

Trail Area Health & Environment Committee



Summary

Meeting: June 21, 2022, 7:00 p.m. by Zoom

Committee Members in attendance:

Lisa Pasin, Chair, City of Trail
Dr. Karin Goodison, Interior Health MHO
Tara Bullanoff (alternate), Interior Health
Dan Bouillon, Teck Trail Operations

Steve Hilts, Community Member
Julia Stockhausen, Community Member
Clare North, Teck Trail Operations

Others in attendance:

Annick de Goede, Community Member
Christina Yamada, Interior Health
Colleen Delaney, BC Ministry of Environment
Jayne Garry, Teck Trail Operations
Cindy Hall, SNC Lavalin
Frances Boreland, Broken Hill, Australia
Sophie Martin, South Australia EPA

Thea Hanson, Community Member
Meghan Morris, Interior Health
Danny Rioux, Teck Trail Operations
Andrea McCormick, SNC Lavalin
Alexa Matthes, SNC Lavalin
Michelle Laurie, THEC Lead Facilitator
Kalimna Roe-Simons, South Australia EPA

The Trail Area Health & Environment Committee (THEC) meets five times per year online or in-person. Members, designates and community members are welcome.

WELCOME and INTRODUCTIONS

- After a round of introductions by participants, Mayor Lisa Pasin (THEC Chair) proposed three new community members to join the THEC. Everyone welcomed:
 - Thea Hanson (Trail Parent, Realtor, Lower Columbia Community Development Team Society, <https://theahanson.com/about.html>)
 - Annick de Goede (Trail Parent with interests in local businesses and community organizations)
 - Erika Krest (Executive Director of Chamber of Commerce)
- The updated THEC Terms of Reference were approved and will be posted on thep.ca (see attached).

MEETING MINUTES

- The minutes from the THEC meeting, April 26, 2022 (as attached) were approved.

PRESENTATIONS, REPORTS, DISCUSSIONS & RECOMMENDATIONS

Sulphur Dioxide (SO₂) Reduction Program Update

Presenter: Danny Rioux, SO₂ Reduction Program Lead, Teck Trail Operations

- Presentation attached.

THEP Strategic Directions

Facilitated discussion with Michelle Laurie, THEC Lead Facilitator

- Since April's THEC meeting, the THEP Strategic Directions plan was drafted to articulate what the program works on and hopes to achieve moving forward. A working group met three times to review the ideas and provide comments.
- During the June THEC meeting, key questions were reviewed by small groups and feedback ensued in plenary as well as via an online collaboration platform.
- Michelle will update the document based on feedback received and send out for a final review via email over the summer. The intention is to have a final draft for approval at the September 22, 2022 THEC meeting.

Program Reports & Updates

Air Quality

- Air Quality Report – **Dan Bouillon, Teck Trail Operations**
 - See attached.
 - Clare North and Jayne Garry from Teck Trail Operations shared that Teck is moving the current Air Quality monitoring station in Warfield in order to meet Ministry of Environment and Climate Change Strategy criteria. It will be placed in Haley Park adjacent to the softball field. Teck communications will work with THEP to develop interpretative signage for the station as a way to inform people about air quality monitoring in the area and its contribution to THEP's air quality program.
- Air Quality Working Group Update – **Lisa Pasin, Chair**
 - The draft SO₂ 1-pager for elderly and young (see attached) was shared and a few comments were provided. People were encouraged to send final feedback by email. The intention is to have the 1-page handout printed and in circulation by the end of summer.
 - The next meeting is scheduled for July 6, 2022.

Family Health Report – Meghan Morris, Interior Health

- See attached.
- Meghan Morris has returned to the position of THEP's public health nurse. Everyone thanked Cecilee Pitman for her work during the time Meghan was supporting other programs with Interior Health. Cecilee will occasionally work with THEP, filling in for Meghan as needed.

Home & Garden Report – Andrea McCormick, SNC Lavalin

- See attached.

Community Check-In - All community members

- Sophie Martin from the South Australian Environmental Protection Authority spoke about the current visit to Trail June 20-23 in order to share knowledge and learn between communities with active smelter operations. She thanked the program team, THEC community members and Teck Trail Operations for the exchange thus far which included touring Trail and the surrounding areas from Castlegar to Rossland, as well as visiting Teck's facility to specifically learn about air quality improvement initiatives. Michelle Laurie invited all THEC members to join the online meetings planned for Wednesday June 22nd with South Australia Health and BC Interior Health as well as a presentation on learning from the external review of Port Pirie's Targeted Lead Abatement Program. The final day of the tour is intended to discuss ways to continue knowledge exchange between Port Pirie and Trail as well as other interested communities with active lead (Pb) smelting or mining operations.

Program Planning Update - Michelle Laurie, THEC Lead Facilitator

- Follow up on the communications plan as well as community renewal plan continues.
 - Michelle invited members to visit THEP/THEC partner websites and social media as THEP is promoting its program via those channels. FAN, the Trail and District Chamber of Commerce, Village of Warfield, City of Trail and Regional District of Kootenay Boundary have been posting on behalf of THEP.
 - Research and discussions on engaging service providers focused on working with Indigenous and First Nation's families is taking place.
- Supporting the THEP Strategic Directions plan, recruiting three new THEC community members, as well as planning the knowledge exchange visit (in person and online) with Port Pirie counterparts has been the priority in May and June.

- Over the summer, Michelle will be putting together the newsletter for September distribution. She will also look into options for THEC meetings to be hybrid in the future.

Partner Meeting Report - Lisa Pasin, THEC Chair, Mayor, City of Trail

- There was no Partner meeting.

2022 THEC MEETING DATES

- September 22
 - The option for a hybrid meeting in September will be explored.
- December 1

THEC meetings are held from 7:00-9:00pm.

Trail Area Health & Environment Committee



AGENDA

Meeting: June 21, 2022, 7:00 p.m.

By Zoom: <https://us02web.zoom.us/j/83595504011>

Committee Members:

Lisa Pasin, Chair, City of Trail
Sandy Santori, Alternate Chair, City of Trail
Dr. Karin Goodison, Interior Health MHO
Jane Power, Interior Health
Kyle Jorgenson, USW Local 480 Rep
Dan Bouillon, Teck Trail Operations
Clare North, Teck Trail Operations

Linda Worley, RDKB Area B
Cyra Yunkws, Village of Warfield
Ali Grieve, RDKB Area A
Cassandra Counce, BC Ministry of Environment
Ron Joseph, Community Member
Steve Hilts, Community Member
Julia Stockhausen, Community Member

The Trail Area Health & Environment Committee (THEC) meets five times per year online or in-person. Members, designates and community members are welcome.

WELCOME and INTRODUCTIONS

- Opening remarks from Mayor Lisa Pasin, THEC Chair
- Proposal to welcome 3 new community members to join THEC
 - Thea Hanson (Trail Parent, Realtor, Lower Columbia Community Development Team Society, <https://theahanson.com/about.html>)
 - Annick de Goede – (Trail Parent, Interests in local businesses and community organizations)
 - Erika Krest – (Executive Director of Chamber of Commerce)
- Proposal to adopt the updated THEC Terms of Reference (see attached)

MEETING MINUTES

- Approve minutes from THEC meeting, April 26, 2022 (as attached)

PRESENTATIONS, REPORTS, DISCUSSIONS & RECOMMENDATIONS

Panel Presentation:

Annual Air Zone Reports (10 mins)

Presenter: Markus Kellerhals, Senior Air Quality Science Officer, Ministry of Environment and Climate Change Strategy

Sulphur Dioxide (SO₂) Reduction Program Update (15 mins)

Presenter: Danny Rioux, SO₂ Reduction Program Lead, Teck Trail Operations

Questions and discussion (10 mins)

THEP Strategic Directions (30 mins)

Facilitated discussion with Michelle Laurie, THEC Lead Facilitator

- Review of key questions, group feedback and next steps

Program Reports & Updates (45 mins)

PLEASE NOTE:

All reports are provided in the agenda package for your review prior to the meeting. TO MAKE THE MOST OF OUR TIME TOGETHER, PLEASE BRING YOUR QUESTIONS OR ITEMS FOR FURTHER DISCUSSION.

Air Quality

- Air Quality Report (see attached) – **Dan Bouillon, Teck Trail Operations**
- Air Quality Working Group Update – **Lisa Pasin, Chair**
 - Draft SO₂ 1-pager for elderly and young (attached)

Family Health Report – (see attached) **Meghan Morris, Interior Health**

Home & Garden Report – (see attached) **Andrea McCormick, SNC Lavalin**

Community Check-In - All community members (15 mins)

- Round table contributions & questions

Program Planning Update - **Michelle Laurie, THEC Lead Facilitator**

Partner Meeting Report - **Lisa Pasin, THEC Chair, Mayor, City of Trail**

2022 THEC MEETING DATES

- September 22
- December 1

THEC meetings are held from 7:00-9:00pm.

**Draft THEC Terms of
Reference for Final Review
and Approval**

FOR REVIEW BY THEC (May 2022)
City of Trail

Select Committee of Council
Terms of Reference

NAME OF COMMITTEE:

Trail Area Health & Environment Committee (THEC)

MANDATE:

To be a transparent platform for multistakeholder dialogue, collective decision-making and community engagement specific to the Trail Area Health & Environment Program (THEP)*.

ROLE:

- Participate in the decision making and approve the strategic direction of the THEP.
- Monitor and advise Trail City Council on the implementation of the THEP.
- Support collaboration between program partners in an effort for the whole to be greater than the sum of the parts.
- Help interpret and understand the complexities of the comprehensive program, including contextualizing information to the local area.
- Establish and convene Working Groups from time to time to investigate and make recommendations on specific issues (for example Air Quality Working Group, Community Renewal Working Group).
- Facilitate public communication and oversight with respect to delivery of services and progress toward the joint goals and objectives of the THEP.
- Provide voice for the community of Trail in related processes, taking place concurrently at times, and relevant to attaining the stated goals and objectives.
- Be a mechanism for program accountability to the community, the City, as well as between the partners.

The Committee is not a regulatory body and does not replace the regulatory functions required between some of its members.

Some members of the Committee partner in program implementation in order to realize increased health benefits to the community. The partners are the City of Trail, Interior Health, Teck Trail Operations and the Ministry of Environment and Climate Change Strategy.

MEMBERSHIP:

Membership on the Committee aims to include those with a potential interest in the activities of the THEP, and shall consist of:

- The City of Trail Mayor, or designate from City Council, who shall act as Chair;
- 1 member of Trail City Council, who shall act as alternate Chair;
- 1 member appointed by the following local governments, or their designate:
 - Village of Warfield

- RDKB Electoral Area 'A'
- RDKB Electoral Area 'B'
- 2 members from Teck Trail Operations
- 2 members from Ministry of Environment and Climate Change Strategy
 - Member specific to authorizations South
 - Member specific to land remediation section
- 2 members from the Interior Health Authority
 - Medical Health Officer
 - Organizational representative
- 1 member from United Steelworkers, Local 480 or 9705
- Up to 6 members appointed from the public at large, or representative organizations, who are broadly reflective of the community.

