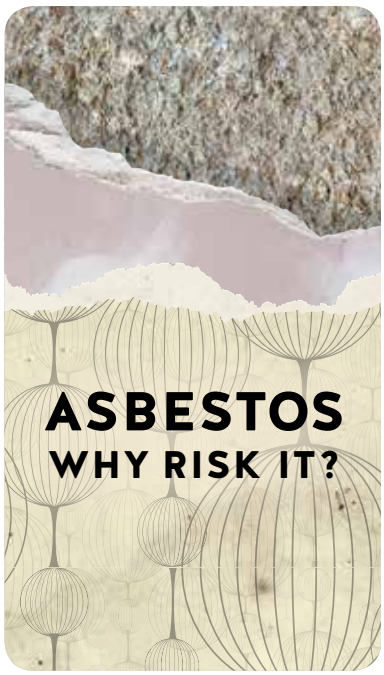
The regulatory consequences of contractors not identifying asbestos properly, not removing it safely, and not following safe work procedures include stop-work orders and fines — which result in lost hours, blown deadlines, and cancelled projects.

In homes built before 1990, asbestos can be found in more than 3,000 building materials. And when these materials are disturbed — when they're drilled, sawed, sanded, or broken up during a renovation or demolition — asbestos fibres can be released into the air.

Breathe them in, and you can develop serious chronic diseases; many of which result in death. In fact, asbestos-related diseases are the single largest cause of workplace death in B.C.

Through proper planning, training, and supervision, you can eliminate the risk of workers' exposure to asbestos.

Find helpful resources at worksafebc.com/asbestos



Protect your employees from the hazards of combustible dust

To help you recognize and mitigate combustible dust in your workplace, visit **worksafebc.com/manufacturing** and download the combustible dust resource toolbox.

WorkSafeBC

Run by the Neil family, Little Valley Restorations has an exposure control plan inspired by an institutional-scale model.

Stopping exposure to sensitizers in autobody repair

By Kathy Eccles

Fit-tested respirators, clean-shaven faces, and air purifiers are all part of the work day at Little Valley Restorations — a medium-sized business that takes potential exposure to sensitizers very seriously.

It was the day before her birthday when occupational hygiene officer Susan de Leeuw visited Little Valley Restorations in Ladysmith, B.C. Her visit was part of a WorkSafeBC campaign to educate employers on the risks of isocyanate exposure, as part of the Occupational Disease Strategy.

Isocyanates are part of a group of harmful chemical compounds known as sensitizers. Vapours, dust, and particulates containing isocyanates can produce allergic skin and respiratory reactions, ranging from a rash or runny nose to life-threatening asthma attacks.

"Even a small exposure can lead to a hyperactive immune response," says Barry Nakahara, manager, Prevention Field Services, at WorkSafeBC. Once a worker is sensitized to isocyanates, sensitization is permanent and reactions are often severe.

In autobody repair shops, isocyanates are produced in the two-part process of mixing hardeners into paint primers and clear coats. But, in de Leeuw's experience, industry awareness of isocyanates and sensitization was low, and she was expecting a tough sell.

"One or two painters had heard of isocyanates in nine or ten visits," says de Leeuw. "There was little or no awareness of signs and symptoms of dermal and respiratory exposure to sensitizers."

Anatomy of a site visit

At Little Valley Restorations, de Leeuw went through the normal procedures for a site visit.

"I have a set of questions I go through to see what is in place," she explains. "I ask about first aid, respirator fit tests, supplied air tests, safety data sheets, and exposure control plans."

Production manager Travis Neil gave de Leeuw responses that she didn't expect.

"The first surprise was they had air-flow testing and respirator fit tests completed. They had fit-test records

that went back quite a way. This was a good start," says de Leeuw.

Next, he showed her the shop's detailed isocyanate exposure control plan and a certificate for a compressed breathing air test.

"I was really impressed that they were testing the air and had an exposure control plan," adds de Leeuw. "They sure are trying to protect their workers' health. This was a great birthday gift."

Creating an exposure control plan

Little Valley Restoration is run by the Neil family, headed by John Neil, who opened the business in 1980. His son, Travis, inherited his approach to safety. "He started me out as safe as possible, teaching me 'Don't be the cool guy.'"

Travis Neil's wife, Cayla, developed the shop's isocyanate exposure control plan. She had previous experience working for advisors in the Health and Safety Department at Vancouver Island University.

"My mentors gave me insight into how to develop thorough procedures on a large institutional scale. Seeing plans at this level was a natural progression into being able to create and implement a plan in a small-business environment."

To start, Cayla enlisted the buy-in of suppliers. "Ian [from Lordco] gave us a document that was a framework to start with and said, 'Add your detail to it and customize it to your business.'" Cayla identified each product containing isocyanates and where exposure occurs. Everyone on staff was then educated on signs and symptoms of isocyanate sensitivity.

She stays up to date on safety regulations and industry-specific hazards, and looks to WorkSafeBC's website as a resource. She advises, "Change your mindset about WorkSafeBC and see it as an avenue to keep your employees safe."

"Shave or go home"

In Little Valley Restoration's shop, a dozen painters and apprentices work in 14 well-ventilated operating bays. Two giant air purifiers push fresh air down from above, filter dust, and clean contaminated air. "They take particulates out of the atmosphere," John explains. "They're portable and can move from one job to another."

Fresh air is supplied into the spray booth and workers wear full-face air-supplied respirators, as well as chemically impervious disposable suits, gloves, and boots. A supplier brings in a free respirator fit test kit each year. Workers must be clean-shaven for a proper seal.

John maintains, "We have a shaving kit in our washroom for our guys. If they come in with three days' growth, it's 'Shave or go home.'"

Travis agrees: "We don't want anyone exposed or sensitized. In such a small business, it's a close-knit group. Every worker is important. It's our well-being."

Drs. Viridiana Perez and Irene Andreu, who lead the team's research in nano-safety in the workplace, discuss their latest results with Prof. Byron Gates.

Cleaning up nanomaterials

By Gail Johnson

How do you clean what you can't see? New research, supported by a WorkSafeBC Innovation at Work grant, looks into the science of cleaning up nanomaterial spills that could potentially be invisible to the naked eye.

Nanotechnology is one of the fastest evolving fields of scientific discovery. Nanomaterials, sometimes referred to as nanoparticles (a subcategory defined by shape and dimensions), are materials and structures with dimensions between 1 nanometre (one billionth of a metre) and 100 nanometres in size.

The minuscule materials are found in everything from electronics to medicine and cosmetics. And they pose a vexing challenge in the workplace. Workers may come into contact with them regularly, and there are potential hazards associated with handling them. Not only that, but questions abound surrounding exposure limits and effective workplace processes and procedures.

That's where Dr. Byron Gates' research comes in. An associate professor of chemistry at Simon Fraser University, Gates specializes in all things nano.

A quick introduction to nanomaterials

To get a sense of just how minuscule they are, picture this: a single human hair is about 80,000 nanometres wide.

Nanomaterials are all around us in nature and have existed since the beginning of time: They can be found in a variety of things, from ocean spray, to volcanic ash, to fine sand, to dust.

Engineered nanomaterials are relative newcomers, and their uses cover everything from enhanced antimicrobial activity to efficient energy conversion. They're used in hospitals worldwide to enhance the contrast of MRI scans and exist in everyday products, such as some sunscreens and new televisions.

