WYOMING’S TRONA MINING AND SODIUM-BASED CHEMICAL MANUFACTURING

ITS VITAL CONTRIBUTIONS TO THE STATE, THE UNITED STATES AND THE WORLD.
It’s hard to imagine today, but 50 million years ago southwestern Wyoming was covered by a vast inland lake. As the Earth evolved over the centuries – with major changes in temperature, humidity and rainfall – sodium, alkali and bicarbonate were transported to the lake by runoff water. As the lake evaporated, these minerals and soil settled at the bottom of the lake. This unique mixture of elements left behind more than 200 billion tons of pure trona deposits meshed between layers of clay and shale. The trona beds in Wyoming cover roughly 1,085 square miles.

Although this bountiful deposit is not exactly gold, the sodium carbonate or soda ash within this natural storehouse has been coveted by consumers around the world for a whole host of products considered essential to everyday life for generations. Roughly 90% of the nation’s soda ash is located here. The corresponding economic benefits to Wyoming and the United States from this high-demand natural resource cannot be overstated and its continuing supply for future generations is unrivaled on the planet.
WYOMING’S TRONA INDUSTRY KEY STATISTICS

WORLD’S LARGEST
Concentration of Soda Ash Facilities

OVER 2,300
Direct Employees

90% of domestic Soda Ash is produced in Wyoming

LARGEST
Single exporter

NEARLY 60% of our production is exported

OVER
2,300
Direct Employees

90% of domestic Soda Ash is produced in Wyoming
TRONA – AN AMAZING MINERAL WITH MANY USES

A naturally occurring mineral, trona is mined and processed into soda ash and bicarbonate of soda. It is a basic chemical building block used by industries throughout the world to make glass, food and pharmaceutical products. It is also effectively used to reduce air emissions. The diagram below shows how mined trona is refined into soda ash using the mono process.
SODA ASH AND SODIUM-BASED CHEMICALS ARE ESSENTIAL TO MAKING...

- Drinking Glasses
- Glass Bottles, Jars and Containers
- Structural Glass
- Solar Panels
- Automotive Glass
- Pharmaceuticals
- Pulp and Paper
- Baked Goods
- Soap and Laundry Detergent
- Chemicals
- Animal Nutrition
- Personal Care Products
- Cosmetics
- Cleaning and Sanitation Products

It is a certainty that trona-related products from Wyoming touch your life every single day.
WYOMING’S TRONA INDUSTRY

SODA ASH MARKETS

BY END USE

- 18% Chemicals
- 15% Detergent
- 6% Other Glass
- 25% Flat Glass
- 19% Container Glass
- 17% Other

BY GEOGRAPHY

- 43% China
- 8% Rof Asia
- 7% ISC
- 7% MEA
- 10% U.S. & Canada
- 11% W. Europe
- 9% C&E Europe
- 7% L. America
- 6% Flat Glass
- 7% Other Glass
- 5% Other

*Other includes mining, oil & gas, flue gas desulfurization, etc; Sources: IHS

WYOMING’S TOP 5 GLOBAL EXPORTS

<table>
<thead>
<tr>
<th>Product</th>
<th>USD in Millions</th>
<th>% of Wyoming’s Total Exports</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soda Ash (sodium carbonate)</td>
<td>$993 million</td>
<td>(73.2%)</td>
</tr>
<tr>
<td>Bentonite</td>
<td>$33 million</td>
<td>(2.4%)</td>
</tr>
<tr>
<td>Rare gases</td>
<td>$29 million</td>
<td>(2.1%)</td>
</tr>
<tr>
<td>Motor vehicle bodies for road tractors, vans</td>
<td>$25 million</td>
<td>(1.8%)</td>
</tr>
<tr>
<td>Ammonium dihydrogenorthophospha</td>
<td>$21 million</td>
<td>(1.6%)</td>
</tr>
</tbody>
</table>

https://www.census.gov/foreign-trade/statistics/state/data/wy.html
Wyoming’s trona industry employs more than 2,300 people with an average payroll, including benefits, of over $100,000 per employee and a cumulative annual payroll of more than $360 million.

