



Gail Johnson

Gail Johnson is an award-winning Vancouver-based journalist who specializes in health writing. In this edition, she delves into what makes effective health and safety committees tick (page 7).



Gord Woodward

Gord Woodward has over 30 years of experience writing stories, but he still learned something new when speaking with WorkSafeBC's Andy Lim on the explosion risks of re-used shipping containers.



Lynn Welburn

Nanaimo-based writer and teacher Lynn Welburn has written for *WorkSafe Magazine* for nearly 10 years. In this edition she takes that to heart by taking the message of safeguarding straight to workers (page 21).



Don Hauka

Don Hauka is a journalist, author, and screenwriter interested in health and safety. He explores the risks found in the B.C. dairy industry in this edition's *WorkSafe Update* (page 24).

Reusing shipping containers creates risk of explosion



Andrew Lim

Senior regional officer instructor,
Learning and Development Services

Region: Richmond

Years on the job: 25

This month we talked with Andrew Lim, WorkSafeBC's senior regional officer instructor in our Learning and Development Services department, about the hazards of using shipping and sea containers in the workplace.

Q. These containers are designed for transporting goods. Why are they being used for anything else?

- A.** The metal containers are popular because they're mobile, secure, robust, and relatively waterproof. They're also easy to get and relatively cheap.

We're seeing them used for many things they weren't designed for — such as offices; storage or electrical rooms; workspaces for welding, spray painting and sand blasting; etc. They're being used in many industries, from oil and gas, to construction, to manufacturing, to agriculture. We're even seeing them used by schools and municipalities.

Q: What makes these containers potentially dangerous?

- A.** One of the biggest hazards is the potential for explosions. Shipping containers have the potential to become a pressurized bomb if they contain enough of the three elements of the "fire triangle" (oxygen, fuel, and a heat source).

Storing even small amounts of flammable liquids or combustible gases can forcibly rupture containers. For example, 1 kilogram of propane is enough to cause an explosion that will forcibly rupture a shipping container. By comparison, your home barbecue uses a 9-kilogram propane tank. In Saanich, a barbecue inside a container caused an explosion that blew one of the 250-pound doors 40 meters. In Enderby, a firefighter was killed when a container's door blew off in an explosion and struck him.

“One of the biggest hazards is the potential for explosions. Shipping containers have the potential to become a pressurized bomb if they contain enough of the three elements of the ‘fire triangle’ (oxygen, fuel, and a heat source).”

—Andy Lim, WorkSafeBC senior regional officer instructor

Q. We don't store anything in the container we use. Doesn't that eliminate the risks?

A. Not necessarily. There are many other potential hazards, including inadequate ventilation, unknown contaminants, and the risk of electrocution. The venting in a shipping container allows for only a small amount of airflow. Workers inside could be overcome by carbon monoxide, or by the build up of fumes and vapours from chemicals. Since you don't know how the container has been used in the past, there could also be unknown contaminants, such as floors that are treated with pesticides or harmful chemicals that may have soaked into the wood. It's also important to keep in mind that a metal container is one great big conductor, making it a possible electrocution risk if it is exposed to an electrical current and the container is not properly bonded and grounded.

Q. What can my company do to make our containers safer?

A. Determine the hazards, and then put safety controls in place. Some basic controls include the following:

- Ensure that there is adequate ventilation for what is kept inside the container and for its intended use
- Be aware of incompatible stored items, such as flammables and combustibles with any potential ignition sources

- Include the contents in your fire safety plan so first responders know what's inside the container
- Consider replacing the floor
- Post appropriate safety data sheet symbols, if required

Q. Where can I get more information on the safe use of containers?

A. If a shipping container is going to be used at a worksite, see Part 4 of the Occupational Health and Safety Regulation for the general safety requirements for Building, Structures, Equipment, and Site Conditions as well as Parts 5 and 6 for the requirements for hazardous substances.

You can find information on the incidents and hazard alerts surrounding shipping containers by searching “shipping containers” on worksafebc.com.

You should review the BC Building Code and check with your local government: your municipality may require the BC Fire Code to be applied for shipping containers. You can also consult your local fire department, and ask our Prevention officers for assistance.

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. ☺

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