It's these engineered nanomaterials that have so many unknowns.

"Many nanoparticles of earth-abundant materials are readily present in our environment, but when you go into a laboratory and start synthesizing a form that is not natural, you're potentially exposing someone to relatively concentrated amounts and reactive forms of nanomaterials that could have biological implications," Gates says. "Workers might also be dealing with relatively large quantities of the material, and that translates into a higher probability for exposure.

"Nanomaterials can accumulate in our environment and in our bodies, and can adversely affect ecological and biological systems," he adds. "Why would you want that risk? That's the foundation of our work: We're ultimately trying to put in place science that helps to determine the potential for exposure

to engineered nanomaterials in the workplace environment, and to create methods that minimize this exposure."

Nano safety in the workplace

With support from Research Services at WorkSafeBC, Gates's ongoing research aims to assess the potential for workers to be exposed to engineered nanomaterials in the workplace. He and his research team have so far identified several sectors where engineered nanomaterials exist, including construction, transportation, and utilities; manufacturing of, for example, some forms of antibacterial clothing, bathing suits, and wetsuits; wholesale and retail trade; health care; arts, food, and entertainment; agriculture and mining; and information technology, to name just a few.

The primary means of exposure are inhalation (via aerosols), penetration through the skin, and ingestion.

Nanomaterials can pass into the bloodstream and affect the body's organs and systems. They have the potential to lead to liver damage; autoimmune, neurological, and heart diseases; and other health problems.

"While precise toxicity levels are still being studied, there is evidence that these particles can cause worse health effects than those associated with the parent materials because of their size," says Geoffrey Clark, WorkSafeBC senior occupational hygienist.

"For example, exposure to silver can cause a variety of toxic effects," Clark says. "WorkSafeBC has an occupational exposure limit for silver and silver compounds, but the toxic effects of nano-silver may be even more severe, and the existing limits may not be good enough.

"These things are also going places in the body that the parent materials don't typically go," Clark adds, pointing to an animal study in which inhaled nano-titanium went into the lungs, as expected, but also travelled up nerve cells in the nose straight to the brain.

Another animal study found that certain types of fibrous carbon nanotubes can affect the lungs in a similar way to asbestos, leading to fibrosis, scarring, lung cancer, and the possibility of mesothelioma. "With these materials, we have to be even more careful," adds Clark.

Mark Teo, a WorkSafeBC occupational hygiene officer with a Ph.D. in chemistry and a sub-specialization in nanotechnology, agrees with Clark. In 2014, the International Agency for Research on Cancer classified a specific type of multi-walled carbon nanotube — MWCNT-7 — as possibly carcinogenic to humans.

With many nanotubes still unclassifiable with regard to carginogenity, Teo notes that "research on carbon nanotube toxicities is still ongoing, and much more research needs to be done."

Simple strategies for the safe use of nanomaterials

What makes handling and controlling nano-scale materials especially difficult is that in a number of situations, these materials aren't visible to the naked eye.

Gates's research focuses on the kinds you cannot see, which pose a significant issue when it comes to cleaning them up.

"If you walk into a laboratory to assess its cleanliness, you might be able to notice the presence of dirt or dust on the floor, but if you're talking about non-agglomerated or non-aggregated forms of nanomaterials, it is likely that you will not readily see them," Gates says. "So how do you know you're not exposed to these materials? Furthermore, how do you know how to effectively clean them up?"

Gates's research is applying science to those questions. Although further studies are needed regarding safe exposure limits to engineered nanomaterials, his team has devised ways of detecting engineered nanomaterials and methods to effectively clean them up.

Worker exposure can be controlled using many of the existing occupational hygiene risk assessment and exposure-control methods. For instance, local exhaust ventilation, HEPA filters, and fume hoods may be able to recapture certain types of nanomaterials.

The use of personal protective equipment is also vital. Gloves, safety goggles, respirators with HEPA filters, and full body coveralls may be needed, depending on the risk level of the activity.

A safe practice involves placing absorbent liners underneath work areas, replacing them regularly, and disposing of them in sealed waste containers.

"We're developing techniques that are aimed at being translatable to the broader community," Gates says. "We believe this research is applicable to workplaces around the world. Different employers will be able

to implement a very simple set of procedures to test the workplace so workers can be confident it's clean and safe."

Teo, also a member of Gates's research steering committee, sees this research as having a significant impact on nanomaterial health and safety in the workplace.

"Professor Gates's research team is working hard in developing analytical methods that will help users to detect specific types of engineered nanomaterials on work surfaces. Whether you're an employer, a worker, a researcher, or a regulatory officer, Dr. Gates's work will interest you," says Teo.

Raising awareness

Gates's research laboratory at SFU and WorkSafeBC are both collaborating on soon-to-be-released guidelines for employers related to engineered nanomaterial safety.

Raising awareness of engineered nanomaterials, meanwhile, is essential.

"Education is one of the key things we're focused on," Gates says. "There are people using engineered nanomaterials who do not regard the chemical composition and reactivity of these materials, so they don't wear gloves or other necessary protective equipment when handling these materials. Workers still need to protect themselves when working with any form or composition of these materials."

With engineered nanomaterials only becoming more commonplace in our everyday lives, this kind of research will be increasingly necessary.

"Nanotechnology might sound futuristic, but it has already found its way into so many of the products we commonly use," says WorkSafeBC director of Policy, Regulation and Research, Lori Guiton. "Prevention of occupational injury and disease is a central part of our mandate, and the kind of work Dr. Gates is doing at SFU is so important, showing us how we can detect and mediate spills and ultimately safeguard the workplace."

Amendments to the Regulation allow employers to use engineered restraint systems that offer equal or better protection to workers than the traditional wire and chain models.

Regulations amended for flow piping systems

Following public consultations and hearings, amendments to the Occupational Health and Safety Regulation for oil and gas flow piping systems took effect on August 1, 2017. Here's what you need to know.

Generally, the amendments to Section 23.69 of the Regulation enhance, clarify, update, and / or expand existing regulations on:

- The integrity-assurance program for flow piping systems
- The selection, installation, operation, and inspection of flow piping systems
- Engineered restraint systems
- Related issues such as pressure-testing requirements

Who will be affected?

Oil- and gas-sector employers in upstream petroleum, and those running processing operations such as gas plants, refineries, and bulk storage facilities.

What's changing?

Some of the highlights include definitions, restraint systems, and integrity assurance, as noted here. But employers should review Section 23.69 for full details of all the changes.

The definition of flow piping systems

The new definition clarifies the type of flow piping systems that are covered by this section: The requirements apply to temporary or portable above-ground piping systems used to convey liquid or gas under pressure to or from a wellhead. These activities include drill stem testing, swabbing, cementing, well servicing, and stimulation.

Restraint systems

Employers were formerly required to use specific wire-rope safety lines or chains to secure their piping systems. The amendments allow employers to use other engineered restraint systems that offer equal or better protection for workers.

"With the amendments, the Regulation now aligns with practice in the field for the last year and a half," explains Budd Phillips, WorkSafeBC manager, Prevention Field Services.

Each flow piping system needs an engineered restraint system designed and manufactured specifically for that purpose.

