

# Responsible Production and Waste Management



Pictured above: Employee at Trail Operations, Canada.

## Responsible Production and Waste Management

A circular economy is a system that is aimed at minimizing waste and maximizing resources. This is contrasted with a linear economy, where resources are extracted or harvested, manufactured into a product and in the end disposed as waste. The shift towards a more circular economy will change the way businesses and society are structured to maximize responsible resource use while meeting growing resource demand in a responsible way.

### *Industry context*

Each of the three principles of a circular economy — design out waste and pollution, keep products in use and regenerate natural systems — present both risks and opportunities for the mining industry. For example, demand from customers, investors and civil society will increase for products that are shown to have been responsibly produced and sourced. A circular economy would also see an increasing move away from single-use and disposable products towards more durable and reusable items, which could drive new demand for metals and minerals. And new systems that design out waste or find productive uses for waste materials will be increasingly implemented. This is coupled with an increasing demand for the traceability of mined materials that has given rise to new and growing product certifications and standards.

### *Teck context*

Teck provides key commodities required for sustainable products and infrastructure, which are durable and naturally recyclable. Teck has long worked to reduce waste and pollution, to keep products in use and to help improve the natural environment where we operate. Our Trail Operations recycles various metals and its smelting and refining operation is highly efficient. We have a Materials Stewardship Committee responsible for ensuring the responsible use of our products and, at our operations, we track and report on waste and are implementing waste reduction and recycling programs. Moving forward, we are setting new goals to be a leader in responsibly providing the metals and minerals needed for the transition to an economy focused on reducing waste and keeping products in use, and doing our part in waste reduction by disposing zero industrial waste.

### **GRI Indicators and Topic Boundary**

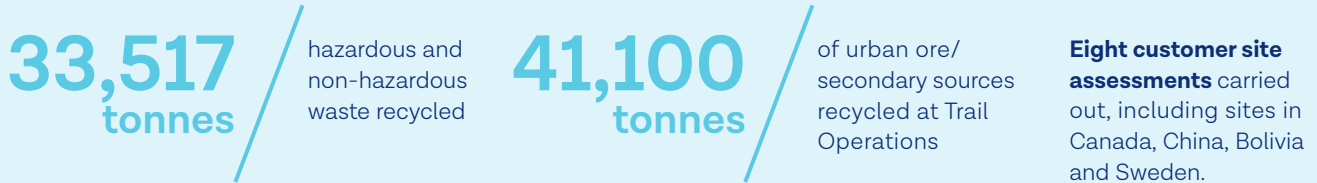
306-2, 306-4, G4-DMA (Materials Stewardship)

This topic is considered one of the most material by our employees, local communities, government regulators, investors and society in the context of all Teck managed sites.

### **How Does Teck Manage This Topic?**

Information about how we manage responsible production and waste management, including relevant policies, management practices and systems, is available for download on our website.

**2019 Highlights**



**Our Performance in Responsible Production and Waste Management in 2019**

**Our Targets and Commitments** The following table introduces our new strategic priority and goals related to responsible production and waste management.

**New Strategic Priorities and Goals**

Strategic Priorities	Goals
<ul style="list-style-type: none"> <li>• Be a leader in responsibly providing the metals and minerals needed for the transition to an economy focused on reducing waste and keeping products in use</li> <li>• Work towards disposing zero industrial waste by 2040</li> </ul>	<ol style="list-style-type: none"> <li>1. By 2025, establish site-based industrial waste inventories and plans to turn waste into useful and appropriate products. Based on these inventories and plans, set goals for industrial waste reduction.</li> <li>2. By 2025, develop and implement a responsible producer program and “product passport” that is traceable through the value chain.</li> <li>3. Be a leader in product stewardship by continuing to implement our Materials Stewardship program and produce secondary metals at our Trail Operations.</li> </ol> <p>Details about the context, definitions and key performance indicators related to these strategic priorities and these goals are available on our website at <a href="http://www.teck.com/responsibility">www.teck.com/responsibility</a>.</p>

**Waste Management Performance**

In 2019, our operations generated approximately 980 million tonnes of mineral waste, with the vast majority being waste rock from the extraction of ore and steelmaking coal. We have permit and regulatory requirements for treating and recycling waste at all of our operations. Waste disposal methods are determined based on data and information provided by waste management suppliers specific to each site’s applicable factors.

