

Repeal of Bylaw 6788/38/20

To regulate open air burning and recreational fires
in the city of Port Colborne



Why I am addressing council.

- I would like council to consider the repeal of Bylaw 6788/38/20 that allows open air burning and recreational wood fires in the city of Port Colborne. This bylaw was established by council in 2020 at the start of the covid pandemic.
- The allowance of wood fueled burning within city limits gravely affects people's health, damages interiors of homes and possessions, and presents as a safety concern to the citizens of Port Colborne.
- There is no issue with wood fire burns conducted in the rural areas of Port Colborne.
- Stats Canada 2021 PC pop. 20,033, 164.2 people per square km

Dangers of wood firepits within PC city limits

- Burning wood produces more carbon dioxide than oil and gas and also produces methane. Both of these, in particular methane is a powerful global warming gas and this hinders the achievement of climate neutrality. Soot when released through wood burning blankets arctic snow and increases melt rates. (1)
- Wood firepits are potential fire hazards to surrounding structures. (2)
- The Consumer Product Safety Commission cited that wood firepits put children at risk. The Journal of Burn Care & Research cited that children 19 and younger accounted for 10,951 burns due to firepits between 2006-2017. (3)

Dangers of wood firepits cont'd

- The ideal location of a wood firepit should be 20-25 feet away from houses, garages, shrubs, trees, gardens, and fences. It should also not be located in a windy location. Not many houses in Port Colborne can accommodate this safety measure due to lot size, building congestion, foliage, trees and so on... (3)
- “A fire’s heat dries out everything above and around it. If something becomes dry and brittle enough over time and gets to a certain temperature, it’ll ignite. You don’t even need a spark the heat alone will ignite it, ” states Roydhouse who has a degree in fire science. (3)
- From the late 1800s to 1940s balloon-framed wood construction was the fastest and easiest way to construct multi storied houses.

Dangers of wood firepits cont'd

- Outdoor wood firepits are dangerous to wood structures and balloon-framed structured houses. There are many houses in PC like this.
- “The balloon frame uses a continuous wood stud wall member that stretches from the home’s foundation to the attic. The stud framing is typically 16 inches apart and contain no inherent vertical fire stops, except for the occasional window or door. The wood lathe used to key plaster walls and ceilings provides abundant fuel and increases the potential for flame spread in void spaces. The floor/ceiling joist space is also open and connected to the wall stud space which contributes to deadly horizontal flame spread. Fires in balloon-frame construction are labour intensive and require a lot of fire personnel to respond. It is important to determine if there is enough personnel available to respond to such fires.” (4)

Damage caused by wood firepits

- Invasive insects that kill wood trees and our forests spread geographically to destroy other forests through the sale of firewood.
- The Emerald Ash Borer and the Hemlock Woolly Adelgid are two such invasive insects that are killing Ash and Hemlock trees in Southern Ontario according to the Forests Ontario EAB advisory and the Canadian Forest Service of Natural Resources Canada. These insects bore into the wood of these trees and lay their eggs for propagation.