Membership on the Committee shall reflect the desired experience, knowledge and expertise relevant to fulfilling the Committee's role. Organizations will appoint their representatives. Recruitment for representatives from the community and representative organizations will be tasked to the THEC Lead Facilitator and approved by the Chair in consultation with the Committee.

Members shall serve on the Committee without remuneration.

MEETINGS:

Meetings of the Committee shall be held at least quarterly and shall be open to all members of the public and media. A meeting of the Committee may also be called at the discretion of the Chair.

A quorum is the majority of the number of appointed Committee members. A meeting shall require a quorum in order to proceed.

On all matters requiring a decision, the Committee shall attempt to reach said decision by a process of consensus. If the Committee is unable to achieve a consensus, the decision shall be decided by majority vote.

Agenda packages will be sent to the members before the meeting and will exclude confidential information.

If any member considers an agenda item confidential, they will advise the Chair and that item may be discussed in camera at the discretion of the Chair.

BUDGET & EXPENDITURES:

Teck Metals Ltd. will provide funding, facilities and/or equipment if needed by the Committee to conduct meetings (eg: presentation equipment, photocopying, minute taking).

REPORTING:

The minutes of each meeting of the Committee must be recorded, highlight key decision points and record any decisions or recommendations the Committee may decide on.

Once approved by the Committee, the minutes shall be provided to the Corporate Administrator's office for circulation to Council. The minutes (excluding any confidential material) will also be posted online for the public at thep.ca.

The Mayor shall report on the activities of the Committee at the next Regular Council Meeting after any Committee meeting.

The following parties shall submit a report to the Committee as noted:

- Teck Trail Operations representatives will report to the Committee on the results of air quality monitoring and emissions reduction activities, environmental management planning, soil management activities, home visiting and support activities, outreach and other related program activities. The Teck representatives may delegate reporting on areas outside of air quality to their designated contractor.
- Interior Health staff, responsible for primary prevention, blood lead testing, enhanced supports and community liaising, will report to the Committee on those programs. A Medical Health Officer will provide advice, including written guidance, to the Committee on an as needed / requested basis.
- The THEC Lead Facilitator will report to the Committee on activities carried out in their role supporting program activities / teams as well as committee members, working groups and their activities.

REVIEW:

The Terms of Reference of the Committee will be reviewed in conjunction with the program monitoring and reviews (at least every five years).

***ABOUT THEP:**

THEP works to support community health and wellbeing in the area influenced by smelter air emissions. The overall Program enables the community to understand and navigate ways to reduce exposure, addresses the inherent overlap of the Program components and maximizes opportunities for improvement through an integrated approach. The various Program components are implemented by different entities (known as partners). Learn more, and access strategic documents, at thep.ca.

**Panel Presentation with Ministry of Environment & Climate Change Strategy and Teck Trail Operations:
Annual Air Zone Reports & Sulphur Dioxide (SO₂)
Reduction Program Update**

*Presentations shared by panelists will be included in the
summary/minutes.*

Teck Trail Operations

Ambient SO₂ Reduction and Control Update

June 21, 2022

Danny Rioux, SO₂ Reduction Program Lead

The Teck logo is displayed in a bold, blue, sans-serif font.

Situation Overview: Trail and SO₂

Trail Operations captures > 99% of the sulphur released in smelting operations

- Would meet requirements for a new plant

Trail Operations is capable of meeting 2021 Permit Amendment with current process and operational controls implemented

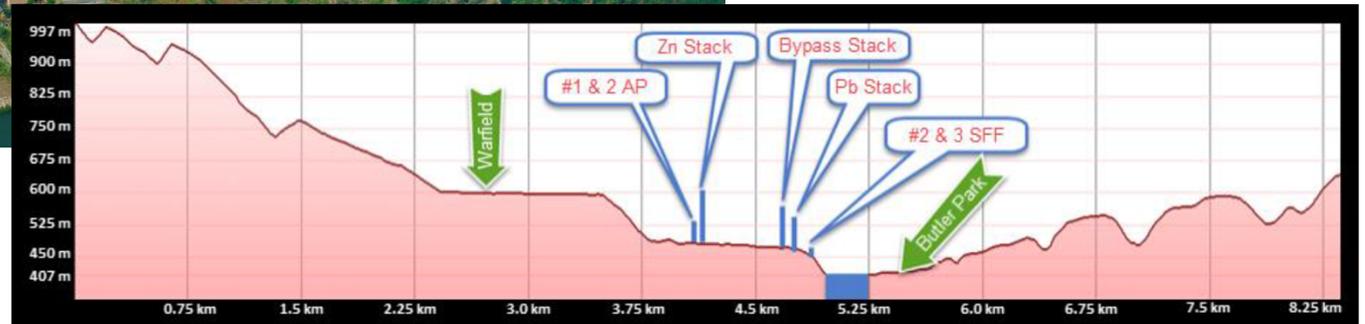
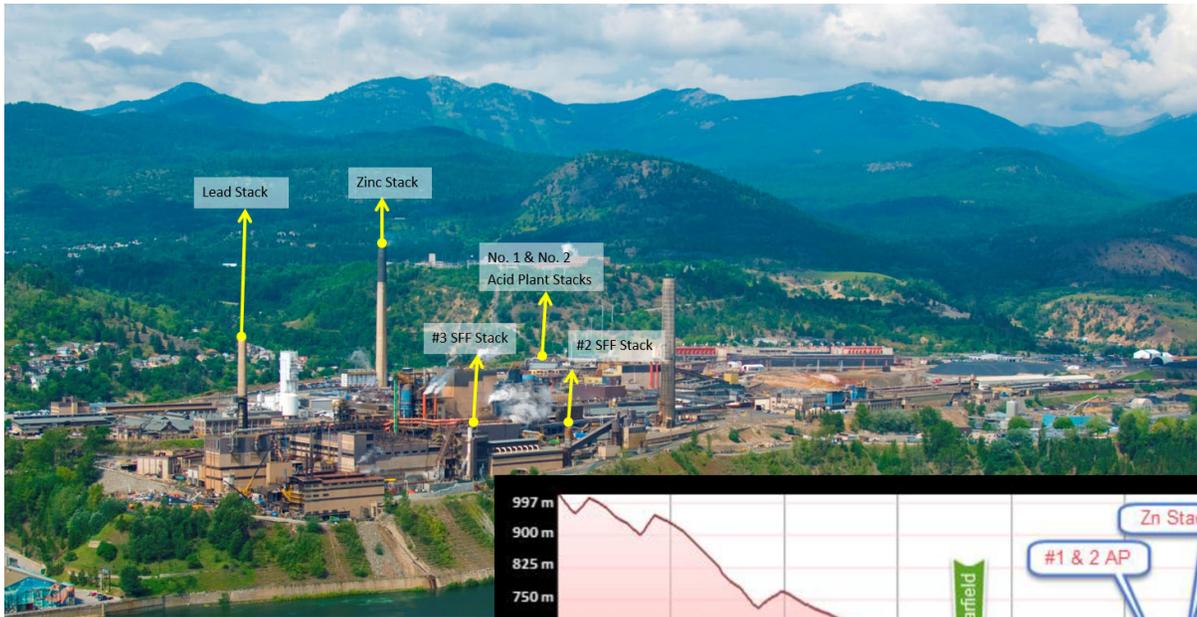
Permit Amendment in 2023 with lower Ambient Targets

- New emission reduction project combined with adjusted operational control to meet requirement is being installed

Topography of the Columbia Valley limits dispersion of the emissions

- Proportionately higher impact than in more open terrain

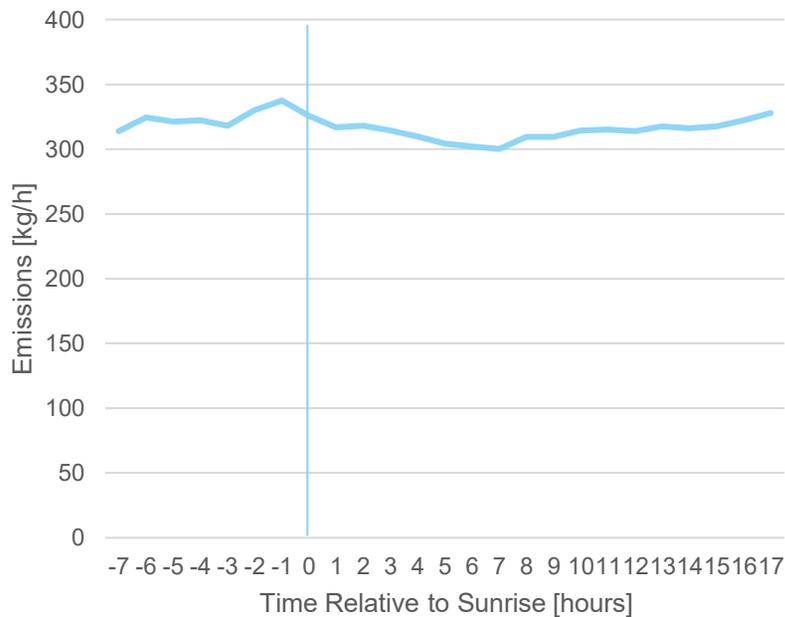
Sources of SO₂ at Trail



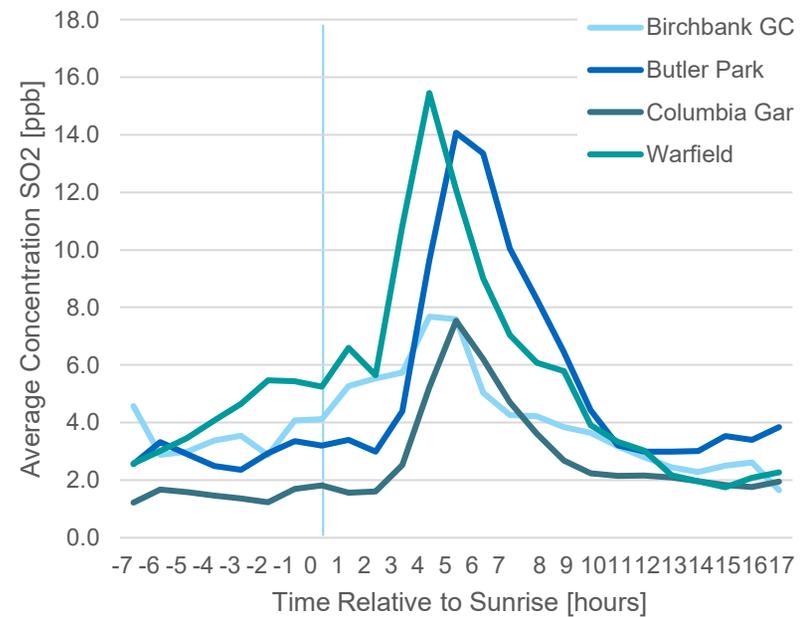
Impact of Diurnal Cycle on Ambient Levels