The following categories of waste are products of Teck’s operations:

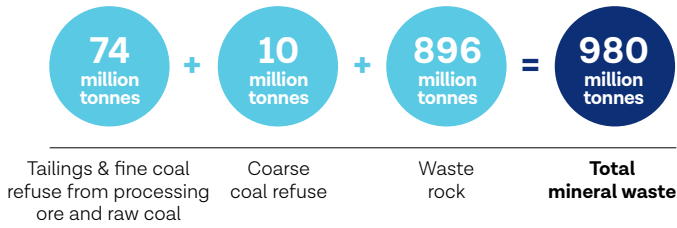
**Waste Rock:** Waste rock, which is material that is removed to access ores, coal and oil sands, typically contain trace

amounts of naturally occurring metals and other constituents. The bulk of waste rock from our operations is placed in areas that are specifically designed to contain the rock. The remainder of the rock, which may still have some geochemical concern, is placed within tailings storage facilities or used to backfill open pits and underground workings.

**Coarse Coal Refuse:** Coarse coal refuse is a coarse fraction of raw coal that is separated during processing; it is not currently an economic product. Coarse coal refuse is placed in designated engineered facilities or, if determined to not be susceptible to leaching, it may be used as a construction material.

**Tailings and Fine Coal Refuse:** Tailings and fine coal refuse are the finer fractions of the processed mined material that have no economically recoverable commodities. These materials are typically stored in tailings storage facilities. Learn more about tailings management on our website at [www.teck.com/tailings](http://www.teck.com/tailings).

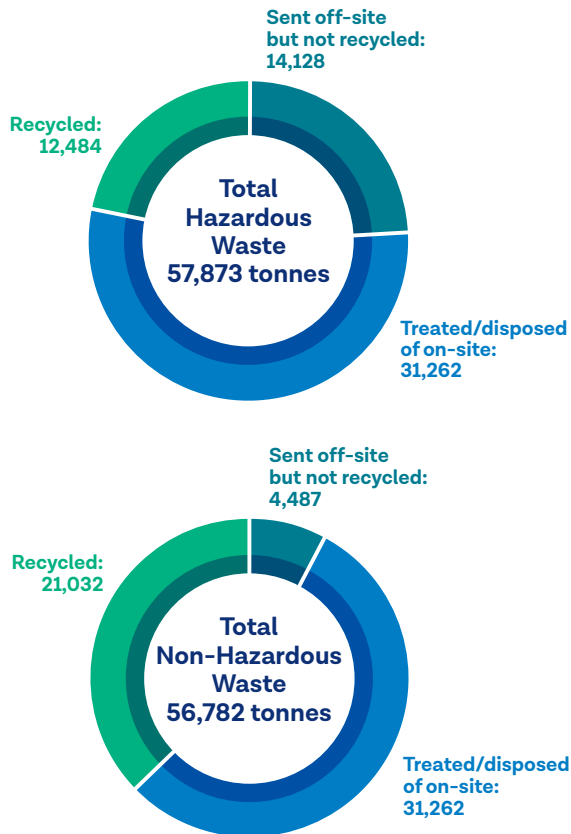
**Figure 20: Mineral Waste** (million tonnes)



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

Hazardous and non-hazardous wastes are segregated and disposed of in accordance with material-specific waste management plans and regulatory requirements. The primary hazardous wastes produced at our operations include waste oil, solvents, antifreeze, paint, batteries and fluorescent tubes. Licensed contractors recycle or dispose of this waste off-site. Non-hazardous waste (e.g., scrap metal, wood waste, glass, tires, cardboard and paper) is recycled whenever possible.

**Figure 21: Hazardous and Non-Hazardous Waste** (tonnes)<sup>(1)</sup>



(1) Recycled waste includes waste that is diverted from the landfill through recycling and reuse. Waste sent off-site but not recycled includes waste disposed of at appropriate facilities, landfills and deep-well injections.

### Red Dog Operations and the Toxic Release Inventory

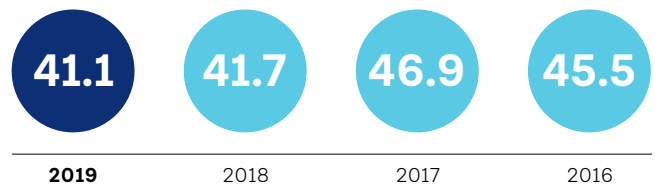
Every year, Red Dog is listed on the United States Environmental Protection Agency’s (EPA) Toxic Release Inventory (TRI) due to the volumes of rock and ore safely moved at the mine site each year. Red Dog is required to report the amount of materials moved at the mine site due to the grades of zinc and lead naturally occurring in the rocks. This is part of the mining process and does not indicate any health or environmental effect, including any releases of materials from Red Dog to the environment. The Alaska Department of Environmental Conservation (ADEC) has also responded to the TRI, noting that almost all of the releases from TRI facilities in Alaska are regulated under strict EPA and state of Alaska permits with monitoring and compliance requirements designed to prevent human and environmental harm.

