



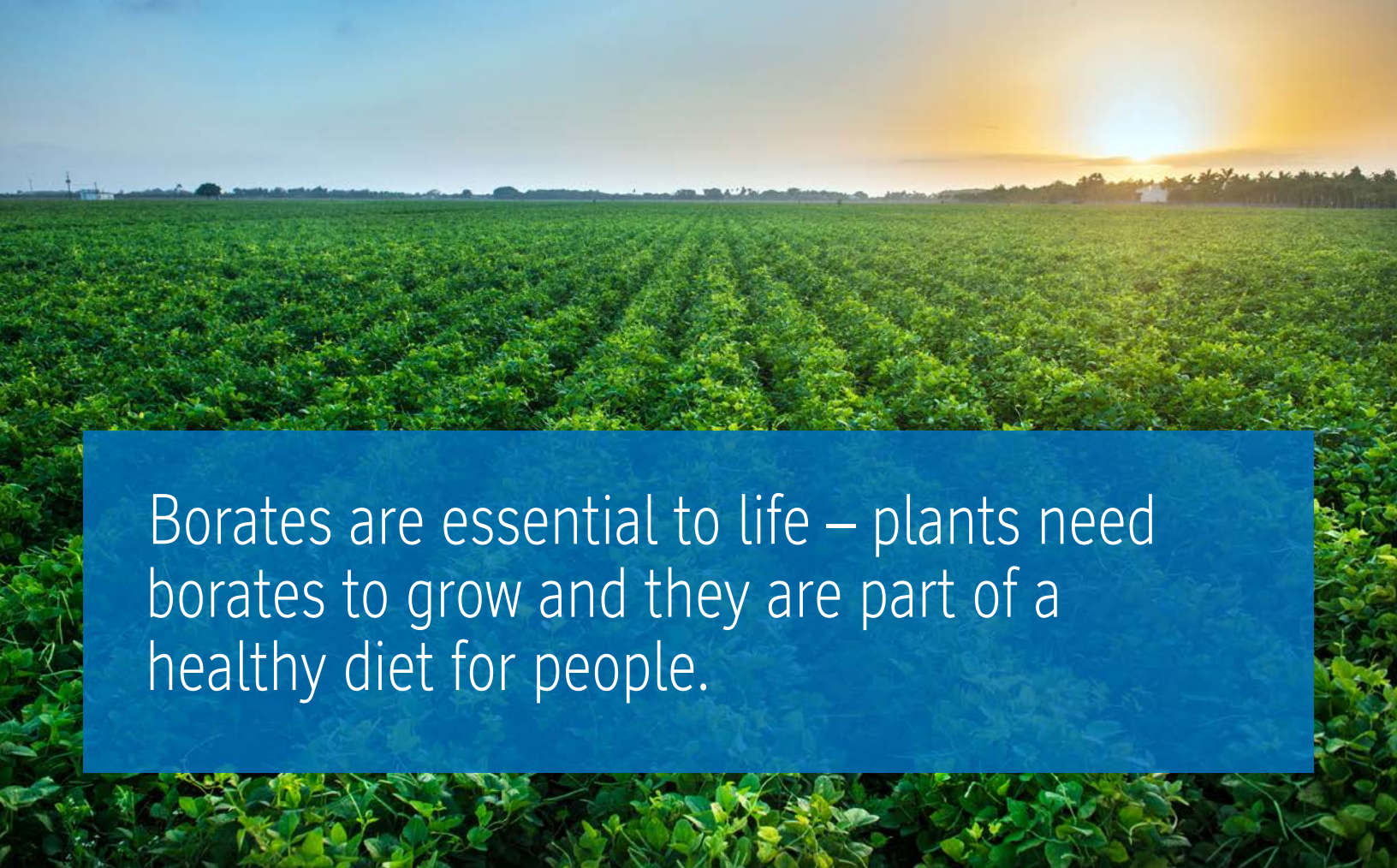
# Boron Operations



Borax's roots stretch back to 1872 when company founders began mining borates in Nevada. These pioneers discovered borates in Death Valley in 1881 and used teams of twenty mules and giant wagons to haul them 165 miles to the nearest railroad in Mojave, California. The twenty mule teams hauled borates for only five years, but 20 Mule Team Borax lives on as one of the most recognized brands in the country.