Mid-morning Peak Levels

Average Emissions



Average Ambient Levels



SO₂ Emissions Reductions

2014 & 2019 - Two New Acid Plants

- ~100 kg/h SO₂ reduction

2018 & 2020 - Continuous Dry Sorbent Injection for #2 and #3 Slag Furnace

- ~165 kg/h SO₂ reduction

2023 – KIVCET Feed Dryer Project

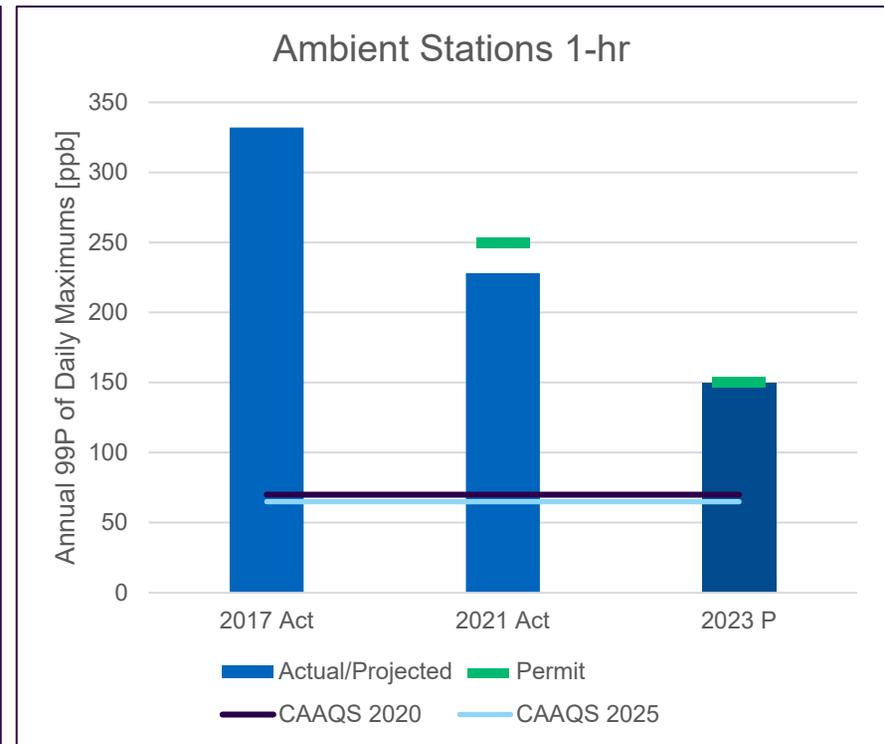
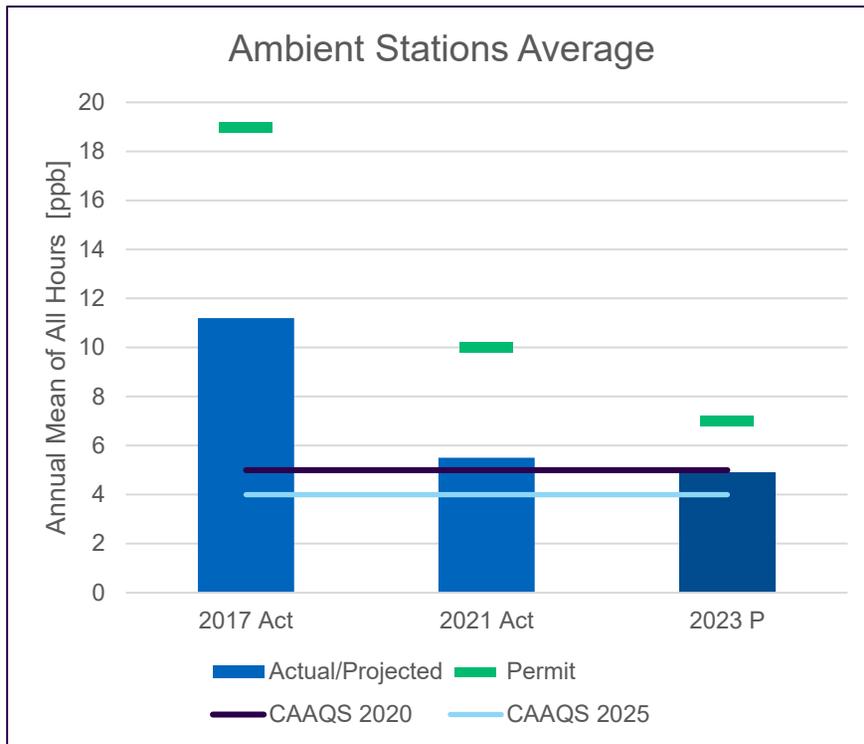
- ~145 kg/h SO₂ reduction

2021 – Overall Emission Target → 440 kg/h
Post 2023 - Overall Emission Target → 295 kg/h

Teck



SO₂ Ambient Performance

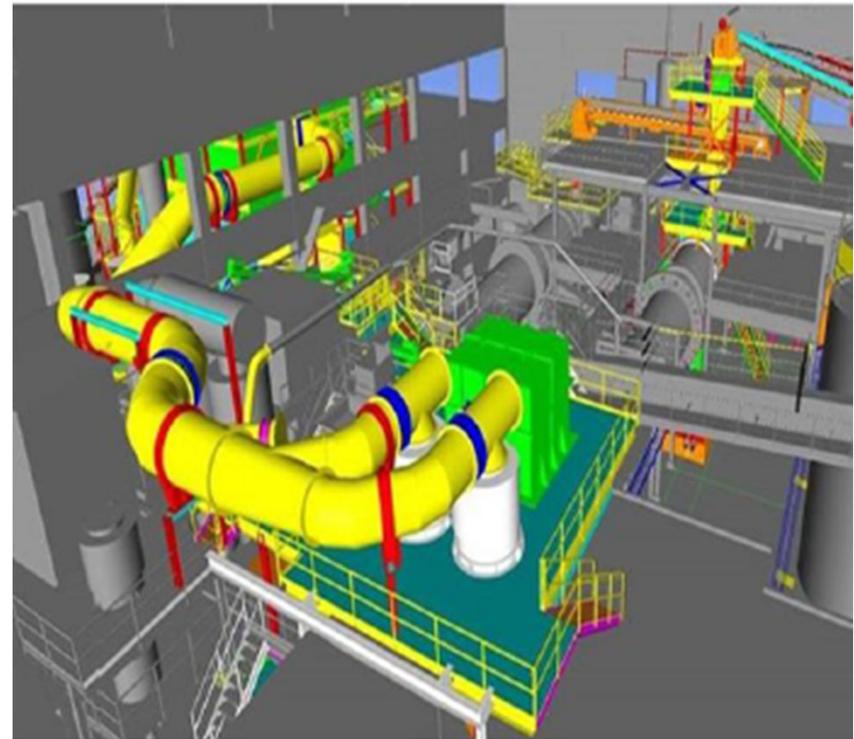


Note : Prior to 2021, Permit was a maximum of 343 ppb

SO₂ Emissions Reductions in Progress

KIVCET Feed Dryer Project

- SO₂ Emission Reduction of ~ 33%
- ~ 145 kg/h SO₂ reduction
- Provide capability to modulate emissions based on mid-morning peak level
- ~ \$ 55M Investment
- Global supply chain issues have delayed startup in early Q2 2023



Towards CAAQS for SO₂

Projection for 2024

Annual Average

- All stations will be at, or close to, the CAAQS 2020; < 5.0 ppb

1-hr Metric:

- Columbia Gardens and Birchbank will be at, or close to, CAAQS 2025; <65 ppb
- Butler Park and Warfield will depend on:
 - The KIVCET Feed Dryer Project and
 - Modulating Operations

We are evaluating the opportunity for further SO₂ emissions reductions in parallel with CO₂ reduction planning.

Discussion



Teck





Draft Strategic Directions Plan

This document is "in progress".

Please do not distribute until it has been approved by the THEC.

June 15, 2022

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1.0 INTRODUCTION

The Trail Area Health & Environment Program (THEP) represents a unique collaboration in support of community health and wellbeing, in an area influenced by smelter air emissions for over 125 years. The comprehensive program enables the community to understand and navigate ways to reduce exposure to Pb as well as SO₂. The program also addresses the inherent overlap of different exposure pathways and maximizes opportunities for improved health and the environment through an integrated approach. Program components focus on air, health, soil, built environments (e.g. homes, daycares, civic buildings, fences, sheds, etc), and community connection while keeping the perspective of the whole in mind.

The Program is implemented by different entities (known as partners), each with their own mandate. Together they work toward shared objectives and goals focused on improvements in knowledge, awareness and health related to lead (Pb) or sulphur dioxide (SO₂). The partners include the City of Trail, Teck Trail Operations, Interior Health and the BC Ministry of Environment and Climate Change Strategy. THEP partners have staff and consultants carrying out leading edge program activities. The Program is accountable to the Trail Area Health & Environment Committee (THEC), a select committee of the City of Trail. THEC is unique in that community has a large presence on the committee, with up to six spaces designated for community representation.

This strategic directions plan is developed with recognition of various concurrent processes, (at times with related objectives), taking place in and around Trail to improve the health and environment as a result of being situated in close proximity to an operating smelter. The strategy leverages the unique capacity, roles, and expertise of the partners and community.

This is not a legal document. This is a guide the partners can use to work together toward their shared ambitions. Its strength is that the partners acknowledge the cooperative spirit by which this Program (THEP) has been developed, and the expectation that the various elements of the THEP, as they evolve, will be carried out, monitored and adjusted with new knowledge, learning and time, always keeping the community at the forefront of decision making. This document sets out the broad areas of work, aspirational targets and indicators to measure success.

While the commitments and goals were established in good faith, it is understood that the issues are complex, technologies change and science continues to evolve. As it has in the past, THEP will need to adapt in the future as circumstances change.

2.0 BACKGROUND

Trail, British Columbia is the site of one of the world's largest lead and zinc smelting facilities. The smelter has been in existence for over 125 years with the community of Trail growing up around it, creating unique challenges for people and the environment.

A University of British Columbia (UBC) study in 1989 found that children in Trail had elevated blood lead levels as a result of air emissions from the smelter. Parents were concerned, and the community came together to form a community-industry-government task force working in partnership to reduce children's blood lead levels. Through extensive research and independent reviews, the Trail Lead Task Force made the groundbreaking recommendation to focus on air quality as the first major action in reducing exposure to Pb in Trail. Hard work began to reduce emissions at the source (the smelter), along with extensive community wide support, education and involvement. This led to a decade of success in reducing children's blood lead levels. In 2001, the Trail Lead Task Force concluded and the work of the Trail Lead Program continued through THEP.

THEP, accountable to THEC, has continuously strived to evolve with emerging science and understanding. Over the past decade further reductions in smelter related fugitive emissions (dust that escapes from buildings, stockpiles, roadways and other activities on site) and public health primary prevention programs targeted at young families have resulted in the lowest levels of lead in community air and the lowest children's blood lead levels ever. At the same time, the public facing program team have become active members in the social landscape contributing to the overall wellbeing of families and community in the Trail area.

Program partners and the community are committed to being leaders in this domain. In the 1990's the average blood lead level in Trail children was over 15 µg/dL, and since 2018, the average level is consistently under 3 µg/dL. The blood lead reference value in the USA, which is used to identify blood lead levels that are higher than most children's levels, is 3.5 µg/dL. Provincially, the BC Centre for Disease Control uses a blood lead level of 5 µg/dL to prompt follow up investigation into lead exposure. Still, there is more work to be done to drive down blood lead levels of children in Trail and surrounding areas. The average blood lead level remains higher than national levels and there are individual children in Trail and area who exceed the BC guideline for level of concern.