"Employers have two options based on the type of pressure the pipe will be under," he says. "Buy from a manufacturer, or have one made and certified by an engineer who will ensure it is adequate for the intended purpose."

Integrity-assurance program

The amendments broaden the scope of the integrity-assurance program, commonly known as an O&M (operations and maintenance) program.

"Employers are now required to implement an effective program regardless of the type of well operation or anchor used," says Phillips. "It's really a non-destructive testing inspectional process."

Employers need to select flow piping systems based on the anticipated operating conditions, install them according to the manufacturer's instructions, and assign a qualified person to administer the program.

Why were these changes made?

Many of the changes to Section 23.69 of the Regulation reflect current practices and / or the use of new technologies and equipment. The amendments aim to ensure flow piping systems are safely operated and properly restrained.

Advancing technologies allow for greater operating pressures of flow piping systems than noted in the former requirements.

In addition, over the last few years, WorkSafeBC has received variance requests to allow other restraint systems. These changes are the result of input from subject-matter experts including workers, employers, and industry members, as well as from public consultations and hearings held by WorkSafeBC.

The integrity-assurance program formerly focused on high-pressure piping used in wells. It was broadened to encompass all uses of temporary or portable flow piping systems.

Where can I get more information?

Full descriptions of the changes can be found on the Law and Policy pages of worksafebc.com, under "Closed Public Hearings and Consultations."

Winner

Scaffolding not up to code

The winner of the July/August edition of "What's wrong with this photo?" on scaffolds and ladders is Kevin Waldal, OHS attendant at FortisBC. Here's what he found:

Ground level:

- Poor housekeeping. There are several items creating trip hazards, including the pallet, an empty box, jerrycans, the saw horse, a conduit (can't say if it's live), garbage bags, PVC pipe, and a 2x4.
- The jerrycan is not marked with WHMIS labels or other means of identification.
- The jerrycan is on its side with the top off, creating an environmental spill hazard.
- There are no spill-containment or clean-up materials present.
- Garbage has not been cleared away from the work area.
- The worker carrying the box is using poor technique and ergonomics. The box should be at waist level and held by both handholds. It's also obstructing the worker's vision.

Scaffold level:

- The scaffold is not erected according to code and best practice; the blocks for levelling are not allowed.
- The scaffold requires handrailing on all sides.
- The scaffold should have visible inspection tags.
- The scaffold access ladder must extend beyond the top level by 3 ft.

- The stepladder should not be on the scaffold; instead, the scaffold should be built to correct height, as needed.
- The ladder on the scaffold is not fully engaged and locked.
- The worker on the scaffold cannot make three-point contact, as there are objects in both hands.
- The worker on the scaffold is not wearing safety eyewear.
- The worker on the scaffold appears to be wearing street shoes and not safety boots.
- Fall hazards are present below the scaffold; e.g., sawhorse.

In Ethan Eigenfeldt's video *Speak Out*, young workers witness a number of unsafe activities while tape on their mouths prevents them from speaking.

B.C. students inspired to speak up for safety

By Jackie Wong

Two-minute videos by and for youth are empowering high-school students to stand up for workplace safety. The videos offer insights that can help with staying safe in after-school jobs, and create a safety mindset that can last long after graduation.

There's a bit of magic in catching a glimpse of a young person's imagination, and the top submissions to WorkSafeBC's 12th annual student video contest, which focus on the importance of workplace safety, reveal the impressive creativity of teenage minds.

The wide-ranging videos include a live-action black comedy encouraging workers to break the silence about dangerous or abusive workplaces, and a cast of teens and children in suits encouraging people to speak out about workplace bullying, among others.

From VHS to YouTube: The evolution of student videos

"This is one of the most fun parts of our job," says Robin Schooley, who coordinates the student video contest alongside Helen Chandler. Schooley and Chandler are industry specialists in WorkSafeBC's young- and new-worker program.

They've watched with excitement as the contest has evolved since its beginnings in 2006, when "people would send us VHS videos," Schooley remembers. "Now, they film it on their phone and send us their YouTube link."

There were 45 submissions from B.C. secondary schools this year: Some 140 students took part in making the films.

"We were really pleased with the fact that the 45 came from all over the province," says Chandler.

And, new schools participating came out swinging. Centennial Christian School in Terrace, B.C., which participated for the first time this year, took home two awards: A win in the grades 8 to 10 category for their video *Junior Speaks Up* (a *Choose Your Own Adventure*–style Lego animation) and an honourable mention for *Young Curt — Falling* (a rap music video, shot in black and white, about forester safety).

Thanks to the sponsors — British Columbia Safety Authority, Seaspan, ActSafe, and London Drugs, who each contributed $2,500 for the top two awards in each category — there was a total of $10,000 in prize money. WorkSafeBC, meanwhile, funded the contest's two $500 prizes for honourable mention.

Walnut Grove Secondary takes home two wins

"That WorkSafeBC is promoting this contest, and has been for so many years, is such a great thing," says Ryan Radford, a digital media and video production teacher at Walnut Grove Secondary School in Langley, B.C.

Two of Radford's students, Kevin Kim and Ethan Eigenfeldt, submitted videos on workplace safety that earned the two winning spots in the grades 11 to 12 category, for their videos *Find Your Voice* and *Speak Out*.

Kim's *Find Your Voice* is a moving piece of motion-graphic animation that addresses bystanders' fears when they witness abuse in the workplace or at school.

Eigenfeldt's *Speak Out* depicts silenced workers treated like cogs in a machine, and the video ends as one character rips off the tape on his mouth and opens it to speak.

Radford glows with pride when he talks about his students — he says he did little else but provide them with the contest opportunity and technical supports. "I'm learning just as much from them as they are from me."

Activating peer-to-peer conversations on safety

Their videos will also live beyond the contest. Schooley and Chandler note that employers around the world often download student videos for training purposes. The videos may be able to take the message to young workers who might not feel comfortable advocating for their own safety.

"Young people don't always feel empowered to speak for themselves, to say, 'These are my rights and I'm entitled to them,'" Schooley says. She hopes that activating peer-to-peer conversations through the student video contest will help change that.

"Empower people not to just know their rights, but to exercise them."

Watch the videos and participate in 2018

You can visit worksafebc.com and search "student safety video contest" to see the 2017 videos. And, watch for updates on the theme for next year's contest — to be unveiled this fall.

Central Kitchen + Bar in Kelowna is one of several employers proving that preventing injuries to young workers is good for business.

Setting a positive example for young workers

By Jesse Marchand

Between 2012 and 2016, around 126 young workers were injured daily on the job in B.C. But, a proactive approach from employers is trying to turn the tide.

Work can be intimidating for young people, especially when they're new to the job, or don't have a lot of experience in the industry. They want to make a good first impression by showing their employers and co-workers that they know what they're doing.

But, without proper training and support, young workers are at risk of injury. Between 2012 and 2016, more than 32,000 workers aged 15 to 24 were hurt on the job in B.C. Eighteen of those individuals died.

That, quite simply, is unacceptable, says Trudi Rondou, WorkSafeBC senior manager, Industry and Labour Services. "So, together with employers, we're encouraging young workers to trust their instincts, and, when they have safety concerns, to raise them with their employers. We also want to ensure they know their rights and responsibilities on the job."

"I wish I knew then, what I know now."