In the early twentieth century, mining operations moved to Boron, California, home to one of the biggest and highest quality borate deposits in the world. What began as an underground mine in 1927 was transformed into an open pit mine in 1957. Today, the mine supplies more than 40 percent of the world's demand for refined borates, and will be producing for another 40 years.





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### Leading the industry in borate supply and science

Borates are essential to life – plants need borates to grow and they are part of a healthy diet for people. Borates are also key ingredients in a wide variety of products including fiberglass, heat-resistant glass, ceramics, agricultural micronutrients, detergents, wood preservatives and flame retardants. While borates are everywhere in the environment, commercially viable deposits are very rare. Borax mines borate ore at a rate of about three million tons per year and produces about one million tons of refined products annually.

### Mining technology

The mining process starts with drilling to sample the type and purity of the ore. Information derived from drilling is used to develop long-term mine plans. Borax uses explosives to blast loose the overburden – or the sandstone that covers the deposit – which is removed by electric shovels that lift 80 tons per load. Haul trucks – equipped with a GPS satellite system to ensure safety and efficiency – transport the overburden and ore. Each haul truck costs more than one million dollars and can carry 240 tons of material.

### Refining technology

Borates are essentially salts. Ore from the mine is crushed to increase the surface area, dissolved in a hot solution of water and borates, and screened to remove any remaining solids. This saturated borate solution is pumped into large settling tanks called thickeners then transported to crystallizers for cooling. The drop in temperature forces the borates to crystallize. From there, borates are filtered, dried and transported for storage or packing and shipping. At each stage of the process, borate samples are tested for quality at on-site laboratories, allowing for instant analysis and adjustments.

### Process and product innovation

Most of the operational processes that set the standard for borate production were developed or first adopted by Borax. Company experts also work closely with customers to raise productivity, environmental and product quality standards at their operations. Borax commissions or conducts independent research to advance society's understanding of borates' properties and potential. The results of these research efforts lead to new products and processes that increase agriculture yields, lower energy use and emissions in many manufacturing processes, and lower the environmental impact of building products.

# Leading the industry in sustainable development



Borax's success spans three centuries – an achievement that rests on our ability to meet or exceed expectations. Our employees expect a safe workplace and competitive compensation; our customers expect excellent products and services, and, ultimately, our shareholders expect a return on their investment. Society also has expectations; namely, that businesses operate in a socially, environmentally and economically responsible manner. Borax began its Sustainable Development program in 2000 to reinvigorate how we meet those expectations.

## Health and safety leadership

Boron Operations has been recognized as the safest large mining operation in the United States for the last four years in a row. This year, along with its Rio Tinto sister companies, the Mine Safety & Health Administration recognized Boron Operations for having the lowest injury rates in the nation. The company takes a behavioral approach to health and safety, which focuses on developing employees' and contractors' safety skills – particularly their ability to identify and mitigate potential risks.

## Environmental stewardship

Boron Operations lowered both energy use and greenhouse gas emissions by more than five percent per tonne of product from 2003 to 2008 through improvements in plant design and maintenance practices. The operation also lowered its water use by millions of gallons through recycling – a critical goal given California's drought cycle. The company partners with a local horticulture college to restore the land disturbed by its operations and to encourage the return of native plant and animal species. Boron Operations is the first mining operation in California to register its greenhouse gas emissions to the California Climate Action Registry, and to commit to reduction targets. Borax was also the first mining company to receive the Governor's Economic and Environmental Leadership Award.

## Community partnership

Borax seeks to create value for local economies and to partner with local communities to address issues of concern. Every year in California, Borax contributes \$4.5 million to the local tax base; provides 800 jobs with a combined payroll of \$100 million; purchases \$150 million in local goods and services; and contributes \$120,000 to support programs that sustain local communities through education, environmental stewardship, capacity building and social services. In 2008, Boron Operations employees raised more than \$50,000 in United Way contributions to create pathways out of poverty for local residents.



# Boron Operations is the heart of a global business including specialty refineries, shipping facilities and a global network of warehouses and stock points.

Borax serves more than 1,000 customers in more than 100 countries and the company is acknowledged for its leadership in developing borates' potential and its world class safety, environmental and community practices.