In addition to Pb, SO₂ is emitted by Teck Trail Operations as a by-product of processing mine concentrates, which contain sulphur, into metal and chemical products. In 2020, building on the momentum of new Federal and Provincial Air Quality Standards, a working group of the THEC, initiated work on communicating health and environment related information on sulphur dioxide (SO₂). This expanded the focus of the comprehensive program beyond Pb (and other associated metals) to include SO₂.

The comprehensive program (THEP) works to reduce environmental health impacts; helps make sense of, and increase understanding, of regulatory requirements in the context of Trail and provides data and learning to inform continuous improvement. This is achieved by working together in areas that are regulated by the Province of BC, and sometimes in other areas outside of government regulation. Ongoing work includes activities contributing to THEP's purpose, sharing learning locally and beyond, and engaging the community from governance to activities on the ground.

This strategic directions plan is intended to complement and contextualize the next operational update to the THEP (last updated in 2014).

3.0 GOVERNANCE, WORKING GROUPS AND PARTNERS

THEP reports to the Trail Area Health & Environment Committee (THEC). THEC is formally established as a Sub-Committee of the City of Trail. The Terms of Reference (ToR) are approved by Trail City Council and are reviewed on the same schedule as updates to the strategic directions plan and associated operational plan of the Program.

THEC Mandate (as per the Terms of Reference, updated 2022)

To be a transparent platform for multistakeholder dialogue, collective decision-making and community engagement with respect to the THEP.

Role

- Participate in the decision making and approve the strategic direction of the THEP.
- Monitor and advise Trail City Council on the implementation of the THEP.
- Support collaboration between program partners in an effort for the whole to be greater than the sum of the parts.
- Help interpret and understand the complexities of the comprehensive program, including contextualizing information to the local area.
- Establish and convene Working Groups from time to time to investigate and make recommendations on specific issues (for example Air Quality Working Group, Community Renewal Working Group).
- Facilitate public communication and oversight with respect to delivery of services and progress toward the joint goals and objectives of the THEP.
- Provide voice for the community of Trail in related processes, taking place concurrently at times, and relevant to attaining the stated goals and objectives.
- Be a mechanism for program accountability to the community, the City, as well as between the partners.

THEC also establishes working groups to oversee specific initiatives as well as investigate and make recommendations on specific issues. For example:

- Air Quality Working Group (AQWG). This group is comprised of THEC members and technical specialists from Teck Trail Operations, Interior Health and the BC Ministry of Environment and Climate Change Strategy. The purpose is to gain a better understanding of, and prioritize, air quality issues that impact the community, including health concerns.
- The Community Renewal Working Group. This group is led by a THEC community member and is tasked with finding ways to ensure ongoing inclusion, representation and engagement of community in THEC/THEP activities.

Partners Committee

The THEC partners committee is composed of the entities who hold responsibility for delivering Program components, and who also sit on the THEC. This includes the City of

Trail, Teck Trail Operations, Interior Health and the Ministry of Environment and Climate Change Strategy. In addition to the roles outlined below, the partners are committed to building on the synergies of each others' activities and finding opportunities to maximize impact.

Partner Roles:

- The City of Trail is the convenor, providing facilitation and collaboration support for the partners, the working teams as well as the governance committee. In addition, the City supports community engagement and additional dust control measures throughout the Trail area (including Rivervale, Waneta and the Warfield hill). Activities are implemented via elected officials, hired consultants and City staff.
- Teck Trail Operations manages air quality, soil and built environment components. This includes air emissions monitoring, reporting and improvements; soil testing and remediation; primary prevention via in-home visiting (in collaboration with the 'health' team), provision of lead safe renovation information and supplies and supporting partnerships in the community. Secondary prevention is addressed through additional support for families the MHO is following up with. Activities are implemented via Teck employees and a consulting team.
- Interior Health (IH) manages health components including primary and secondary prevention activities. This includes in-home visits with a public health nurse, engagement with the local community, management of blood lead testing clinics and providing Enhanced Support in collaboration with partners. Activities are implemented via the Public Health Nurse with support of the MHO, Manager of Environmental Management and IH THEC representative.
- The Ministry of Environment and Climate Change Strategy provides expertise, as well as being a liaison to the community and other partners. This includes working with Teck to ensure data has undergone quality control measures; participating in activities of the Air Quality Working Group and being available to engage with the community as requested. Activities are implemented via the Authorizations and Land Remediation branch, as well as the Senior Air Quality Meteorologist.

4.0 THEP PURPOSE, VISION, MISSION, AND VALUES

Purpose

THEP's purpose is to support the community of Trail and surrounding areas to live, work and play in an area influenced by smelter air emissions.

Vision

A community with thriving families, environment and economy.

Mission

THEP works collaboratively to reduce exposure to smelter air emissions such as Pb (lead) and SO₂ (sulphur dioxide) by improving air quality, providing community-based education

and programs to reduce children’s blood lead levels, and ultimately improve peoples’ health.

Values

Health – Program resources are targeted to reducing peoples’ health risks and empowering families and others to support their health journey.

Community – Community members are integral to success from programs on the ground to participation in decision-making, having the largest portion of representation on the THEC. Program goals and activities are reviewed by the community through regular public consultation, and the programs are in place to actively contribute to community health and well-being.

Partnership – THEP uses a partnership approach in governance and program delivery. It has been recognized for the effectiveness of its collaborative multi-stakeholder model of industry, government, and community working together for mutual benefit.

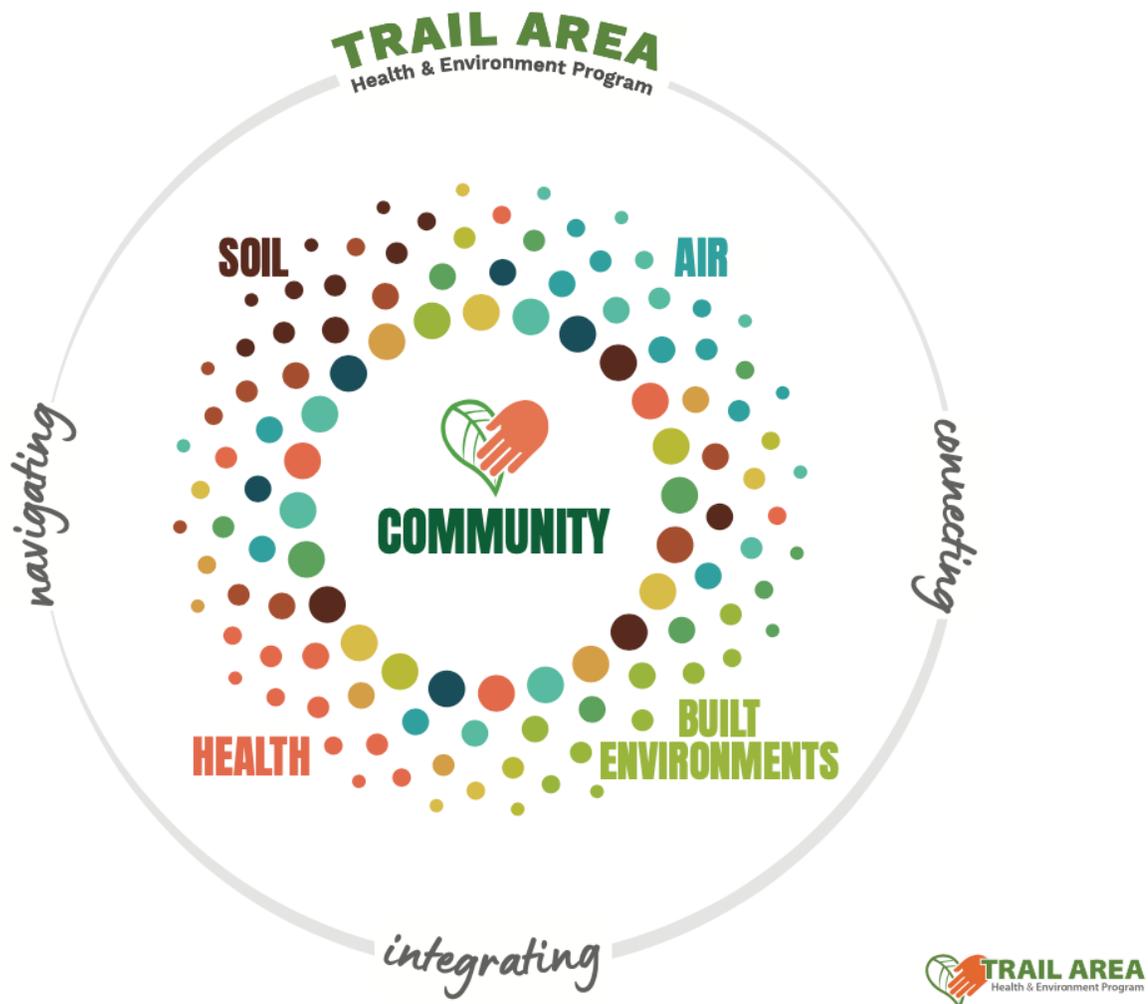
Science-based –THEP designs and delivers activities based on scientific research, evidence of effectiveness and a recognition of complex systems.

Accountability – THEP is accountable to the community, the Committee and other stakeholders through transparent decision-making, responsive and timely programming, and pro-active public communication and consultation.

Trustworthy – THEP is open, honest and transparent in its actions and communication with the public, with each other as partners, and with the Committee.

5.0 STRATEGIC DIRECTIONS

THEP strategic directions focus on themes the program works on as well as where the program intersects, adds value and creates meaning to achieve our vision of a community with thriving families, environment and economy. This strategic document was developed on the heels of a global pandemic which challenged partners to find ways to continue working together, and with the community, across distance and competing demands. It acknowledges the excellence that has taken place and the work still to do.



5.1 Air

Issue: Trail is home to one of the world’s largest lead and zinc smelting and refining facilities. While significant operational improvements have been made to reduce emissions, Pb and SO₂ levels in air have the potential to impact community health.

Pb in Air:

Monitoring data at the established community monitoring stations meet the most stringent standard in the world. However, children’s blood lead levels are higher than non-smelter communities and ongoing emissions contribute to Pb in dust in the community (as measured by Pb in ambient air). Further reductions in fugitive emissions provide an opportunity for further reductions in blood lead levels. Fugitive emissions may also influence soil lead levels in the community.

SO₂ in Air:

Monitoring data at the established community monitoring stations show periodic elevated levels of SO₂ which exceed the recently introduced federal standard. Short-term exposure to elevated levels of SO₂ can constrict or tighten air passages in the lungs, leading to breathing difficulties and tightening in the chest. Young children,

elderly people and those with chronic respiratory disease are most sensitive. While sulphur capture meets the highest standard for smelters across Canada and SO₂ emissions are lower than other Canadian smelters, dispersion of SO₂ emissions can be constrained due to the location of the smelter, weather, and the surrounding topography.