Understanding rights and responsibilities, is something Clint Mahlman, executive vice president and chief operating officer for London Drugs Limited, takes to heart. Two near misses at a B.C. sawmill opened his eyes to the dangers of inadequate training on the job.

"It was a different time and place back in the early '80s when I started to work. I wish I knew then what I know now about safety," says Mahlman. "I just about lost my hand due to a crush injury when working in a sawmill as a young maintenance worker, and I saw one of my good friends nearly impaled by a hydraulic ram. Those two things really snapped my attention," he adds. "We were never taught lockout procedures."

Today, Mahlman considers training young workers a top priority at London Drugs. Since 26 percent of injuries in retail involved young workers in 2016, it's a significant concern. One of the things they are doing is making sure workers understand the health and safety training no matter what their background.

"English isn't the first language for a lot of our employees," says Mahlman. Having a coach or co-worker help reinforce a safety message in the worker's mother tongue helps get the message across.

"It's also really important for young workers to talk about safety," he says. "Speaking up to your employer is a very good thing, and quite honestly, if an employer doesn't value that, you're working for the wrong place."

Working toward continuous improvement and innovation in safety

Over in the construction industry, which employs 28,000 young workers in B.C. each year, the risk of serious injury is high. Five young people lost their lives to workplace incidents in this industry in the past five years.

Scott Jacob, co-owner of Jacob Brothers Construction in Surrey, B.C., is determined not to see that happen at his workplace. And he believes that getting young workers to feel comfortable asking questions is key.

"It's not enough to say safety matters. You have to demonstrate it," he says. One of the ways they do that is through their innovative Green Hard Hat training program.

"The green hard hat identifies them as a new or a young worker," says Jacob. "We think it makes it easier for young workers to ask for safety help, or receive safety suggestions, from the more experienced workers." The hard hats are a reminder to not only ask questions, but to really think about the risks before doing something.

Promoting a safety culture

Over at Beedie Construction in Burnaby, B.C., early training and orientation is part of the business model. Eric Jensen, director, construction operations, knows all too well what lack of training on the job can do. In his youth he got an injury at work that he feels to this day.

"I was standing on the edge of an excavation, the bank gave away and I suffered a knee injury that took a fair number of months to recover from," says Jensen. "It really opened my eyes to the importance of safety."

So much so that today, Jensen sees safety as a high priority. "In our company it starts from the top," he says. "It's very much in the DNA of the Beedie's themselves. They're very proud of what they do and take a great deal of pride in doing it safely."

Almost 20 percent of workplace accidents involving young workers occur during their first month on the job, so orientation is key, says Beedie.

"An initial orientation provides young workers with information about what we expect from them and how they are expected to work. We then mentor them by providing them with experienced work partners." Young workers are also encouraged to ask questions, he adds.

Safety is good for business

"There's a strong connection between safety and productivity," he says. "We're not building one building or any one project, we're building a reputation. I believe very much there's a competitive advantage to being a safe company."

Over in Kelowna, B.C., Central Kitchen + Bar has the proof that a safety mindset is good for business. They recently won Best Employer at the 2017 Small Business BC Awards. The hospitality industry employs around 71,000 young workers in B.C., with the most dangerous jobs falling to cooks, kitchen and food service helpers, and fast-food preparers.

"When people start in restaurants, they underestimate the risks of just working an everyday serving shift or bartending shift," says Central Kitchen co-owner Jared Lee. "We want to encourage staff to ask questions and not feel they're being judged. It's important that we create a space where they can really thrive, feel safe, and just be happy to work."

Setting a positive example

"At the end of the day it's our responsibility as owners to make sure we lead the charge for safety," adds Lee. As an employer who started out as a young worker in the restaurant industry, he knows that setting a positive example is vital.

While employers in B.C. are required by law to train and supervise their workers and ensure their health and safety, Lee, Jacob, Mahlman, and Jensen all agree that health and safety is just the right thing to do. As Scott Jacob says, "When you care about your employees from a safety perspective, you're telling them in the most sincere of ways that they matter, and that what they do is important."


18th Annual WorkSafeBC
Physician Education Conference
Saturday, October 21, 2017
Pinnacle Hotel Harbourfront
1133 West Hastings Street, Vancouver, B.C.
Save the date
Oct. 21, 2017
Physicians, register today at worksafebcphysicians.com
For more information, contact Kerri Phillips at 604.244.6192 or 1.877.231.8765;
email kerri.phillips@worksafebc.com
WorkSafeBC


"AT THE END OF THE DAY,
IT'S OUR
RESPONSIBILITY AS OWNERS
TO MAKE SURE WE LEAD THE CHARGE
FOR SAFETY."
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JARED LEE
CO-OWNER CENTRAL KITCHEN + BAR
WorkSafeBC

Safety on the agenda

Autumn is a great time to catch up on your health and safety knowledge, with conferences happening all over B.C. and beyond. Check out these opportunities from October to November.

British Columbia Municipal Safety Association
2017 Occupational Health and Safety Conference
October 15–17, 2017
Penticton, B.C.
http://pacificsafetycenter.com/bcmsa

WorkSafeBC
Ergonomics Forum
October 17, 2017
Richmond, B.C.
www.worksafebc-ergonomics-forum-2017.eventbrite.ca

International Life Saving Federation
2017 World Conference on Drowning Prevention
October 17–19, 2017
Vancouver, B.C.
www.wcdp2017.org

WorkSafeBC
18th Annual Physician Education Conference
October 21, 2017
Vancouver, B.C.
www.worksafebcphysicians.com

North American Occupational Safety and Health (NAOSH)
BC Safety Forum and Awards Luncheon
October 19, 2017
Surrey, B.C.
www.naoshbc.com

The Conference Board of Canada
The Better Workplace Conference 2017
Better Wellness, Better Leaders, Better Experience
October 24–26, 2017
Toronto, Ontario
www.conferenceboard.ca/conf/betterworkplace/default.aspx

BC Construction Safety Association
12th Annual Construction Safety Conference
Bridging the Gap
October 26–27, 2017
Vancouver, B.C.
www.bridgingthegapsafely.ca

Health & Safety Conference Society of Alberta
16th Annual Health and Safety Conference and Trade Fair
New Directions
October 26–27, 2017
Banff, Alberta
http://hsconference.ca/

Manufacturing Safety Alliance of BC
Make it Safe 2017 Conference
October 26–27, 2017
Whistler, B.C.
https://makeitsafe.ca/

Canadian Institute of Public Health Inspectors (CIPHI)
83rd Annual Education Conference
Honoring Traditions, Inspiring Innovation
November 5–8, 2017
Richmond, B.C.
www.ciphi2017.ca

Pacific Safety Center
2017 Safety Committee Conference
November 15–16, 2017
Langley, B.C.
www.pacificsafetycenter.com

Institution of Occupational Safety and Health
IOSH Conference 2017
November 20–21
Birmingham, United Kingdom
www.iosh.co.uk

Please note, information and links that appear in this section are provided as a resource. Listings do not necessarily constitute an endorsement from WorkSafeBC.

Penalties

Construction

1014582 B.C. Ltd. | $1,250 | Surrey | April 26, 2017

This firm was framing a new townhouse complex. WorkSafeBC inspected the site and observed multiple unguarded window and door openings, as well as several stairways without handrails installed. Four of the firm's workers, one of whom was a supervisor, were working inside the buildings and were exposed to risks of falling more than 3 m (10 ft.). The firm failed to ensure the use of guardrails or other means of fall restraint. Further, the firm failed to ensure that stairways had handrails as required. These were both repeated violations.

