



# Air Quality

Air pollution is a global environmental risk to health, with a worldwide estimated cost of US \$8 trillion, equivalent to 6% of global GDP.<sup>2</sup> Governments increasingly require that industrial air emissions are monitored, mitigated and disclosed to public inventories such as the [Toxics Release Inventory](#) in the United States or the [National Pollutant Release Inventory](#) in Canada.

Mining and mineral processing can impact air quality through particulate and gaseous emissions from activities like drilling, blasting, crushing, collection and storage, and transportation along the value chain. Managing these emissions – through technological and process improvements – allows companies to limit their potential air impacts while benefiting from operational efficiencies and cost reduction.

We continue our commitment to improving and managing air quality management, and we undertake comprehensive monitoring and reporting on air quality in the areas of our operations. This is a priority for Teck, as air quality continues to be identified as a key concern by our communities of

interest. In particular, dust has been identified as a key concern by local and regional communities around our steelmaking coal operations in the Elk Valley and at Trail Operations in British Columbia (B.C.), at Red Dog Operations (RDO) in Alaska and at Carmen de Andacollo Operations (CdA) in Chile. Longer and severe wildfire seasons due to record-breaking warm temperatures continue to impact air quality in local communities and at some of our operations. As air quality issues require close collaboration with communities of interest such as local stakeholders and Indigenous Peoples, we continue to explore initiatives to partner with communities across our operations.

### GRI Indicators

GRI 2-23, 2-24, 2-27, 3-3, 305-7

This topic is considered material by our employees, Indigenous Peoples, local communities, government and regulators, and society in the context of all of Teck’s sites.

### How Does Teck Manage This Topic?

Information about how we manage air quality, including relevant policies, management practices and systems, is available for [download on our website](#).

<sup>2</sup>The Global Health Cost of PM<sub>2.5</sub>, [Air Pollution: A Case for Action Beyond 2021](#). World Bank. 2022.

Pictured: Highland Valley Copper Operations, Canada.

## 2022 Highlights

100%

of community-based air quality stations recording annual average values were within the World Health Organization (WHO) guideline interim target value for ambient concentrations of particulate matter less than 2.5 microns in size

**Implemented initiatives to improve air quality monitoring** and to minimize impacts from our activities on communities at all of our operations

### Performance Metrics

**Indicator** Sulphur dioxide (SO<sub>2</sub>) emissions from stacks, stationary and mobile fossil fuel combustion

<b>2022:</b>	2,423 tonnes
<b>2021:</b>	3,094 tonnes
<b>2020:</b>	3,812 tonnes

**Indicator** % of community-based air quality stations with annual average concentrations of ambient PM<sub>2.5</sub> within the World Health Organization guideline interim target value of 10 µg/m<sup>3</sup>

<b>2022:</b>	100% of stations
<b>2021:</b>	100% of stations
<b>2020:</b>	100% of stations

**Indicator** % of community-based air quality stations with annual mean concentrations of ambient PM<sub>10</sub> within the World Health Organization guideline interim target value of 20 µg/m<sup>3</sup>

<b>2022:</b>	75% of stations
<b>2021:</b>	75% of stations
<b>2020:</b>	75% of stations

## Our Performance in Air Quality in 2022

**Our Targets and Commitments** Our goal is to continuously improve air quality and reduce dust emissions for the benefit of workers, communities and the environment in areas affected by our activities.

### Minimizing Emissions to Improve Air Quality

All of our operations have extensive operational control strategies and monitoring programs designed to minimize impacts on the local air quality within the vicinity of our activities, Table 2 highlights the 2022 improvements to these programs.

