Air Quality Program FAQ: **Lead (Pb)**

1. What is Lead (Pb)?

Lead (Pb) is a naturally occurring element found in small amounts in the earth's crust. You can find Pb in various products such as vehicle batteries, radiation protection and soundproofing.

2. Why do we have lead (Pb) in Trail?

In addition to lead (Pb) contributions from historical use of products such as lead-based paint and leaded gasoline, Trail is home to one of the world's largest Pb and zinc smelting and refining facilities, in operation for over one hundred years. Dust particles present in smelter emissions contain Pb. During operations, these particles can settle on surfaces in the Trail area as part of the dust and soil.

The amount of Pb currently contained in Teck's stack emissions is low. Although fugitive dust emissions (see FAQ 4 for definition) have also been significantly reduced, the main focus for further lowering lead levels in the Trail area remains on these fugitive dust emissions from onsite materials handling and vehicle traffic.

Continuous improvement is a key component of Teck Trail Operations Environmental Management System (ISO14001). Measurements of Pb in airborne dust help to understand levels of Pb in the community and inform environmental improvements.

3. What is lead (Pb) in airborne dust and how does it affect the community?

Dust particles present in smelter emissions contain Pb. Dust particles in the air that contain Pb is referred to as 'lead in airborne dust'. This lead in airborne dust, along with stack emissions, may travel from the smelter site and settle in the community as part of the dust and soil. In Trail, dust originating at the smelter site as lead in airborne dust (fugitive dust emissions) may come from stockpiles, open handling of materials, buildings and vehicle traffic. Bare soils and deteriorating older paint can also add to Pb in airborne dust.

4. What is fugitive dust and how is it being managed at the smelter?

Fugitive dust is an air quality term used to describe an emission which does not pass through a stack. At the smelter in Trail, this is dust that escapes the smelter site from stockpiles, open handling of materials, buildings and vehicle traffic. Fugitive dust is not stack emissions. Fugitive dust is a source of lead (Pb) in airborne dust.

Teck Trail Operations manages fugitive dust at the smelter mainly by investing in initiatives to reduce fugitive dust on roads, in open mix areas, and in buildings. Some examples include improved road cleaning and dust suppressant, installing a windfence as well as wheel washes. They also focus on monitoring and real-time behaviour changes within the operation. See FAQ 9 for more on fugitive dust reduction efforts.

5. What are the amounts of Pb in outdoor air in Trail and what are the applicable standards?

The amount of lead (Pb) in outdoor air in Trail is measured at two locations, Butler Park and Birchbank. Data from Butler Park, a park in the heart of the community and closest to the smelter, is shown in Figure 1 indicated by the blue line.

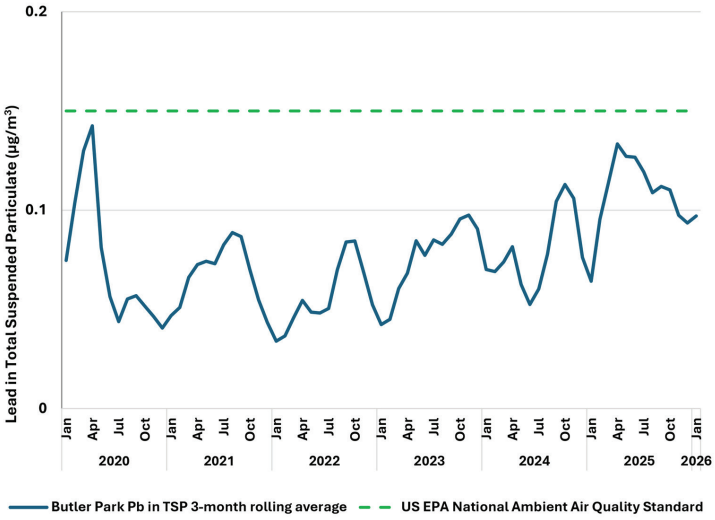

Figure 1: 3-month rolling average lead in total suspended particulate at Butler Park station (measured bi-daily)

6. Where is Pb in air monitored?

Teck conducts the following monitoring in the community:

- Measures of Pb in the air are taken at two testing locations in the Lower Columbia: Butler Park and Birchbank. Readings are taken over 24- hour periods.

This information is collected and analyzed by Teck's environment staff and reported to the Ministry of Environment and Climate Change Strategy as well as the Trail Area Health & Environment Committee (THEC). THEC meetings are open to the public, occur five times per year, and include an air quality report with the most current data available.

In addition to the 24-hour samples collected at Butler Park and Birchbank, Teck also conducts the following monitoring:

- Every hour, analyzers measure Pb concentrations at Butler Park and Duncan Flats and transmit readings directly to Trail Operations. Trail Operations immediately responds to any abnormal increase. See question 7 for how these data are used.

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- Dustfall measurements are collected on a monthly basis at Birchbank, Downtown Trail, Columbia Avenue, Columbia Gardens, Tadanac, Kootenay Boundary Regional Hospital, Glenmerry, Oasis, Stoney Creek, Waneta and Warfield. These measurements help understand changes in dust settling in the community over time.