### Recycling

Teck’s methods for recycling include recycling for value recovery, industrial waste processing and domestic recycling. We do not currently track office and construction waste, which are managed by licensed external waste service providers. We recycle in accordance with international, national, provincial and local requirements and we aim to exceed these requirements. Continually improving recycling at our operations by identifying and sharing best practices throughout the company is our goal – including ongoing assessments of our recycling and reuse practices.

At our Trail Operations, we recycle materials purchased from external users. Our focus remains on treating cathode ray tube glass, plus small quantities of zinc alkaline batteries and other post-consumer waste through our lead acid battery recycling program.

**Figure 22: Recycled Material at Trail Operations** (thousand tonnes)





### Case Study: Supporting Urban Materials Recovery at Trail Operations

The urban materials recycling programs at Teck's Trail Operations, which started in 1982 with lead battery recycling, and have helped keep hundreds of thousands of tonnes of metal in use and reduce overall environmental impacts. In 2019, these programs safely and sustainably recycled 41,100 tonnes of materials, including 32,500 tonnes of lead batteries.

The shift to a low-carbon economy requires a massive increase in energy storage. Lead batteries, which

currently supply over 70% of the world's rechargeable batteries, will be critical to this shift. The closed-loop lead battery recycling program at Trail Operations, which allows 99% of recycled lead to be recovered, is a perfect example of a closed-loop, circular economy model and will continue to support a sustainable energy transition. Read the full case study at [teck.com/news/stories/](https://teck.com/news/stories/).

## Managing Product Impacts through Materials Stewardship

All Teck products are listed on a Master Product List that is owned and managed by Teck's Materials Stewardship Committee (MSC). For products to be added to the list, a detailed application is submitted to the MSC. Products are assessed on their whole product life cycle and include customer assessments, legal jurisdiction reviews, logistics and form of transportation, hazardous materials and emergency response, contracts and financial rate of return. No new products were added to the Master Product List in 2019.

The MSC also commissions and conducts customer assessments to help ensure that products are handled safely by smelters, refineries or other end users. The assessments allow us to uphold business ethics, regulatory requirements, sustainable management practices and external expectations. Eight customer site assessments were carried out in 2019, including sites in Canada, China, Bolivia and Sweden.

We draw on ecotoxicity expertise developed by various commodity associations and other experts to bring sound science into our management approaches and decisions. Our materials stewardship program is also actively engaged with collective industry efforts, including those of the International

Council on Mining and Metals (ICMM), towards continuously improving materials stewardship practices. In 2019, major engagements related to materials stewardship included the engagement with ICMM, International Lead Association, ICA, IZA and Indium, Cadmium, Germanium Reach Consortium.

### Responding to Regulatory Requirements

Our materials stewardship efforts have expanded in recent years to meet growing regulatory pressures on mineral concentrates. These are manifested, for example, in the International Maritime Organization bulk cargo requirements, Chinese import restrictions and the Minamata Convention for Mercury. These requirements and restrictions now affect mining companies and smelters globally and Teck specifically, in the same way that Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) regulations have defined chemical management programs for refined metals, alloys and compounds in the European Union since 2006. In 2019, this included regulatory requirements from IMO O20 & Polar Code, Canadian Chemical Management Plan 3 and Responsible Silver (LBMA), which we met for the first time.

## Outlook for Responsible Production and Waste Management

Moving forward, we will work towards our strategic priorities of being a leader in responsibly providing the metals and minerals needed for the transition to an economy focused on reducing waste and keeping products in use, and disposing zero industrial waste by 2040. We have set new goals, which include establishing site-based industrial waste inventories and plans to turn waste into useful and appropriate products by 2025, and setting goals for industrial waste reduction based on these inventories and plans. Our goals also focus on developing and implementing a responsible producer program and "product passport" that is traceable through the value chain by 2025 and being a leader in product stewardship by continuing to implement our Materials Stewardship program and produce secondary metals at our Trail Operations. Our focus in 2020 will be on making progress towards achieving our new goals.