**Table 2: Air Quality Improvements in 2022**

Operation	Activities
Carmen de Andacollo	Conducted research on innovative approaches that may reduce dust emissions, including new materials to control emissions during blasting. Exploring new technologies to have a better understanding of the environmental conditions before blasting to better understand changes in the air quality.
Trail Operations	Updated the fugitive dust inventory for the site using approved methods. Reviewed material movement for the site in relation to dust emissions to determine opportunities to relocate materials, reroute traffic and apply controls reducing the fugitive dust.
Red Dog Operations (RDO)	Monitored and evaluated performance, and evaluated opportunities for further improvement. In 2022, RDO investigated the potential of additional fugitive dust control on the tailings beach by adding flocculant to the tailings. Based on a successful laboratory trial and wind tunnel experimentation, a field trial will be conducted in 2023.
Highland Valley Copper Operations	Applied chemical dust suppressants to key dust sources, including haul roads, light-duty roads and dam construction areas. Expanded the fugitive dust monitoring network by adding seven real-time dust and wind speed/direction sensors in August 2022. Ordered five additional real-time dust and wind speed/direction sensors in December 2022 for deployment in 2023. Refurbished the Shula weather station in March 2022 to provide better data that will support modelling and fugitive dust trigger action response plan development in 2023.

# Monitoring and Reporting

In 2022, we commenced an update of our Health, Safety, Environment and Community (HSEC) Management Standards, which outline the framework for the identification and effective management of HSEC risks and opportunities, and define a process for continual improvement.

The most material air quality issues at Teck relate to metals and SO<sub>2</sub> near our Trail Operations metallurgical facility, and to dust at our mining operations. In addition to monitoring these two material indicators, our operations monitor and report on other air emission parameters in accordance with permit and regulatory requirements.

## Monitoring and Management of Sulphur Dioxide (SO<sub>2</sub>)

As the management of SO<sub>2</sub> is a material air quality issue at our Trail Operations, in 2022, we updated our internal SO<sub>2</sub> targets in line with permit limits and our internal standards and procedures. Our SO<sub>2</sub> target for 2022 was less than 3,600 tonnes, and our SO<sub>2</sub> targets for 2023 and 2024 are less than 3,600 tonnes and 2,600 tonnes, respectively.

As shown in Table 3, SO<sub>2</sub> emissions from stacks and fossil fuel emissions in 2022 were approximately 2,423 tonnes – a 22% reduction from 2021 due to extended major maintenance activities on the KIVCET boiler at Trail Operations. Over a four-year period, SO<sub>2</sub> emissions followed

a stable trend. Trail Operations is the most significant source of SO<sub>2</sub> emissions for Teck and, as a result, all other operations have been aggregated in Table 3. Full results per operation are available in the [Sustainability Performance Data](#).

## Technology and Innovation

In 2022, Trail Operations had a planned shutdown of operations to continue the Trail Modernization Program. Part of this program is the replacement of the KIVCET hearth and the replacement of the filter media in Trail’s Mercury Tower to support improved mercury removal from process off-gas.

Trail is also completing constructing the \$66 million KIVCET Feed Dryer Project that will allow for lower drying temperatures, which will further reduce community SO<sub>2</sub> emissions, starting in 2023. These improvements are being implemented in accordance with Trail’s provincial permit limits for SO<sub>2</sub> concentrations at community stations, which became more stringent in 2021 and will further decrease in 2023.

Trail has also been driving down lead levels in the air for several decades. Improvement projects implemented through Trail Operations’ Fugitive Dust Emission Reduction program have reduced lead levels in the community by 85% since 2012.

**Table 3: SO<sub>2</sub> Emissions from Stacks, Stationary and Mobile Fossil Fuel Combustion (tonnes) <sup>(1),(2),(3),(4),(5)</sup>**

Operation	2022	2021	2020	2019
All other operations	20.1	15.7	28.7	42.0
Trail Operations	2,402.7	3,078.0	3,783.5	3,811.0
<b>Total</b>	<b>2,422.8</b>	3,093.6	3,812.2	3,853.0

(1) Rounding of individual numbers may cause a discrepancy in the total value.

(2) Aggregate data for all other operations presented here, as numbers are insignificant compared to Trail. See our [website](#) for the full set of data.

(3) Information current at time of publication. However, values will be added, confirmed and/or changed once regulatory reporting for the 2022 period is complete. See our website for up-to-date information.

(4) Requirements and methods for determining air emissions can vary widely. Not all sites have monitoring equipment in place to measure releases from all sources and activities, and the frequency of sampling can vary.

(5) Our Canadian sites report annually to the National Pollutant Release Inventory (NPRI) and American operations report to the Toxics Release Inventory (TRI); NPRI and TRI have different reporting requirements and calculation methods. Information in this table may not reflect exactly the contents of NPRI and/or TRI reports, due to different reporting definitions concerning site boundaries as well as the inclusion of mobile equipment in the above table, which is not required in some regulatory reporting requirements.