A GROWING INDUSTRY - A BRIGHT CAREER

Wyoming’s trona industry is on the rise globally. As technology transforms efficiency, resource extraction is the beneficiary, as is the environment. It’s an exciting time to be employed in the industry and careers span the spectrum. As vertically integrated, value-added operations, the industry must employ a full team to ensure success including careers in: mining, chemical processing, mechanics, technology, accounting, engineering, marketing and sales, health, safety and environmental, human resources and corporate responsibility.
INDUSTRY INVESTMENTS IN EMPLOYEES & ITS FUTURE

Being a world leader means driving for excellence. Best in class is not enough. It’s about leadership and constantly accepting the challenge to advance. Wyoming’s trona industry boasts world class operations with cutting edge technology. Investments in education enables industry to attract top talent. Recent partnerships with higher education – Western Wyoming Community College and the University of Wyoming – are designed with students at the forefront and how they become employment ready. Those same partnerships are also helping industry solve tomorrow’s problems today. Wyoming’s trona industry – leading the change.

*48% of the Federal Mineral Royalty is returned to the State of Wyoming.*
CULTURE OF SAFETY – MORE THAN WORDS

Safety is a core cultural value for Wyoming’s trona mining industry, with a record that speaks for itself. Wyoming trona mines are recognized by the U.S. Department of Labor as some of the safest mining operations in the nation.

Safe mines are productive mines. The Wyoming trona industry is committed to providing a safe working environment for all employees and contractors. Each day, the most important resource extracted from the mines are the miners themselves.

- All new employees attend 40 hours of safety training prior to their first day on the job.
- All employees participate regularly in safety refresher training.
- Every shift starts with safety briefings and walk-around inspections.
- The Mine Safety and Health Administration monitors all Wyoming mines.
Wyoming’s trona deposits have provided significant economic value to the federal government and the State of Wyoming for nearly 70 years. The technologies employed to mine trona and produce refined sodium-based chemical products have made Wyoming producers leaders in the domestic soda ash market and have progressed the supply of soda ash at competitive prices around the world. It is also the most environmentally sustainable form of production in the world.

Recognizing the value of these trona deposits, a 1,085 square mile area almost entirely in Sweetwater County has been officially designated as the Known Sodium Leasing Area (KSLA). From modest beginnings, this industry has steadily innovated, invested and grown, presently producing more than 17 million tons of ore per year with plans to produce even more in the future to meet growing domestic and international markets. Such growth has been facilitated by the longstanding working relationships between producers and mineral owners, as well as state and federal agencies that regulate the soda ash industry. These relationships yield significant benefits to U.S. and state governments.
GOOD STEWARDS, GOOD NEIGHBORS

The trona industry has a strong conservation and community ethic, taking great pride in its environmental accomplishments and philanthropic contributions.

With the increased focus on wildlife conservation in southwest Wyoming and the KSLA in particular, significant effort is underway to create and support voluntary natural resource conservation, stewardship strategies, scientific research and educational outreach.

The industry is a steadfast driver for cooperative positive change, most recently forming the Wyoming Mining Natural Resource Foundation in 2015, a non-profit corporation partnering with various stakeholders to implement practical and innovative conservation solutions. Those efforts have included protecting the Greater sage-grouse and other sagebrush obligate species by conserving and reclaiming their natural habitats.

The Foundation exemplifies Wyoming’s long history of working landscapes – conservation and production as a partnership. Its mission reads, “Industry Providing for People While Partnering in Conservation and Environmental Stewardship”. Recognized by the Wyoming Department of Environmental Quality for its efforts, the Foundation was awarded the 2019 Wyoming Department of Environmental Quality Non-Coal Reclamation Award.

Local roots matter deeply to the trona industry and its employees. Collectively, the industry donates over $1 million annually to local and Wyoming-based non-profits, including investments in higher education. Embracing an ethic for civic engagement, trona employees volunteer hundreds of hours each year to help improve the quality of life for people living in Sweetwater and Uinta counties.
WHERE ARE THE DEPOSITS?

Green River, Wyoming