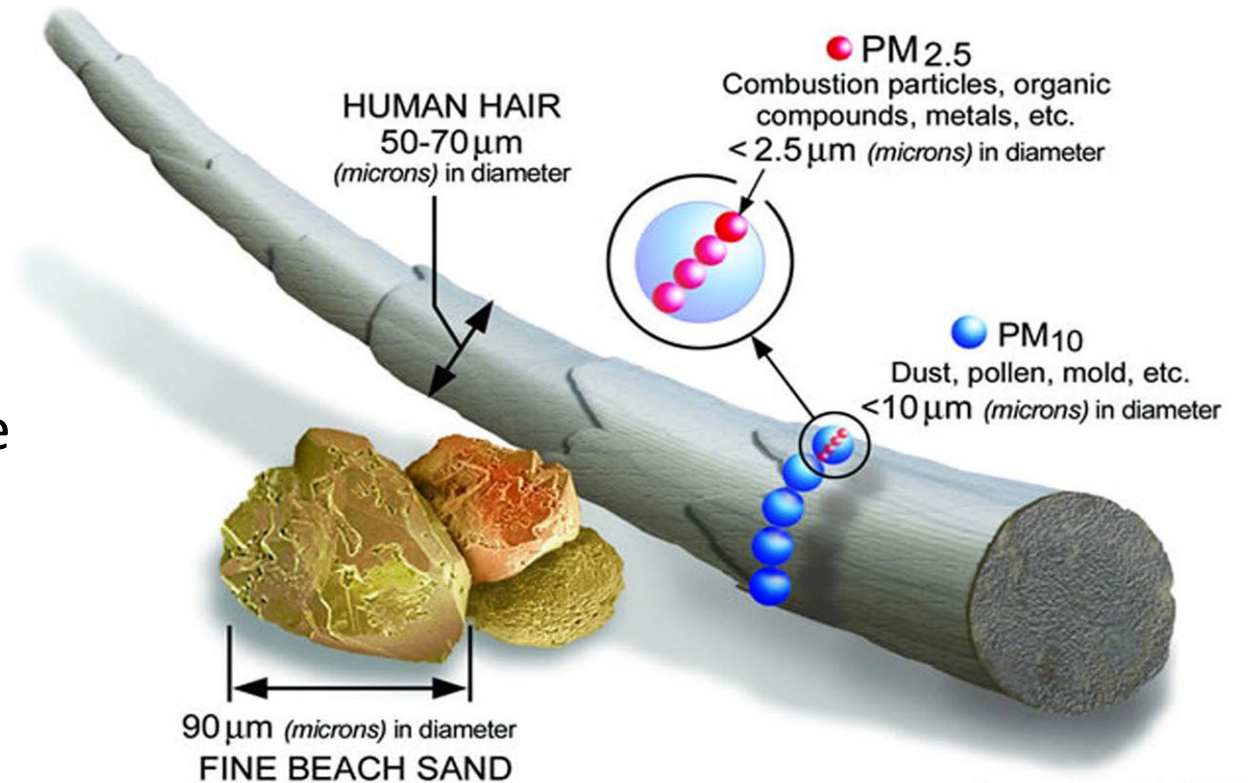


Damage caused by wood firepits cont'd

- Fine smoke particles from firepits invades home interiors and damages belongings. Curtains and upholstery are the most damaged, then bedding, clothing, wood furniture, floors, rugs, drywall, ceiling tiles, plastics, medicines, hygiene products, cosmetics, and food.
Health Effects From Wood Burning Firepits
- Chemicals found on these fine smoke particles that land upon your belongings expose you to harmful toxic substances on these smoke damaged items. Sitting in a smoke damaged chair or living within smoke damaged walls is enough for these toxic chemicals to make their way into your lungs and then your bloodstream and has serious health consequences. (7)

Wood Smoke Particulate Matter 2.5 microns

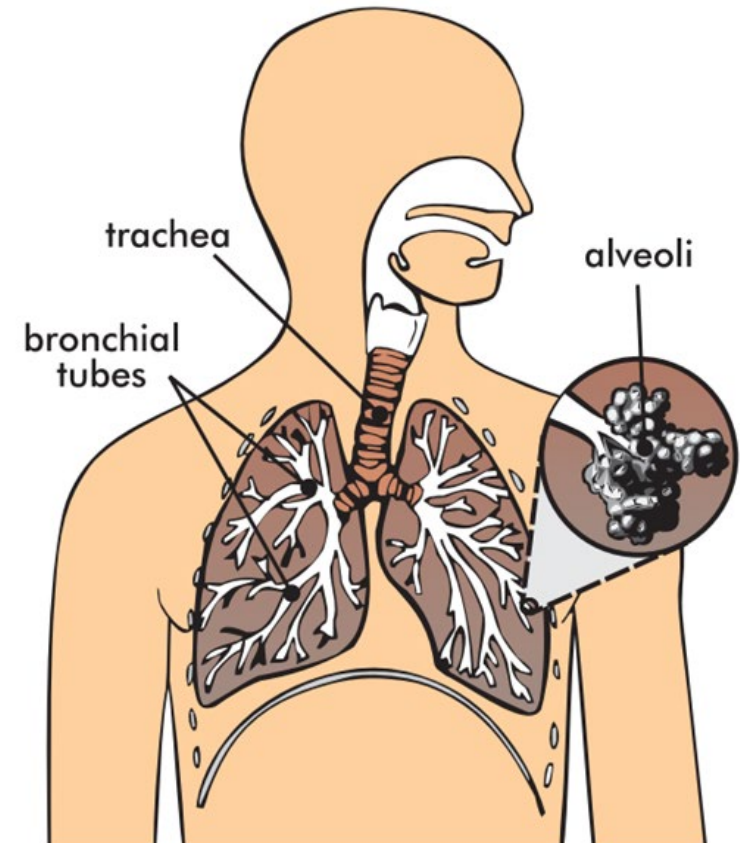
- Smoke is comprised of tiny bits of solids and liquids made of partially burned wood. One of the pollutants of most concern in wood smoke is fine particulate matter. When you breathe in wood smoke, you inhale the fine particulate matter deep into your lungs. These particles contain toxic substances that can remain in your lungs for months, and cause changes that lead to disease and structural damage. Most wood smoke particles are 2.5 microns (μm) or less in size which makes them smaller in diameter than a human hair. (8)



Wood Smoke Particulate Matter 2.5 microns cont'd

- Scientists label these particles PM_{2.5}, known as “fine particles.” These particles are so small they get past the respiratory tract’s defenses and reach the deepest areas of the lungs. It is this area of the lung known as the alveoli, wherein tiny air sacs allow oxygen to enter the blood stream, instead, these toxic particles pass into the bloodstream. (8) These particles carry toxic gases that are harmful to the lung and cause inflammation damaging the lungs delicate tissue and limiting the lung’s ability to absorb oxygen.(10)