Blu Fox Form & Frame Inc. | $5,000 | Colwood | June 9, 2017

WorkSafeBC observed one of this firm's workers on the roof of a house under construction. The worker, who was also a supervisor, was working near the edge of the roof installing plywood, and was observed sometimes leaning over the roof's edge. The worker was not connected to a fall protection lifeline and no other form of fall protection was in place, which exposed the worker to a fall risk of greater than 6 m (20 ft.). The firm failed to ensure fall protection was used, a repeated and high-risk violation.

Brian Keith Hunt / Breloden Construction | $10,000 | Rolla | January 26, 2017

This firm was constructing a garage. WorkSafeBC observed two workers, one of whom was a representative of the firm, standing near the edge of the roof. Neither was using a personal fall protection system and only one complete set of fall protection equipment was available on site. No other form of fall protection was in place. This exposed the workers to a risk of falling about 4.5 m (15 ft.). The firm's failure to ensure that fall protection was used was a repeated and high-risk violation.

B.Q.R. Systems Ltd. / Best Quality Roofing | $5,533.43 | Squamish | May 31, 2017

This firm was roofing a two-storey house under construction. WorkSafeBC observed three workers, one of whom was a supervisor, on the roof. All three were wearing fall protection harnesses but were not connected to the available lifelines. No other form of fall protection was in place. The workers were exposed to a risk of falling 7.3 to 8.5 m (24 to 28 ft.). In addition, access to the roof was via an unsecured ladder that extended only two rungs above the eave. The firm's failure to ensure fall protection was used was a repeated and high-risk violation.

B.R.S. Hans Const. Ltd. | $10,000 | Surrey | April 26, 2017

This firm was roofing a house under construction. WorkSafeBC observed three of the firm's workers installing

Administrative penalties are monetary fines imposed on employers for health and safety violations of the *Workers Compensation Act* and/or the Occupational Health and Safety Regulation. The penalties listed in this section are grouped by industry, in alphabetical order, starting with "Construction." They show the date the penalty was imposed and the location where the violation occurred (not necessarily the business location). The registered business name is given, as well as any "doing business as" (DBA) name.

The penalty amount is based on the nature of the violation, the employer's compliance history, and the employer's assessable payroll. Once a penalty is imposed, the employer has 45 days to appeal to the Review Division of WorkSafeBC. The Review Division may maintain, reduce, or withdraw the penalty; it may increase the penalty as well. Employers may then file an appeal within 30 days of the Review Division's decision to the Workers' Compensation Appeal Tribunal, an independent appeal body.

The amounts shown here indicate the penalties imposed prior to appeal, and may not reflect the final penalty amount.

For more up-to-date penalty information, you can search our penalties database on our website at worksafebc.com. Find it easily by entering the word "penalties" into our search bar.

shingles on the 10:12 sloped roof. Two of the workers were not using personal fall protection systems. The third worker was wearing a fall protection harness but was not connected to a lifeline. No other form of fall protection was in place. The workers were exposed to a risk of falling about 9.1 m (30 ft.). The firm's failure to ensure fall protection was used was a repeated and high-risk violation.

Cascade Roofing & Exteriors Inc. | $27,884.87 | Coquitlam | May 30, 2017

This firm's workers were working on the partial removal and replacement of a public building's flat roofing systems. WorkSafeBC observed a worker walk out to approximately 0.6 m (2 ft.) from the unguarded edge of the roof while using a shovel to clear snow from a drain. The worker was not using a personal fall protection system and there was no other form of fall protection in place, exposing the worker to a risk of falling 5.1 m (16 ft. 8 in.). The supervisor for the worker's crew had been working with the worker on the roof. The firm failed to ensure a fall protection system was used, a repeated and high-risk violation. Further, the firm failed to provide its workers with the supervision necessary to ensure their health and safety, a repeated violation.

CRT Construction Inc. & EBC Inc. / CRT-ebc | $75,000 | Pemberton | February 22, 2017

This firm was the construction contractor for a hydroelectric project. Two workers were recovering and disposing of unexploded charges left after blasting work. They loaded the materials into an incinerator and lit it, which was the procedure for explosives disposal at this worksite. The incinerator exploded, and shrapnel struck both workers. One worker sustained serious injuries and the other worker sustained fatal injuries. WorkSafeBC's investigation found multiple safety violations, including the firm's use of unapproved and unsafe practices for destroying unfired explosives, and a lack of training for workers in the proper procedures for handling explosives. In addition, not all of the workers conducting blasting were certified to do so, and the blasting logs did not record all blasting work being performed or the amount of misfired explosives being recovered. The firm failed to provide its workers with the information, instruction, training, and supervision needed to ensure their health and safety, a high-risk violation.

CTN Construction Ltd. | $3,770.91 | West Kelowna | April 24, 2017

WorkSafeBC observed two of this firm's workers installing the truss system of a house under construction. The workers were standing on the narrow top plates of the exterior walls to perform this work. No work platforms were in place for work at elevation, and access to elevated work areas was via unsecured stepladders. Neither worker was using a personal fall protection system, and no other form of fall protection was in place. The first worker was exposed to a risk of falling 6.7 m (22 ft.) and the second worker was exposed to a risk of falling 3.3 m (11 ft.). The trusses were not adequately braced and were not being erected according to the manufacturer's instructions. The manufacturer's package, which contained erection and bracing plans, was not on site as required and no meeting had been held to discuss the requirements. Without adequate temporary bracing, the truss system was less stable and could have collapsed. No supervisor was on site at the time the inspection began. The firm's failure to ensure that fall protection was used was a repeated and high-risk violation. The firm's failure to ensure that ladders and work platforms met and were used in accordance with acceptable standards was a repeated violation. The firm's failure to provide its workers with the information, instruction, training, and supervision needed to ensure their health and safety was also a repeated violation.

Elkridge Enterprises Inc. / Elkridge Development | $7,311 | West Kelowna | April 25, 2017

This firm was the prime contractor of a residential construction development. Work near an excavation on two of the lots had been subject to numerous inspections and engineering reports due to safety concerns and changing soil conditions. WorkSafeBC inspected the site and observed that the framing subcontractor had erected formwork for foundation walls within 1.8 m (6 ft.) of this excavation even though a final engineering report addressing all of the safety concerns was still pending. The firm's failure to ensure that the excavation was sloped, benched, shored, or otherwise supported as required by a professional engineer was a high-risk violation. The firm also failed to meet its obligations as a prime contractor to ensure that workplace activities relating to occupational health and safety were coordinated, and failed to do everything reasonably practicable to establish and maintain a system for ensuring compliance with the *Workers Compensation Act* and the Occupational Health and Safety Regulation.