What needs to be done:

The comprehensive programs in place at Teck to identify and support the implementation of improvements which improve air quality and reduce Pb in dust in the community (e.g. the fugitive dust reduction program) should continue. Collection and verification of relevant air quality data supports partners and researchers to continue to evaluate the influence of air quality on community health. It's important to ensure air quality data are representative of the community's air and continues to provide high-quality, timely data to track progress, inform decision-making, and contextualize Trail relative to other Canadian communities. Community education to increase knowledge around SO₂ levels, the potential health effects and actions that can be taken is important for people to be empowered to make choices around their health while a program of improvements to reduce SO₂ emissions at Trail Operations are implemented.

THEP Ambition:

Air quality measures for Pb and SO₂ that meet the most stringent applicable criteria:

- Pb levels in air consistently meet 0.15 µg/m³ on a 3-month rolling average across the community; and
- SO₂ levels in air meet Canadian Ambient Air Quality Standards.

Targets and actions of THEP partners toward achieving the ambition:

1. By 2025, the ambient air monitoring network in the community will be reviewed and, where necessary, recommendations for modifications will be identified to ensure air quality data are representative of the community's air.
2. Annually, Pb in ambient air as measured in the community will continue to demonstrate reductions in emissions.
3. Biannually review and update the communications plan on community education around SO₂ levels in Trail, potential risks and actions to take.

5.2 Soil

Issue: Historical emissions from over 125 years of metallurgical operations in Trail have resulted in elevated levels of Pb (lead) and other metals in soil in the surrounding area. Elevated levels are above natural background levels and regulatory standards. Teck is the responsible party for the soil impacted by historical emissions, under the direction of the BC Ministry of Environment and Climate Change Strategy (ENV) as per the Contaminated Sites Regulation of the Environmental Management Act. Teck is working with ENV to develop and seek approval for a long-term soil management plan called a Wide Area Remediation Plan (WARP). Prior to an approved WARP, annual soil management plans are developed by Teck and submitted to ENV. THEP delivers the Soil Management Program as

part of its comprehensive program, to address potential health risks associated with metal contaminated soil. Evaluation of the potential influence of contemporary emissions on soil as the smelter continues to operate is also required.

What needs to be done: Reducing potential exposure to lead (Pb) and other metals in soil needs to continue on a prioritized basis. In addition to providing soil management services, continued and improved communication on the potential risk from metals in soil, who may be at risk, and the supports available to the community is needed. Given the multiple exposure pathways to Pb, ensuring soil is contextualized as one pathway, and ensuring people understand that soil management may not be the only (or the most impactful) action to reduce Pb exposure (and lower blood lead levels) is important to keep empowering people to take all potential actions to reduce Pb dust in the home and community. Understanding the potential for soil recontamination is also important for ensuring sustainability of the work taking place.

THEP Ambition: Metal contaminated soil in the Environmental Management (EM) Area is managed in a risk-based and prioritized way through an approved approach under a WARP (Wide Area Remediation Plan).

Targets and actions of THEP partners toward achieving the ambition:

1. Biannually review and update the communications plan on community education to increase awareness and understanding around metal contaminated soil, potential risks, soil management programs and priorities.
 2. Annually review and update the soil management prioritization framework to ensure the framework meets the needs of changing priorities and emerging issues. Each year, support prioritized soil management on residential properties by identifying priority properties and offering soil management work.
 3. On an as-needed basis, support property development in the EM Area by offering soil management to address impediments to development from metal contaminated soil.
 4. By 2025, identify, evaluate and recommend solutions for soil management including soil relocation, reuse and disposal strategies for the EM Area that supports a long-term sustainable approach to soil management.
 5. By 2023, develop a long-term monitoring program to:
 - a. evaluate soil metals levels over time, including the influence of contemporary emissions; and
 - b. consolidate performance verification activities for remediated sites.
 6. By XXXX, support the integration of THEP-supported soil management activities into a WARP for the EM Area.
-

5.3 Built Environment

Issue: Pb in indoor dust is a significant pathway for children's lead exposure, and continues to be an important focus of the home visiting program. There are many sources of Pb in homes in the Trail area including smelter emissions and other non-smelter related sources. Many buildings (homes and other structures) in the Trail area were built prior to the regulation of Pb in paint and plumbing materials, and have a greater likelihood of containing Pb-based paint or Pb in plumbing. Also, older homes can contain historical Pb dust from an era when smelter emissions were higher. Chipping and peeling paint creates Pb dust which can be accessed and ingested by small children, and paint and dust stirred up during renovation activities may expose residents to Pb dust. As air quality continues to improve, soil management activities reach more properties, and THEP expands outreach to other communities in the EM Area, the relative influence of Pb exposure from other Pb sources in the built environment may be more significant

What needs to be done: Continue to work with families through home-visiting to provide education about various potential sources of Pb and to empower them through supports and steps to protect their health and the health of their children. Educate renovators (DIY and contractors) to identify Pb risks during renovation projects. This is particularly important in the Trail area where a large percentage of homes predate the regulation of Pb in paint and plumbing materials.

THEP ambition: Current and future residents and caregivers in the Trail area are knowledgeable, supported and empowered to ensure their built environments are lead-safe.

Targets and actions of THEP partners toward achieving the ambition:

1. Biannually review and update the communications plan on community education about Pb sources in the built environment.
2. At least 90% of the known eligible homes / daycares be offered a home visit by the community program representative focused on a healthy home.
3. At least 80% of home visit recipients surveyed, will feel they were empowered to take action in their home or daycare environment.
4. By 2025, review data collected through existing THEP activities to evaluate the prevalence of Pb-based paint in the Trail area, and make recommendations, as required, to update THEP guidance for residents on managing Pb based paint and dust in the home.
5. Annually, THEP's online lead safe renovation support and education usage increases.

5.4 Health

Issue: There is considerable research that shows a link between blood Pb levels and health effects. Children are known to be particularly vulnerable to the effects of lead. Pregnant women who are exposed to lead, can also pass lead on to their baby. A Health Canada (2013a) literature review identified that a range of 1 to 2 µg/dL of lead in blood may be

associated with a 1 point reduction in children's IQ. Effects have not been clinically diagnosed in individual children but rather were identified through studies of populations (large groups) of children (Wilson and Richardson, 2013). Many other factors, beyond lead exposure, contribute to IQ differences¹ and these could potentially be influenced in a positive way through improvements in early childhood education supports. In addition to work around Pb, reducing potential health effects from sulphur dioxide exposure has been identified as a priority area for work.

What needs to be done: Family Health should continue to identify future and new parents and provide one-to-one education on ensuring healthy child development. Providing supports and continuing voluntary blood lead testing is encouraged to ensure any children with elevated blood lead levels are identified and supported, and to evaluate influence of the Program in reducing community lead exposure through population level blood lead data. Community education and actively investing in baby groups, daycares, services that support families, and other identified venues all help ensure that messaging on reducing exposure, as well opportunities for improving child outcomes, occur. Furthermore, community collaboration is important to cross-promoting equity in child health outcomes and program team participation in local networks helps ensure THEP messages are relayed by other service champions (and THEP does the same for others). Using existing channels for communication as well as new ones, information on how to manage potential effects from elevated levels of sulphur dioxide also needs to be communicated.

THEP ambition: THEP is a community leader and champion for health and early childhood development.

Targets and actions THEP partners will contribute toward achieving the ambition:

- At least 90 percent of the known families will receive a primary prevention home visit by the public health nurse focused on Pb and SO₂ before the child's first birthday.
- Annually, outreach and support participation in blood lead testing clinics to maintain high participation rates.
- The home visiting team (PHN and community program rep) continue to be known as a trusted source of knowledge on Pb and SO₂ in the community.

5.5 Community connectedness & leadership

Issue: There are many supports available to residents and investors in Trail to navigate the influence of proximity to an operating smelter. Understanding where to go for information and providing one 'window' to learn about the issues, ask questions or find support is

¹ The magnitude of the potential effect reflects the values reported in the literature. They should not be interpreted as definitive, but rather as an approximate indication of the relative importance of these factors.

important however could be better known outside of existing networks. Community partnerships along with the proactive and transparent nature of the program is critical to maintaining the THEP's relationships and high participation rates in programs by families during the child-rearing years. Referrals and community connections are necessary for trust building and maintaining THEP's positive reputation in the community. Being accessible to others outside of Trail is important to sharing the learning and knowledge gained over the thirty plus years of programming.

What needs to be done: THEP needs to increase its visibility and accessibility in the community beyond its core client base. Program representatives should continue to be sources of support in a variety of family specific networks, be sources of education for the development community and generally continue to be present throughout the community as a positive addition to living in Trail and surrounding areas. THEP's visibility online should be strengthened so its recognized as a source of knowledge and experience locally and globally .

THEP ambition: THEP is known locally (and beyond) as a trusted partner in the community well-being of Trail and area.

Targets and actions of THEP partners toward achieving the ambition:

- Keep abreast of the work of, and actively contribute to, other organizations whose work supports THEP goals .
- Annually, THEP will identify and participate in at least five events/year, which help raise its profile, improve connectedness and demonstrate leadership.
- THEP will pursue the concept of a community of practice / learning network to support knowledge sharing and learning between global actors facing similar challenges to THEP partners (e.g. potential members include BCCDC, Port Pirie, Broken Hill, Mount Isa, along with THEP).
- By 2024, the story of THEP's evolution and achievements will be documented for the public and science community (2001-2021).

5.6 Integration, understanding and creating value together

Issue: The partners acknowledge that no one organization or government can address the challenges THEP addresses alone. Working in silos leads to missing the synergies needed to create value to the community, a better understanding of the complex system we live in, and ultimately more impact on the ground. The success of working together has been a strength noted by a Premier's Award for Collaboration in 2011 however it continues to take a concerted effort by all parties especially given the geographic distribution and turnover of program partner staff and committee members . Furthermore, understanding the context of Trail is not the same for all stakeholders as people often come from different viewpoints.

What needs to be done: The partnership needs to commit to a culture of ongoing knowledge sharing and learning with regular communication and documentation. Better efforts to

onboard new staff and committee members will increase morale and ability to contribute to program ambitions. Strategies that build understanding of complex systems should be integrated into the program facilitating a shared understanding of the whole picture, and continuing to look for value creation will support success. Ensuring local context is included in activities taking place to better understand the health and environment in Trail including the local perspective is important. Risks should also be identified and managed.