Figure 2: The human respiratory tract



Toxic substances found on smoke particles

- Nitrogen Oxides – cause lung and airway irritation, shortness of breath, increased risk lung infections for people with COPD/Asthma
- VOCs – irritate respiratory tract and cause cancer
- Formaldehyde – eye irritation, headaches, coughing, wheezing
- Hydrocarbons – cause lung inflammation, coughing, wheezing, cause Asthma, and COPD
- Benzene – suppresses immune system, bleeding, anemia

Toxic substances found on smoke particles Cont'd

- Carbon monoxide – reduces the lungs ability to absorb oxygen, strains the lungs and cardiovascular system , can cause and worsen respiratory symptoms, and at high levels causes suffocation.
- Acrolein – irritates eyes and respiratory tract.
- Dioxins – cause cancer
- Sulfur Dioxide – cause eye irritation, bronchospasms, respiratory inflammation in people with pre-existing respiratory disease. (9, 10)

Health Complications from Wood Smoke

- People with heart or lung diseases, diabetes, young children, women who are pregnant, and older adults are most affected by particle pollution exposure from wood smoke. (12)



Health Complications from Wood Smoke

- 20% of Canadians have a serious respiratory disease such as asthma, COPD, lung cancer, tuberculosis, cystic fibrosis, and respiratory distress syndrome.(12) Wood smoke exacerbates these conditions.(10)
- Wood smoke can also trigger heart attacks and stroke in those already affected by cardiovascular disease. Fine particle pollution is also associated with premature death in people suffering from heart disease and COPD. (9,10) The journal Environmental Research tied wood smoke to inflammation and clotting since its toxins enter the bloodstream. (14)
- Covid – fine particulate matter in air pollution is linked to a 9% increase in covid-19 mortality. People who've recently recovered from Covid-19 or are now battling it will feel the effects of wood smoke more. (11)

Health Complications from Wood Smoke

- Heat of the smoke breathed in- Smoke isn't the only health hazard from wood fires, the heat a fire produces is harmful to a person's health in particular when the air a person inhales is hotter than the temperature of the surrounding area. Breathing in extreme heat can damage the lining of the lower respiratory tract.(12)
- The International Agency for Research on Cancer identified five cancer causing chemicals found in wood smoke. Smoke not only causes cancer but has serious negative health consequences on people suffering from cancer.(13)
- Pregnant women exposed to wood smoke have a higher risk for hypertensive pregnancy disorders like preclampsia, and gestational high blood pressure.(14)

Health Complications from Wood Smoke

- Type 1 diabetics exposed to wood smoke particulate matter experienced overall higher glucose levels and fasting blood sugar level. Chronic inflammation caused from wood smoke particulate matter is believed to be the mechanism responsible for the build up in insulin resistance and difficulty controlling blood sugar levels. (15)
- Obese type 2 diabetic patients “demonstrated a greater inflammatory response than non-obese diabetic patients after being exposed to wood smoke and as a result exhibited insulin resistance and difficulty controlling blood sugar levels.” In addition, type 2 diabetic patients experienced an increase in body weight and body mass index. (15)
- An increase in ambulations due to high and low sugar reactions to smoke particulate matter was observed 24-48 hours after the event. (15)

What is the alternative to a wood firepit in the city of Port Colborne?

- According to Firepit Magazine, propane firepits are safer than wood-burning firepits due to lack of open flames and sparks produced from wood burning firepits. 'The flame in a propane firepit can be turned off instantly by turning off the gas. Propane firepits are a low maintenance alternative to wood burning firepits, and propane is an environmentally friendly fuel.'(16)
- The only drawback is the production of carbon monoxide but this can be avoided if the tank and the firepit are inspected frequently for wear.(16)

Will council decide to repeal Bylaw 6788/38/20

- There are many dire consequences of allowing wood burning firepits to operate within city limits. The high population density of Port Colborne at 164.2 people per square kilometer would indicate that there are many people afflicted within that square kilometer with at least one of the health conditions I indicated was highly affected by wood smoke particles. People with respiratory conditions, cardiac conditions, cancer, Covid-19, older people, young children, diabetics, and pregnant women are just a few reminders of some of the conditions and people adversely affected by wood smoke.
- Wood burning firepits are dangerous to most of the homes and buildings located in Port Colborne since yards and building congestion doesn't allow firepits to be located safely 20-25 ft away from buildings and foliage. In addition, there are a lot of wood and wooden balloon construction homes in Port Colborne built in the late 1800s to the 1940s.
- Damage of house contents is just part of the problem of PM2.5 smoke entering buildings and landing on possessions that hold onto the toxic chemicals carried in by the smoke. This endangers the home's occupants to the possibility of severe health consequences.

Sources of Information

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