7. How does Teck Trail Operations use data to manage Pb levels in air in Trail?

Every hour, analyzers measure Pb concentrations at Butler Park and Duncan Flats. Near real-time data is transmitted to Teck Trail Operations' process control systems. If Pb levels begin to rise, plants at Teck Trail Operations are automatically notified so that actions can be taken to reduce Pb emissions.

8. Who regulates Teck's Pb emissions?

Teck smelter's aerial emissions are regulated under permits issued by the BC Ministry of Environment and Climate Change Strategy (ENV).

9. What is Teck doing to reduce Pb emissions?

Over the past 30 years, there have been significant improvements in community air quality and over $1.7 billion has been invested in a modernization program to improve operational and environmental performance at Teck Trail Operations. Since the installation of the KIVCET Smelter in 1997 and subsequent operations improvements at Teck Trail Operations, there has been a 99.5% reduction in stack lead emissions.

The Air Quality Program, one of several programs overseen by the Trail Area Health & Environment Committee, is managed by Teck Trail Operations, and continues to reduce Pb in the environment through the comprehensive Fugitive Dust Reduction Program.

Fugitive dust reduction efforts include:

- construction of the Smelter Recycle Building, close to the size of two Canadian football fields to enclose mixing and storage of process feed materials;
- installation of a ten-metre high wind fence reducing dusting where feed materials are mixed;
- installation of wheel washes and truck washes onsite help reduce tracking of materials onto roads;
- onsite street cleaning, via street sweepers and water trucks, provide a year-round program of roadway sweeping and flushing; and,
- identification and reduction of fugitive dust sources from work activities in our operating plants.

10. How does lead enter the body?

According to the US Centre for Disease Control, ingestion is the main route of exposure to Pb for children, and the route that most commonly leads to elevated blood lead levels. This is true for any community and is not specific to communities with a lead smelter. Children are at greater risk of ingesting lead as they often put hands and objects in their mouth.

Inhalation can be an exposure pathway for workers in lead industries, "do-it-yourself" home renovators, persons with hobbies (stained glass making/soldering), people who smoke and children exposed to second hand smoke. Aborbtion into the skin is a less common and rare exposure pathway.

Ingestion is the most common route of exposure to lead for children as children often put hands and objects in their mouth. Ingestion is the route that most commonly leads to elevated blood lead levels. **The most important action you can take is to manage dust.**

Lead particles from old paint, dirt, industrial emissions, or renovations can be **inhaled** or **absorbed** through the skin; however, ingestion is the main contributor to Pb exposure.

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11. What actions can I take to reduce my family's exposure to Pb in dust?

Primary prevention is the most effective way to prevent lead (Pb) exposure. Actions you can take to reduce the risk of Pb exposure include:

a. Wash your hands and your children's hands especially before eating and after playing outdoors.

b. Eat foods that have enough iron and other vitamins and minerals. A person who eats a balanced, nutritious diet may absorb less Pb. Eat at the table.

c. Keep your floors dust-free by vacuuming and damp-mopping often. Leave outside shoes at the door. Damp dust frequently, especially window ledges and countertops.

d. Keep outdoor play areas clean. Cover the sandbox when you are finished playing. Hose off patios, play equipment, and driveways often. Play on the grass and cover bare soil areas.

e. Renovate safely. Seal off the area of work, use appropriate personal protective equipment (PPE), and clean well when complete. Keep children and pregnant women away if possible.

Secondary prevention including blood lead testing and follow-up minimizes further exposure. Trail offers an annual voluntary blood lead testing clinic for children under five years old.

12. How does Teck share air quality information locally?

Teck shares summary information at the bi-monthly Trail Area Health & Environment Committee (THEC) meetings which are open to the public. All air quality reports are also published online at thep.ca. Lastly, Teck participates in the THEC Air Quality Working Group to share more detailed information on air quality management at Teck and in the community.

13. How does Pb affect my health?

Lead exposure can have detrimental effects on early childhood development and children's future outcomes. Lead is most harmful to children younger than age 6 and especially those younger than age 3. During pregnancy, small amounts of lead can sometimes pass from a mother to her baby. It's also possible for lead to be passed to a baby through breast milk. There is no known safe level of lead exposure. Taking steps to reduce lead exposure can help keep both mom and baby safe. Visit thep.ca to learn more.

14. Who is at highest risk of Pb exposure?

Young children are at highest risk of Pb exposure and its effects because:

- They often put their hands and objects in their mouths.
- They sometimes swallow non-food items.
- Their bodies absorb lead at a higher rate.
- Their brains are developing quickly.

Pregnant women exposed to lead can pass it to the baby. Lead can also be passed to a baby through the mother's breast milk.

15. If I have a concern about air quality or health, who do I contact?

Residents who have concerns about air quality are encouraged to call the Teck Community and Environment Feedback line at (250) 364-4817, a phone line answered 24 hours a day.

If you have a health concern specific to lead exposure, please contact THEP Family Health Services at the Kiro Wellness Centre 250-364-5945 or text your public health nurse 250-231-5945.

Learn more about Pb and health:
https://thep.ca/programs/health