European Environmental Ltd. | $25,229.28 | Vancouver | June 2, 2017

This firm was performing asbestos abatement work at a pre-1990 house slated for demolition. WorkSafeBC inspected the site and observed four workers, one of whom was a supervisor, working inside the building without using any personal protective equipment. WorkSafeBC observed that the kitchen flooring, which had been identified as an asbestos-containing material (ACM), had been removed. In addition, the sheet vinyl flooring in the basement, also an ACM, had been disturbed and there were open bags marked "asbestos waste" in the corner of the room. WorkSafeBC also observed that the site had insufficient containment measures and lacked the following: poly containment, a negative air unit within the building, an area for work decontamination, and a designated work area set-up. The firm allowed work that disturbed ACMs without taking necessary precautions to protect workers, a repeated and high-risk violation. Further, the firm failed to ensure the safe containment and removal of hazardous materials as required, a repeated violation.

Falcon Roofing Ltd. | $5,000 | Surrey | April 26, 2017

WorkSafeBC observed a representative of this firm installing roofing materials approximately 3.7 to 4.2 m (12 to 14 ft.) above grade on the 6:12 sloped roof of a two-storey house. The representative was not wearing any form of fall protection and no fall protection systems were available on site at the time of inspection. The representative was eventually able to produce four fall protection harnesses and a certification of training in the use of fall protection and safety monitoring, all of which had been temporarily offsite in a company vehicle. The firm's failure to ensure that fall protection was used was a repeated and high-risk violation.

G & D Construction Ltd. | $5,000 | Port Moody | April 27, 2017

This firm was framing a new two-storey house. WorkSafeBC observed one of the firm's workers, a supervisor, on the 6:12 roof installing plywood sheeting. The worker was not using a personal fall protection system and no other form of fall protection was in place. This exposed the worker to a fall risk of 6.4 to 11 m (21 to 36 ft.). The firm's failure to ensure fall protection was used was a repeated and high-risk violation.

G & D Construction Ltd. | $10,000 | Mission | May 30, 2017

This firm was framing two houses under construction. WorkSafeBC observed a worker, a supervisor, standing on the narrow, rough-framed sill while installing a window opening. The worker was not using a personal fall protection system, no fall protection equipment was available on site, and no other form of fall protection was in place. The worker was exposed to a risk of falling about 3.9 m (12.8 ft.). The firm's failure to ensure fall protection was used was a repeated and high-risk violation. In addition, there was no written fall protection plan on site, scaffolds lacked ledgers and bearer blocks, and work areas lacked required guardrails and handrails. The firm's failure to ensure that work platforms met accepted standards and that handrails were installed where required were repeated violations. The firm also failed to provide its workers with the information, instruction, training, and supervision needed to ensure their health and safety, a repeated violation.

Great West Enterprises Ltd. | $2,500 | Richmond | April 26, 2017

This firm was roofing a multi-unit townhouse complex under construction. WorkSafeBC observed two workers, one of whom was a supervisor, installing roofing near the edge of a flat roof. Neither worker was using a personal fall protection system. A guardrail was in place on one side of the roof but not where the workers were working, and no other form of fall protection was in place. The workers were exposed to a risk of falling about 9.1 m (30 ft.). The firm failed to ensure that fall protection was used, a repeated and high-risk violation. It also failed to provide its workers with the information, instruction, training, and supervision needed to ensure their health and safety, a repeated violation.

H&I Environmental Groups Ltd. | $10,000 | Burnaby | February 18, 2017

This firm was hired to conduct asbestos abatement work prior to the demolition of a single-storey home. The firm issued a clearance letter to the owner stating that all identified asbestos-containing materials (ACMs) had been safely

contained and removed. WorkSafeBC inspected the site and observed materials present that had previously been identified as ACMs, including vinyl floor backing, drywall joint compound, and furnace duct tape. The firm failed to ensure hazardous materials were safely contained and removed using accepted procedures, a repeated violation.

Jiya Construction Ltd. | $10,000 | Vancouver | June 13, 2017

WorkSafeBC observed a worker installing plywood sheeting on the roof of a two-storey house that was under construction. The worker, a representative of the firm, was not using a personal fall protection system, and no other form of fall protection was in place. The worker was exposed to a risk of falling approximately 7.3 m (24 ft.). The firm failed to ensure that a fall protection system was used, a repeated and high-risk violation.

Lally Framing Ltd. | $5,000 | Coquitlam | May 26, 2017

This firm was working on a two-storey house under construction. WorkSafeBC inspected the site and observed a worker, who was also a representative of the firm, installing fascia board to the edge of the roof about 6.1 m (20 ft.) above grade. The worker was not using a personal fall protection system despite fall protection equipment being available on site, and no other form of fall protection was in place. The firm failed to ensure fall protection was used at a place from which a fall of 3 m (10 ft.) or more may have occurred, a repeated and high-risk violation.

Milne Roofing Ltd. | $8,220.82 | Parksville | March 2, 2017

WorkSafeBC observed two workers from this firm working near the edge of the flat roof of a commercial building. Neither worker was using personal fall protection equipment and no guardrail or other form of fall protection was in place. The first worker was exposed to a risk of falling about 6.5 m (21 ft.), and the second worker was exposed to a risk of falling about 4.3 m (14 ft.). The firm's failure to ensure fall protection was used was a repeated and high-risk violation.

Norman Homes Inc. | $2,500 | Sidney | June 2, 2017

This firm was the prime contractor at the worksite of a house under construction. During an initial inspection of the site, WorkSafeBC observed that a scaffold system had been erected within the limits of approach of a high-voltage power line. The contractor and a subcontractor were instructed that access to the scaffolding was not permitted until additional safety precautions were taken. These precautions included relocating the power line to the required distance from the work being performed, and adding scaffold netting to prevent materials or workers from encroaching on the power line. At a follow-up inspection, WorkSafeBC observed workers of the subcontractor on the scaffolding even though the safety precautions had not been taken. The firm failed to protect workers from possible contact with exposed high-voltage electrical equipment or conductors, a high-risk violation.

Production NSK Inc. / NFO Contracting | $2,500 | Colwood | June 23, 2017

This firm was working on a building under construction. WorkSafeBC inspected the site and observed a worker on an elevated platform that was mounted to a rough terrain forklift. The guardrail system for the platform was incomplete and did not provide effective fall protection. Further, the worker was not using a personal fall protection system. The worker was exposed to a risk of falling about 5.5 m (18 ft.). The firm failed to provide effective supervision on site to ensure proper fall protection systems were in use. The firm's failure to ensure fall protection was used was a high-risk violation. The firm also failed to ensure the health and safety of all its workers.

RBI Construction Group Inc. | $5,000 | Kamloops | February 10, 2017

This firm was serving as the prime contractor at a hotel construction project. WorkSafeBC inspected the worksite and observed multiple safety breaches. A subcontractor's worker was observed throwing large pieces of debris off the edge of the open second level. There were no guardrails in place and the worker was not using a personal fall protection system. The worker was exposed to a risk of falling more than 7.5 m (25 ft.). Other workers below were exposed to the potential of falling materials and were not wearing appropriate safety headwear. Access to floors above the main floor were by ladder only and no stairs (permanent or temporary) had been installed. The ladders were not properly placed or secured. WorkSafeBC determined that the prime contractor failed to ensure that

workplace activities relating to occupational health and safety were coordinated, and failed to do everything reasonably practicable to establish and maintain a system for ensuring compliance with the *Workers Compensation Act* and the Occupational Health and Safety Regulation. These were repeated and high-risk violations.