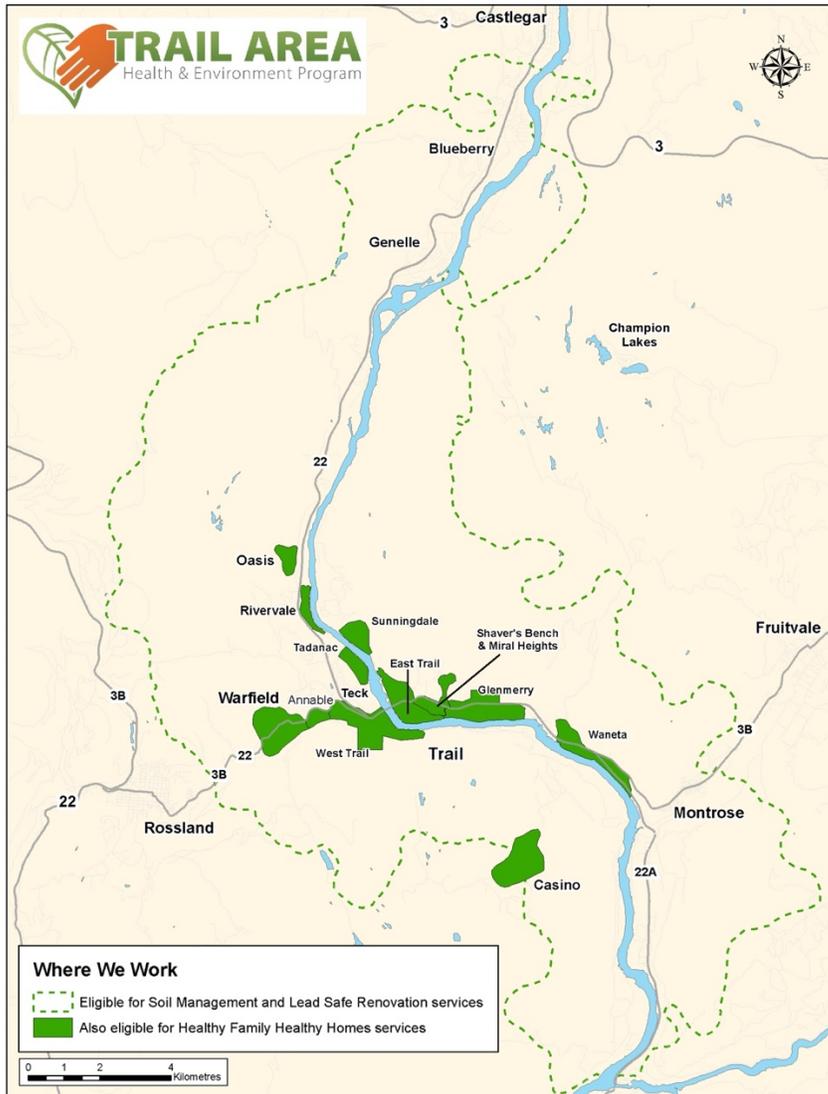
THEP ambition: A greater understanding of the relative influence of smelter emissions on children's blood lead levels in the Trail Area is achieved.

Targets and actions of THEP partners toward achieving the ambition:

- By 2025, an onboarding process to welcome new program staff and committee members will be part of how THEP operates.
- At the community program level, team members will continue to actively to seek opportunities for collaboration across subject matter (soil, built environment, health and air).
- Annually, THEP partners will gather, reflect, document and share publicly the lessons learned generated by the partners and program team with a focus on seeing the bigger picture.
- By 2025, THEP will be using an accepted adaptive management framework to review and learn continuously from program work.
- THEP will advocate for participation of partners in studies that help better understand the health and environment of Trail (e.g. UBC teeth study, THRC, etc.)

6.0 MONITORING

For each strategic area, indicators of success (something measurable) will be developed. A table should be shared in the appendix.



Program Area

The THEP serves Trail and surrounding areas in priority order. The focus and priority support is for communities closest to the smelter including Trail, Casino, Oasis, Rivervale, Waneta and Warfield. Some programs are also available throughout the Lower Columbia Area and on the map within the green dashed line.

Air Quality Report



Air Quality Report

June 21, 2022

1. Lead in Air:

Averages for lead in air continue to be at historical lows; first quarter 2022 average for lead in air at Butler Park and Birchbank stations were $0.045 \mu\text{g}/\text{m}^3$ and $0.065 \mu\text{g}/\text{m}^3$, respectively.

As seen in the monthly averages in Figure 2, month to month variability in ambient levels remains relatively low, but the influence of weather including dominant wind direction and precipitation, can be seen in the data.

Figure 3 presents the 3-month rolling average for lead in air measured at the Butler Park station compared to the US EPA standard of $0.15 \mu\text{g}/\text{m}^3$ (Federal and BC Provincial governments do not have ambient air quality objectives or standards for lead; however, it is reasonable to rely on standards from other jurisdictions when this is the case). Lead in air levels measured at Butler Park and Birchbank meet the US EPA standard of $0.15 \mu\text{g}/\text{m}^3$ on a 3-month average.

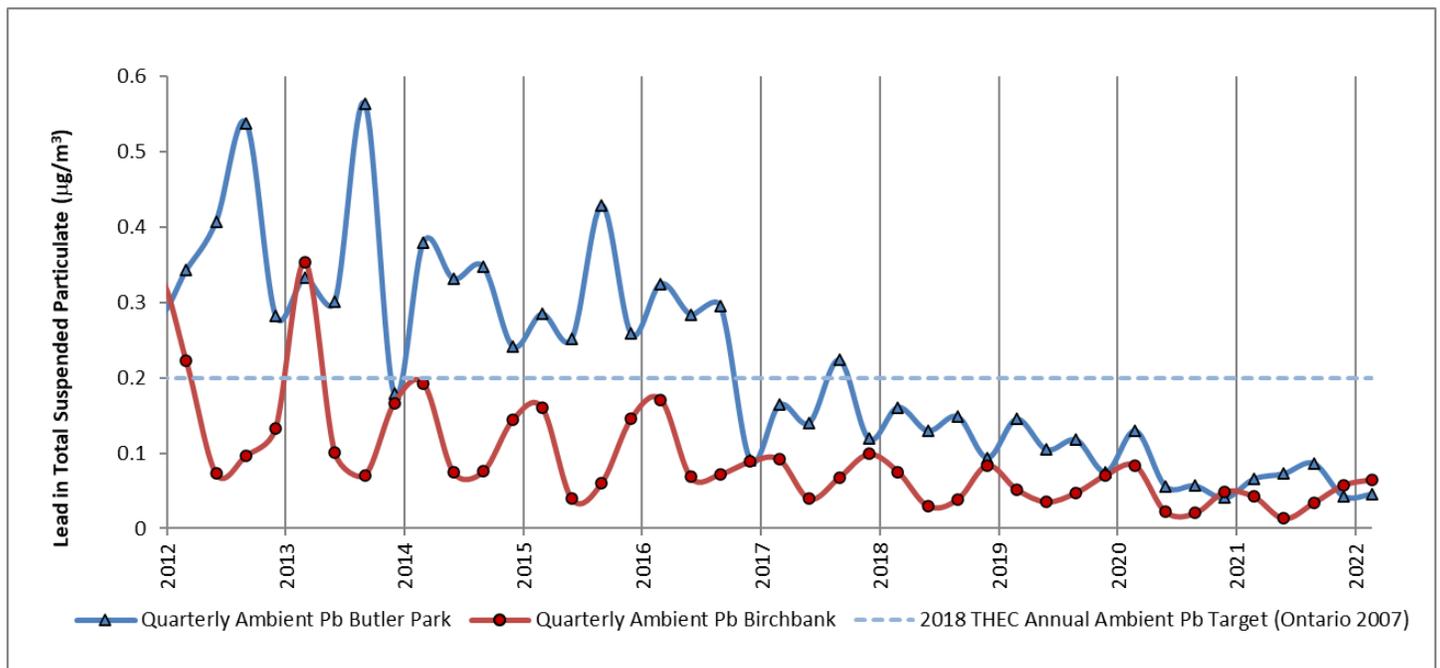


Figure 1: Quarterly monthly average lead at Butler Park and Birchbank stations (as total suspended particulate measured bi-daily)

The chart in Figure 1 shows quarterly averages for Lead in air for Butler Park (dark blue) and Birchbank (red), in comparison to the 2018 THEC Annual Ambient Lead in Air Objective (dashed line).

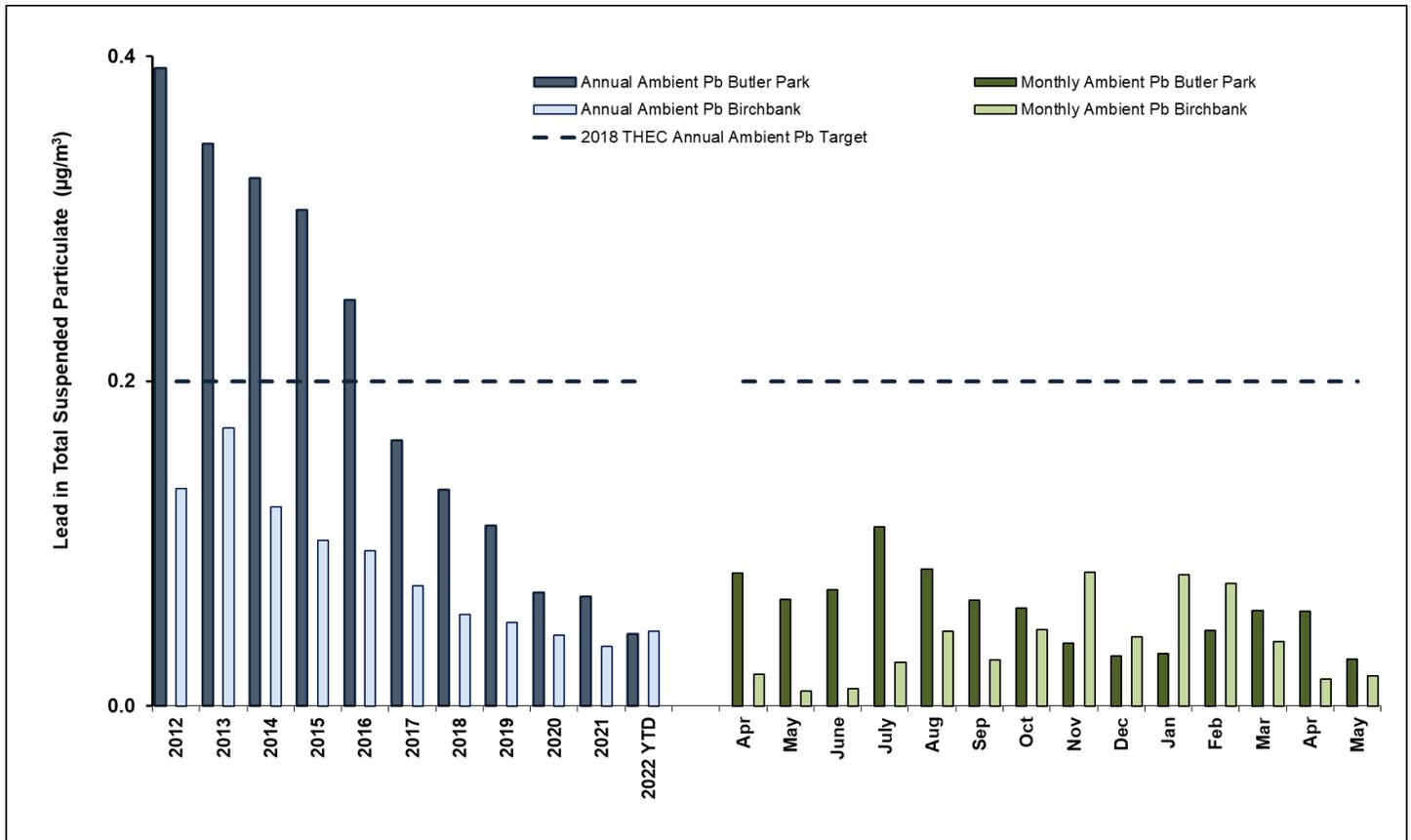


Figure 2: Annual and monthly average lead at Butler Park and Birchbank stations (as total suspended particulate measured bi-daily)

The chart in Figure 2 shows annual and monthly averages for Lead in air for Butler Park. Annual averages are shown on the left for Butler Park (dark blue) and Birchbank (light blue). Monthly averages for the past year are shown on the right for Butler Park (dark green) and Birchbank (light green). The 2018 THEC Annual Ambient Lead in Air Target is shown as a dashed line. Monthly averages for Lead in ambient air are expected to have some variability due to season, weather, predominant wind direction and operational variance.