## Case Study: Dust Management in the Elk Valley

Minimizing the impact of dust in the community is a year-round priority at our operations in the Elk Valley of British Columbia. We are deploying effective dust mitigation measures and looking at other innovative approaches to drive continued improvement in dust management. These projects include helicopter seeding and environmental intelligence systems. Helicopter seeding provides a cost-effective way to increase vegetation in hard-to-reach areas, which in turn leads to less wind and windswept dust as the plants trap soil in their root structure, serving as

natural windbreaks. Environmental intelligence systems provide real-time air quality monitoring, which enables rapid and targeted application of dust-control measures. These are just two of the innovative projects that we are trialling to minimize and manage dust generation, in line with our goal to continuously improve air quality and reduce dust emissions for the benefit of workers, communities and the environment in areas affected by our activities.

Read the full case study at [www.teck.com/news/stories](http://www.teck.com/news/stories).

## Ambient Air Quality Monitoring

As part of our ambient air quality monitoring program, we measure the concentration of particulate matter of a size less than 10 microns (PM<sub>10</sub>) and particulate matter of a size less than 2.5 microns (PM<sub>2.5</sub>) at monitoring stations. These monitoring stations use standardized equipment, per permit and regulatory requirements, and are located on our sites and in a number of community centres. Tables 4 and 5 summarize the ambient air quality during 2022 as measured at a select number of community-based monitoring stations that we manage, based on the significant proximity of the location to our operations.

Two values are presented:

- The annual average concentration that is based on the daily 24-hour average concentrations; this value reflects prolonged or repeated exposures over longer periods
- The annual peak 24-hour indicator that is based on the 98th percentile of the daily 24-hour average concentrations; this value reflects immediate exposures

At these monitoring stations, ambient air quality not only reflects the activities at our operations, but also other activities in the area such as other industries, vehicle traffic, firewood burning, forest fires and waste burning.

For 100% of the stations listed in Table 4, the annual average concentration of PM<sub>2.5</sub> was below the WHO Guideline value of 10 µg/m<sup>3</sup>. For the annual average concentration of PM<sub>10</sub> at the stations listed in Table 5, 75% of the stations were below the WHO Guideline value of 20 µg/m<sup>3</sup>.

## Monitoring and Reporting (continued)

**Table 4: Ambient Particulate Matter of Size Less Than 2.5 Microns ( $\mu\text{g}/\text{m}^3$ )**

Station	Nearest Operation	2022		2021		2020	
		Annual Average	98th Percentile	Annual Average	98th Percentile	Annual Average	98th Percentile
Urmeneta	Carmen de Andacollo	9	16	9	18	9	14
Downtown Sparwood	Elkview	7	27	9	46	6	15
Elkford High School	Greenhills	6	30	7	49	5	31

**Table 5: Ambient Particulate Matter of Size Less Than 10 Microns ( $\mu\text{g}/\text{m}^3$ )**

Station	Nearest Operation	2022		2021		2020	
		Annual Average	98th Percentile	Annual Average	98th Percentile	Annual Average	98th Percentile
Urmeneta	Carmen de Andacollo	31	51	36	65	35	57
Downtown Sparwood	Elkview	17	49	17 <sup>(1)</sup>	55	11	34 <sup>(1)</sup>
Elkford High School	Greenhills	11	38	12	62	9	47
Butler Park	Trail	9	23	17	95	15	63

(1) Incomplete hourly data set, per the Canadian Council of Ministers of the Environment: Criteria ii.

For more information about our emissions to air, such as nitrous oxides, volatile organic compounds, and mercury, visit the [National Pollutant Release Inventory](#) for our Canadian operations and the [Toxics Release Inventory](#) for our American operations.

### Significant Incidents and Non-Compliance Related to Air Quality<sup>3</sup>

We assess the severity of environmental incidents, spills and non-compliances based on potential environmental, safety, community, reputational and financial impacts. Based on our incident severity criteria, there were no significant incidents related to air quality in 2022. There were no significant charges, fines or penalties for non-compliance related to air quality in 2022.

<sup>3</sup>Definition of significant environmental incidents is on page 35.