Robinson Masonry Ltd. | $7,116.68 | Savona | April 6, 2017

WorkSafeBC observed three of this firm's workers installing stone siding on a building exterior. The workers were observed using a scaffold system that had not been properly erected or secured. Nor were they using any form of fall protection such as guardrails, fall restraints, or an arrest system. As a result, the workers were exposed to a risk of injury associated with fall hazards ranging from 3.3 m (11 ft.) to 5.5 m (18 ft.). The firm failed to ensure that fall protection was used, a repeated and high-risk violation.

Sam The Roofer Inc. | $2,500 | Oak Bay | May 31, 2017

This firm was re-roofing a house. WorkSafeBC inspected the site and observed two workers on the sloped roof working at heights of about 4.3 to 5.8 m (14 to 19 ft.). One worker was wearing a fall protection harness but it was not connected to any lifeline or anchor, while the other was working with no personal fall protection system. The firm failed to provide its workers with the information, instruction, training, and supervision needed to ensure their health and safety, a repeated violation. The firm also failed to ensure that fall protection was used, a high-risk violation.

SB Roofing Ltd. | $5,000 | Abbotsford | June 21, 2017

This firm was roofing a two-storey house under construction. WorkSafeBC inspected the site and observed two workers, one of whom was a representative of the firm, working near the unguarded edge on the 4:12 to 5:12 sloped roof. Both workers were wearing fall protection harnesses but no lifelines or fall protection anchors were available on the roof, and no other form of fall protection was in place. The workers were exposed to a risk of falling 6 m (20 ft.). The firm's failure to ensure fall protection was used was a repeated and high-risk violation.

SJDemolition Services Ltd. | $5,000 | Burnaby | April 21, 2017

This firm was conducting asbestos abatement work at a pre-1990 house. During an inspection, WorkSafeBC observed multiple high-risk violations and issued a stop-work order. The stop-work order required the firm to meet certain conditions before abatement work resumed, including hiring a qualified hazardous materials consultant to conduct an assessment of the contamination and submitting the assessment to WorkSafeBC for review. At a follow-up inspection, WorkSafeBC observed that the house had been demolished in contravention of the stop-work order. The firm is being penalized for violating a stop-work order.

South Island Remediation Inc. | $2,500 | Sooke | June 21, 2017

WorkSafeBC inspected the workplace where this firm was conducting high-risk asbestos abatement work and noted several health and safety violations including the following: One worker, a supervisor, was observed

inside the containment area using a half-mask respirator although a powered air-purifying respirator is required for high-risk work. Dust was visible on four other workers' respirators outside the containment, indicating that dust potentially containing asbestos was being spread from one work area to another. The containment barrier had been breached to dispose of waste. The written safe work procedures stated that the material being removed was drywall but was in fact ceiling texture coat, which presents a higher exposure risk to workers. The procedures also did not provide direction to workers for the safe decontamination of tools and equipment. The firm's failure to take necessary precautions to protect workers before beginning work that disturbed material containing asbestos was a high-risk violation. The firm also failed to provide its workers with the information, instruction, training, and supervision needed to ensure their health and safety.

Terrence Dorsey / Terry Dorsey Construction | $2,500 | Quesnel | June 20, 2017

This firm was contracted to renovate several pre-1990 homes. WorkSafeBC inspected the sites and determined that the employer had not conducted hazardous materials inspections prior to engaging in the renovations. WorkSafeBC observed that the firm had conducted work that disturbed potential asbestos-containing materials (ACMs), including vinyl flooring tiles, drywall, and ceiling board. Further, WorkSafeBC observed workers of another firm, none of whom were wearing personal protective equipment, working inside one of the homes where potential ACMs had been disturbed. A hazardous materials survey conducted on one of the homes subsequently confirmed the presence of an ACM. The firm failed to ensure that a qualified person inspected the buildings and the worksites to identify any hazardous materials before starting renovation work, a high-risk violation.

Triex Contracting Ltd | $8,210.30 | Surrey | April 21, 2017

This firm was conducting falling activity on land being prepared for a residential subdivision. The faller, who was also one of the firm's representatives, was manually falling trees near two roads. On the day of the inspection, the firm was not using effective traffic controls to stop or control approaching traffic even though the trees being felled could create a hazard to users of the roads. Also, during falling, the faller did not move to a predetermined safe location at least 3 m (10 ft.) away, and another worker was in an excavator approximately 6 m (20 ft.) away. This was a high-risk violation. The firm failed to ensure that the falling activity at this forestry operation was planned and conducted in a manner consistent with regulatory requirements and safe work practices, which was also a high-risk violation.

Vancouver Roofing and Drainage Ltd. | $10,000 | Coquitlam | May 26, 2017

WorkSafeBC inspected this two-storey house and observed a worker, who was also a representative of the firm, standing on the roof removing roofing material. The worker was not wearing a personal fall protection system, though a full set was available on site, and no other form of fall protection was in place. The worker was exposed to a risk of falling approximately 4.9 to 5.5 m (16 to 18 ft.). The firm failed to ensure fall protection was used, a repeated and high-risk violation.

Westview Drywall Ltd. | $2,500 | Powell River | June 23, 2017

WorkSafeBC inspected a worksite where this firm had cut drywall in several locations at a multi-unit residence. No hazardous materials survey had been conducted, no exposure control plan was in place, and no control measures had been taken to protect workers. The drywall was later confirmed as being an asbestos-containing material (ACM). The firm allowed work that disturbed ACMs without taking necessary precautions to protect workers, a high-risk violation. The firm also failed to ensure the health and safety of all workers at the worksite.

Westwater Property Consultants Inc. | $7,672.13 | Victoria | April 12, 2017

This firm was the general contractor at a residential construction site. Workers from this firm and a subcontractor's firm were installing a utility pole along a steep-slope driveway. Workers rigged the pole to one fork of a rough terrain forklift. As the forklift was backing down the drive and turning to the side with the load, the operator tried to level the forklift using its internal self-levelling feature. When this didn't work, the operator deployed the outrigger, then raised the pole off the ground. The forklift became unstable and tipped over on its side. A worker from the subcontractor's

firm was struck by the pole and sustained fatal injuries. The forklift operator also sustained serious injuries. WorkSafeBC's investigation found that the firm had not taken steps to ensure the forklift being used was capable of safely performing the work task. In addition, the load was attached to the forklift by slinging it from a fork, which is not the proper use for this attachment, instead of using an attachment designed for a suspended load. The firm failed to ensure the safety of all workers at the worksite, a high-risk violation.

Manufacturing

Coleman Road Shingle Ltd. / Marion Taylor | $1,250 | Port Alberni | June 14, 2017

WorkSafeBC inspected this shingle mill and observed a V-belt drive with its fixed guard removed. The guard was not secured and did not require a tool for removal. In addition, a second V-belt drive was observed at a height where workers in the area could potentially contact the hazardous point of operation. Further, WorkSafeBC observed projecting shaft ends on a shingle block conveyor, hog infeed waste conveyor, and the main waste conveyor at the tail end. These projecting shaft ends were unguarded, exposing workers to a risk of contact. The firm failed to ensure that its machinery and equipment were fitted with adequate safeguards to prevent workers from accessing a hazardous point of operation, a repeated violation. The firm also failed to ensure that fixed guards were not modified to be readily removable without the use of tools.