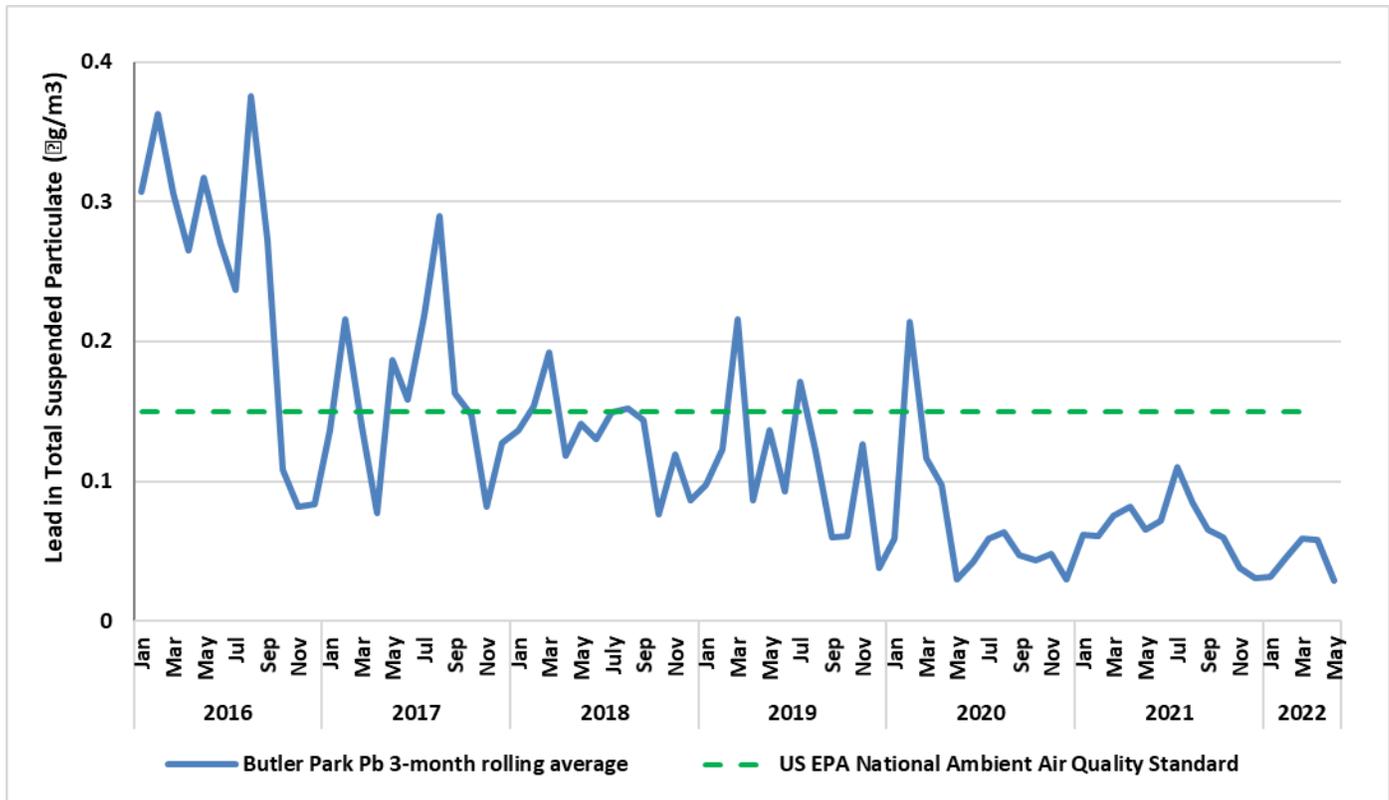


Figure 3: 3-month rolling average lead in air at Butler Park station (as total suspended particulate measured bi-daily)

The chart in Figure 3 shows the 3-month rolling average for lead in air for Butler Park (blue line), in comparison to the US EPA standard (green dashed line).

2. Arsenic in Air:

Averages for arsenic in air continue to be at historical lows. First quarter 2022 arsenic in air at Butler Park and Birchbank were $0.0022 \mu\text{g}/\text{m}^3$ and $0.0035 \mu\text{g}/\text{m}^3$, respectively.

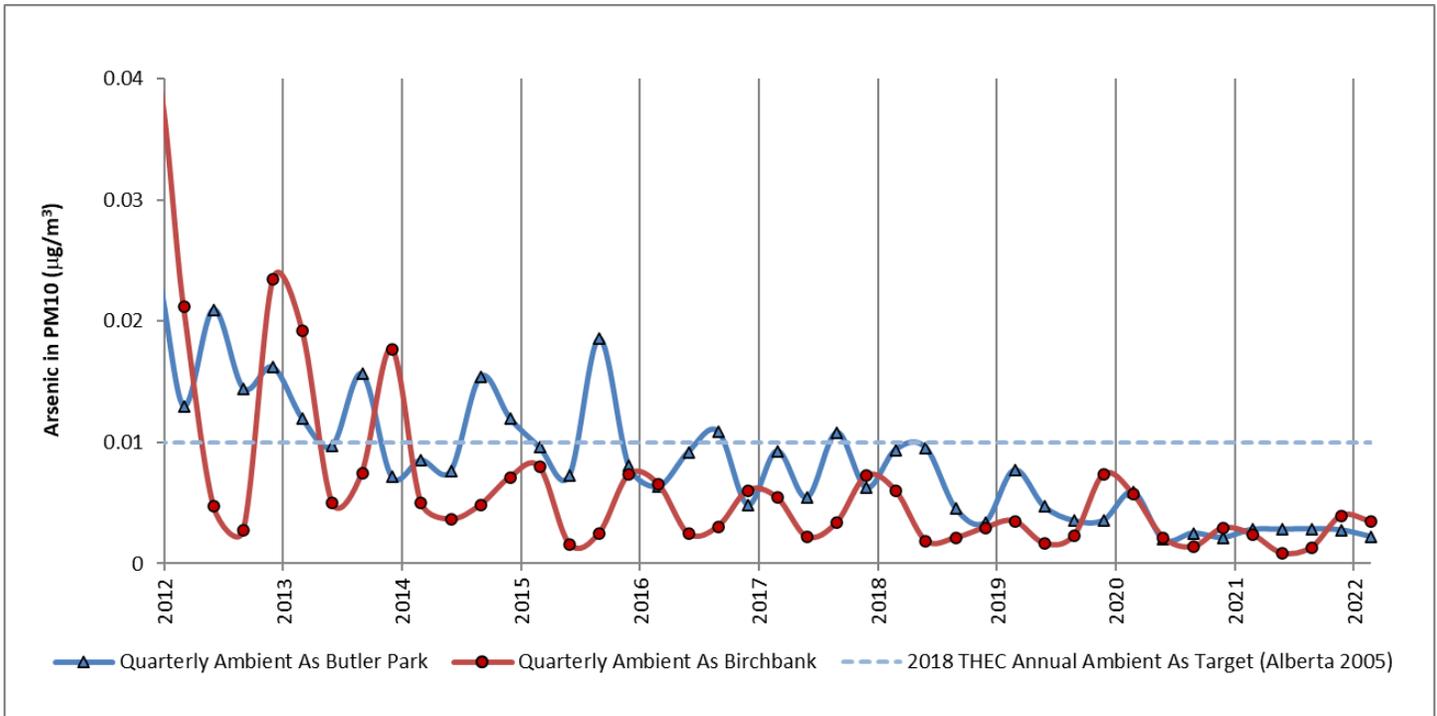


Figure 4: Quarterly average arsenic at Butler Park and Birchbank stations (as inhalable PM₁₀ fraction measured weekly)

The chart in Figure 4 shows the annual average for Arsenic in air (measured as inhalable PM₁₀ fraction) at Butler Park (blue) and Birchbank (red) in comparison to the 2018 THEC Air Quality Objective (blue line).

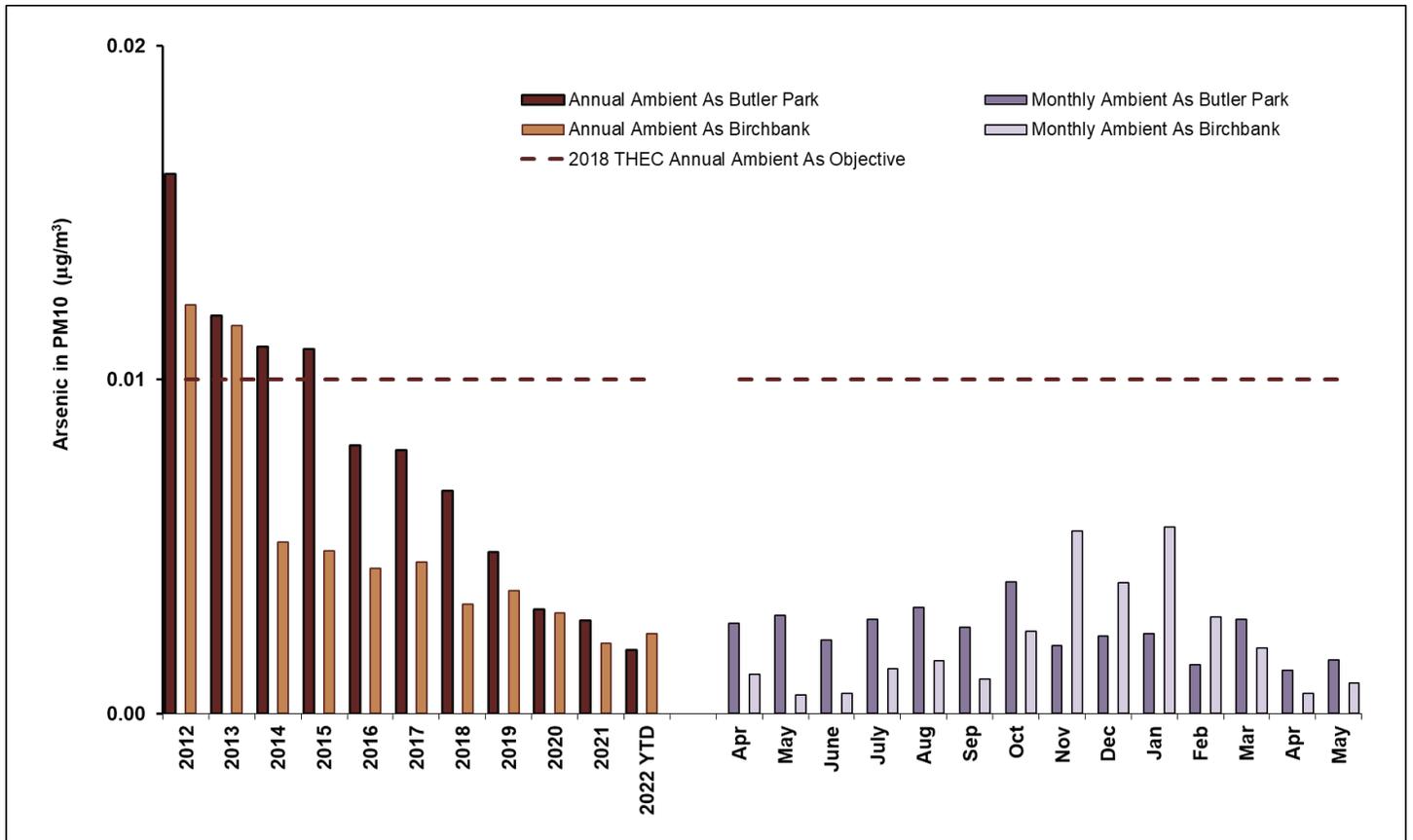


Figure 5: Annual and monthly average arsenic at Butler Park and Birchbank stations (as inhalable PM10 fraction measured weekly)

The chart in Figure 5 shows annual and monthly averages for Arsenic in air at Butler Park and Birchbank. Annual averages are shown on the left for Butler Park (dark brown) and Birchbank (light brown). Monthly averages for the past year are shown on the right for Butler Park (dark purple) and Birchbank (light purple). The 2018 THEC Air Quality Arsenic in Air Target is shown as a dashed line. Monthly averages for Arsenic in ambient air are expected to have some variability due to season, weather, predominant wind direction, operational variance and sampling frequency.

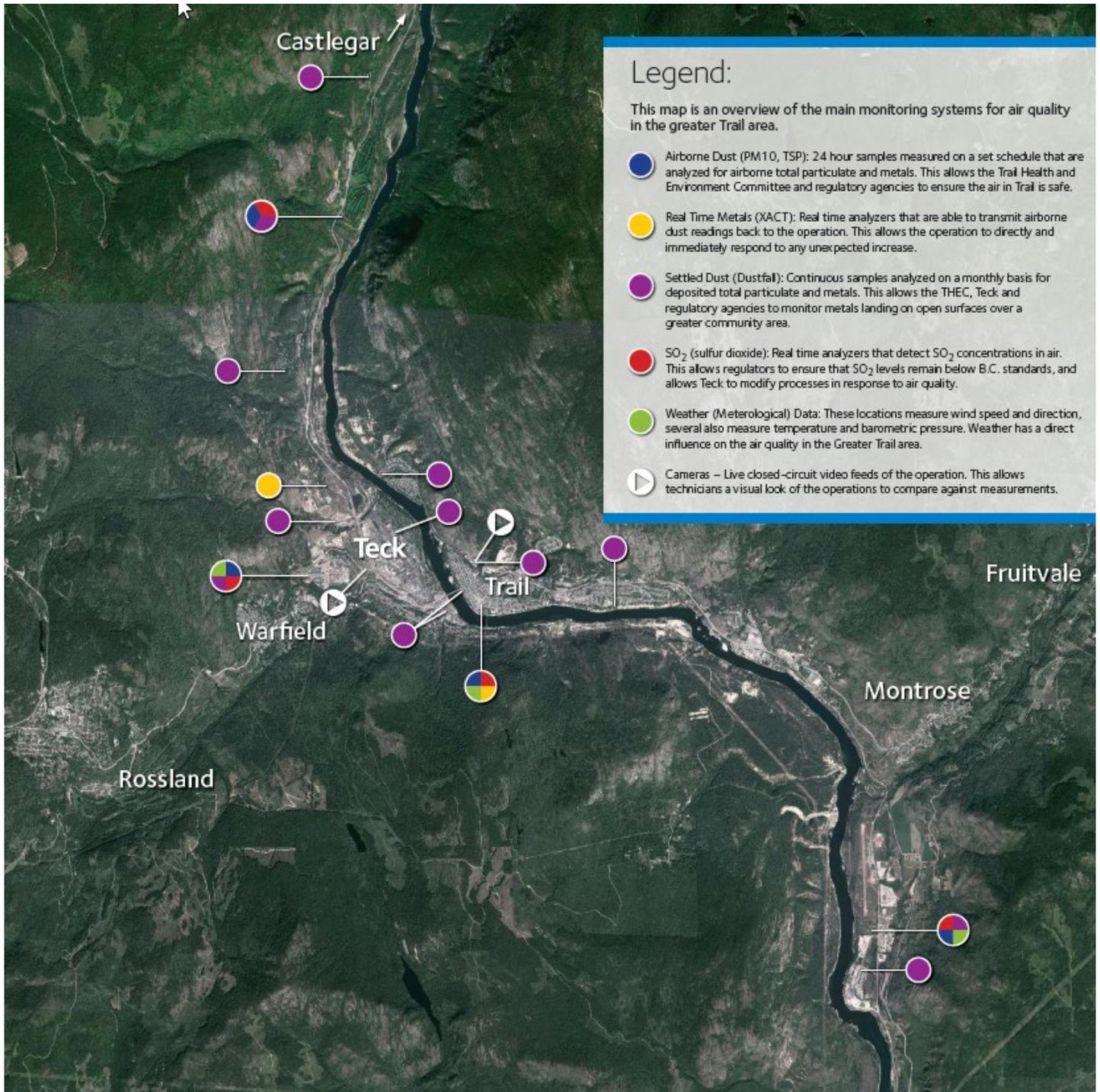


Figure 6: Teck Community Air Monitoring Stations

Air Quality Working Group Report

Sulphur Dioxide (SO₂)

Learn and Take Action!



Sulphur Dioxide (SO₂) is a colourless, reactive gas emitted by Teck Trail Operations. SO₂ is generated as a by-product of processing mine concentrates, which contain sulphur, into metal and chemical products.



Who may be sensitive to the effects of elevated SO₂?

Young children, elderly people, and persons with chronic respiratory disease, especially persons with asthma.



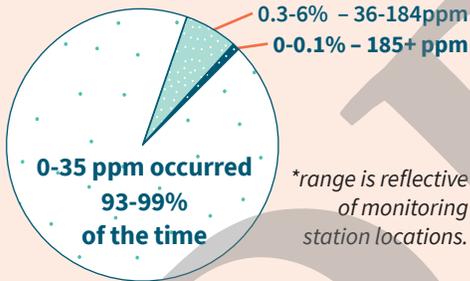
Short-term exposures to **elevated SO₂ levels** can cause the air passages in the lungs to constrict or tighten, leading to breathing difficulties and tightening in the chest. Symptoms may worsen during vigorous exercise or hard physical labour.

CURRENT SO₂ LEVELS:

<https://www.env.gov.bc.ca/epd/bcairquality/readings/find-stations-map-SO2.html>

How do I know what the SO₂ levels are in Trail?

Levels change throughout the day. Check current SO₂ levels online and for context, in 2020:



Where can I find out more?

Check out the FAQs online: thep.ca/faqs

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 health concerns, please contact your family doctor.

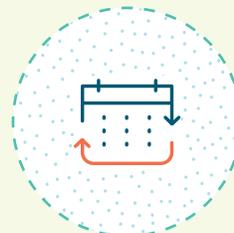
People I care for may be sensitive to SO₂ When do I need to change routines?

Adjust routine as SO₂ levels increase



0-35 ppb

No routine change or adjustment needed.



36-184 ppb

Persons with chronic respiratory conditions such as asthma should consider reducing or rescheduling strenuous outdoor activities if experiencing symptoms. No effects are expected for the general population.



185+ ppb

Persons with chronic respiratory conditions such as asthma should reduce or reschedule strenuous activities outdoors. Others, especially children and the elderly, should also consider avoiding outdoor physical exertion.

Family Health Report



FAMILY HEALTH REPORT

June 21, 2022

RECENT HIGHLIGHTS

1. Public Health Nurse Update
2. Healthy Family Visits
3. Community Outreach
4. Fall 2022 Blood Lead Clinic Dates

ADDITIONAL DETAILS

1. Public Health Nurse Update
 - Meghan Morris returned as the Program's PHN on June 1st, after 15 months of Pandemic work.
 - Thank you to Cecilee Pitman for all the work she has done to keep the program running during an extremely busy time in Public Health. Cecilee will continue to support Meghan with vacation coverage and assisting at Blood Lead Clinics and with Community Outreach.
2. Healthy Family Visits
 - 30 Healthy Family visits completed in 2022.
 - Working with Wendy to offer combined HFHH visits to those families that did not receive them in 2021
 - Trying to return to Home Visiting model, though still offering in office visits for families that prefer this method.
3. Community Outreach
 - Attending Building Beautiful Babies monthly, will resume in the Fall of 2022
 - Attended Muffins and Munchkins once in May and later this week for June. Plan to continue this in the Fall
 - Planning Fall 2022 daycare outreach with Wendy
 - Teddy Bear Picnic was a great success! Wonderful turnout! Children, Parents and Early Years providers all excited to be there!

4. Fall 2022 Blood Lead Clinic Dates

- September 12, 2022 9am-4pm
- September 14, 2022 9am-4pm
- September 19, 2022 9am-4pm
- September 20, 2022 10:30am-5:30pm
- September 26, 2022 10:30am-5:30pm
- September 28, 2022 9am-4pm

Home & Garden Report

June 21, 2022

HIGHLIGHTS

1. Soils Program:

- i. Soil Assessment – 16 Healthy Homes, 4 community yards completed. 81 yards remain in the queue for sampling and an increase in sampling requests from Warfield
- b. Ground Cover Evaluation – annual review of ground cover has been completed
- c. Yard Improvement – 10 active lawn care, 7 properties getting other supports (e.g., soil pickup or delivery, mulch)
Soil Replacement – 20 full yards and 2 vegetable gardens completed so far. Sod has been delayed with the wet weather this spring!

2. Healthy Homes:

- a. Healthy Homes – 27 Home visits have been completed.
- b. Enhanced supports
 - i. Mini ES conference – met with IH to discuss a new family that was referred by local pediatrician.
 - ii. Residential Lead Inspections (RLI) results have been shared with 3 new participants. A 4th RLI was offered and recently completed.

3. Lead Safe Renovation:

- a. Since the last THEC meeting, another 19 residents have accessed the Lead Safe Renovation Program for supplies, bringing the yearly total to 33.
- b. We recently shared educational support with two local contractors.
- c. There have been shortages of some LSR supplies. Homeowners have been patient while waiting for them to be replenished.

4. Outreach and Engagement:

- a. Our staff continue to attend monthly Community Navigator meetings and build connections in the community.
- b. Teddy Bear Picnic – Our program was happy to attend again after a 2-year hiatus. This was a great opportunity to reconnect with families in the area. Every family that visited the THEP booth had already had their soil tested!