Falcon Railing and Superdeck Inc. | $10,895.86 | Victoria | June 2, 2017

WorkSafeBC observed a worker, who was also a supervisor, installing guardrail uprights near the edge of a balcony on the fourth-floor of an apartment building. The worker was wearing a fall protection harness but was not connected to a lifeline, and was exposed to a risk of falling more than 12.2 m (40 ft.). The firm failed to ensure that a fall protection system was used, a high-risk violation.

Primary Resources

0930628 B.C. Ltd. | $2,500 | Yale | April 26, 2017

This firm was harvesting timber at a forestry operation. A tree being yarded upslope became hung up against a rock outcrop. A section of the stump being used as an anchor for one of the yarder's guylines broke off, releasing the guyline. A static (stabilizer) guyline connecting the top of the spar to the yarder then failed. The spar tipped over onto the yarder cab, and the yarder operator inside the cab sustained fatal injuries. WorkSafeBC's investigation found that underlying factors in the incident were improper guyline set-up, unsuitable notches in the guyline anchor stump, the design of the spar, inadequate planning of the yarding activities, and a lack of supervision. The firm failed to ensure the health and safety of its workers and failed to provide its workers with the information, instruction, training, and supervision necessary to ensure their health and safety. The firm also failed to ensure that stumps used as anchors were suitable for use, and to conduct daily inspections to determine they remained suitable for continued use. These were high-risk violations.

Transportation and Warehousing

Gerry Allan Landry / G.L. Property Maintenance Services | $2,500 | Dawson Creek | June 29, 2017

This firm was demolishing a pre-1990 motel. WorkSafeBC observed vermiculite insulation and other potential asbestos-containing materials (ACMs) on the ground, on walls where workers had been working, and in open garbage cans. No hazardous materials survey was available on site. A hazardous materials survey conducted later confirmed the presence of ACMs and lead in several locations at the worksite. The firm failed to have a qualified person inspect the worksite to identify hazardous materials before demolition work began, a high-risk violation.

Penalties (continued)

Public Sector

Town of Sidney | $54,605.71 | Sidney | June 9, 2017

One of this firm's workers was in an aluminum trench shield, along with a concrete manhole assembly, in an excavation that was 4.3 m (14 ft.) deep. The excavation wall collapsed and the collapsed soil contacted the trench shield, causing the entire shield to shift. The shield struck and pinned the worker against the concrete manhole assembly. The worker was seriously injured. WorkSafeBC's investigation found that the trench shield was not tall enough or used in accordance with the manufacturer's instructions. Further, safe access had not been provided into the excavation. In addition, WorkSafeBC's investigation found that four of the firm's workers, one of whom was a supervisor, were standing next to the excavation within the fall hazard zone. None of them was using a fall protection system and no other form of fall protection was available. The firm committed high-risk violations by causing a worker to enter an excavation that did not have a safe means of entry and exit and by failing to ensure that fall protection was used when a fall of 3 m (10 ft.) or more could occur. Further, the firm failed to ensure that equipment in the workplace was used and operated in accordance with the manufacturer's instructions. The firm also failed to provide its workers with the information, training, and supervision necessary to ensure their health and safety.

Service Sector

ADM Pre-Demolition Inspection Services Ltd. | $1,250 | Vancouver | February 16, 2017

This firm was hired to conduct a hazardous materials survey of a pre-1990 house slated for demolition. A WorkSafeBC inspection found that the firm provided a report that was both incomplete and misleading in its findings. The firm's report either overlooked areas of the house known to contain asbestos or implied that areas known to contain asbestos were asbestos-free. For example, the firm misidentified the exterior walls as having stucco when they actually had vinyl siding covering shingles that contained asbestos. As well, interior samples that the firm collected and submitted for analysis were not representative samples. Samples included drywall and paint, but not joint compound, which is more likely to contain asbestos. Further, the firm did not indicate the quantity of the materials identified as containing asbestos or provide a drawing to indicate the location of the samples. The firm's failure to adhere to requirements for conducting an inspection and identifying hazardous materials was a repeated violation.

ADM Pre-Demolition Inspection Services Ltd. | $1,250 | Vancouver | March 23, 2017

This firm was retained to provide a hazardous materials survey (HMS) for the interior of a two-level house. An HMS survey of the building's exterior had already been completed by a separate firm. WorkSafeBC requested a copy of both HMS reports from the site owner. The report of the firm conducting the interior survey indicated that none of the 16 samples submitted for analysis were asbestos-containing materials (ACMs). WorkSafeBC indicated to the firm that its report had a number of deficiencies. The firm submitted a second report and then a third report, neither of which were compliant because the samples of plaster and drywall were inadequate, no drawings or locations of samples were provided, and an approximate quantity of material was not provided. An additional survey of the interior by the firm that had surveyed the exterior confirmed the mastic and the furnace tape as ACMs and identified two additional sources of ACMs present in the house — penetration grout and drywall taping. The firm's failure to adhere to requirements for conducting an inspection and identifying hazardous materials was a repeated violation.

C-Best Environmental Ltd. | $40,000 | Delta | April 27, 2017

This firm had completed a hazardous material inspection of a pre-1990 house slated for demolition. At the time of the inspection, demolition work had already begun. WorkSafeBC inspected the site and determined that the firm had missed identifying and sampling numerous potentially hazardous materials. WorkSafeBC collected and tested several samples and confirmed that they contained asbestos. Workers would have been exposed to elevated levels of asbestos fibres during recycling and demolition tasks. This was a repeated and high-risk violation.

Rajmen Enterprises Ltd. / Victoria Window Cleaning | $5,494.18 | North Saanich | June 19, 2017

One of this firm's workers, a supervisor, was cleaning windows at a public building. WorkSafeBC observed the worker near the unguarded edge of a ledge. The worker was not using a personal fall protection system and no other form of fall protection was in place, exposing the worker to a risk of falling about 4.6 m (15 ft.). Access to the work area was via an unsecured ladder. The worker was in view of two other supervisors who were on site at the time of the inspection. The firm failed to ensure that ladders were properly secured. The firm's failure to ensure fall protection was used was a repeated and high-risk violation. Further, the firm's failure to provide its workers with the information, instruction, training, and supervision needed to ensure their health and safety was a repeated violation.

Sea to Sky Window Cleaning Inc. | $4,306.86 | Vancouver | June 6, 2017

This firm was cleaning windows at a commercial building. Workers were cleaning the glass canopy around the perimeter of the building. WorkSafeBC observed one worker, a supervisor, step from the canopy onto a ladder that was not adequately extended or secured. A second worker was observed standing on the canopy, rinsing the panels. Neither worker was using a personal fall protection system and no other form of fall protection was in place. The workers were exposed to a risk of falling 4.6 m (15 ft.). The firm failed to ensure fall protection was used, a repeated and high-risk violation.

Wakesiah Apartments Inc. | $1,250 | Nanaimo | April 27, 2017

This firm was renovating an apartment building. WorkSafeBC observed a worker standing in the basket of an elevated boom lift, painting the third floor soffit at a height of about 3.7 m (12 ft.). The worker was not using a personal fall protection system and no other form of fall protection was in use. The boom lift was on a sloped surface with its "out of level" alarm sounding. A supervisor was on site but had not instructed the worker in safe work practices for using the boom lift. The firm failed to provide its workers with the information, instruction, training, and supervision needed to ensure their health and safety, a repeated violation.

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