Bloomberg News

Green Batteries’ Graphite Adds to China Pollution

By Elisabeth Behrmann | April 30, 2014

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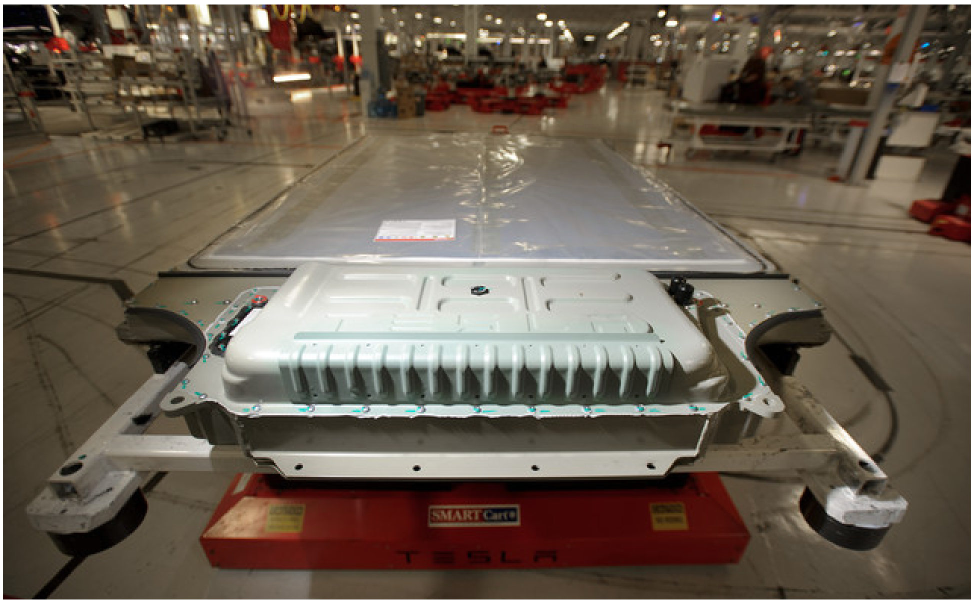

A battery awaits installation in a Telsa Motor Inc. Model S sedan at the company's assembly plant in Fremont, California. To keep up with demand, Tesla plans to invest $5 billion building a factory to produce battery packs for its luxury electric cars, it said last month. Photographer: Noah Berger/Bloomberg

(Corrects headline of story published March 14 to insert industry context.)

As more environmentally conscious Americans do their bit to help clear the air by paying up for an eco-friendly Prius or a sporty Tesla, a damaging form of polluted rain is falling in China.

The link is graphite, a vital component in batteries used in Tesla’s Model S, Toyota’s plug-in Prius and other electric cars, as well as in electronic gadgets including iPhones. It’s mostly mined and processed in China where graphite pollution has fouled air and water, damaged crops and raised health concerns. Now, in response, Chinese authorities are closing dozens of graphite mines and processors in a bid for cleaner air even as global demand for the commodity is surging.

“There’s little question that the Chinese are between a rock and a hard place environmentally,” said Josh Landess, an advanced transportation analyst with Bloomberg New Energy Finance. “There’s an obvious irony that the disruption it’s causing is within the clean vehicle and transportation industry.”

Companies Mentioned

TSLA (Tesla Motors Inc)
$229.59 USD 1.80 0.78%

Market data is delayed at least 15 minutes.

The graphite outcry is the latest among environmental flashpoints in China that have ranged from lead poisoning to acid spills and “unbearable smog” in big cities. And while the clampdown may help improve the quality of China’s environment, it could also affect as much as a third of worldwide production.

Analysts disagree about the impact of a sharp decline of graphite supplies. Simon Moores, a London-based senior analyst at Industrial Minerals Data sees China’s tougher stance pushing graphite prices up as much as 30 percent this year. Others say even that rise would have an only minimal impact on the overall price of electric cars though it could slow the expected long-term decline of battery prices.

Supply Critical

The market for hybrid and electric cars such as Toyota Motor Corp. (7203)’s Prius hybrid and Tesla Motor Inc. (TSLA:US)’s fully electric Model S as well as for e-bikes is forecast to surge this decade, propelled by demand for greener vehicles.

To keep up with demand, Tesla plans to invest $5 billion building a factory to produce battery packs for its luxury electric cars, it said last month. The project, dubbed the “gigafactory,” would be the world’s largest such operation, according to Chief Executive Officer Elon Musk.

Each electric car contains about 50 kilograms (110 pounds) of graphite. Hybrid cars use about 10 kilograms, e-bikes 1 kilogram, laptops about 100 grams and mobile phones about 15 grams, according to Anthony Pandolfo from Monash University’s department of materials engineering. The growth and diversity of electronic devices will propel demand for rechargeable batteries, according to Lux Research.

Double Demand

Tesla’s factory alone could double demand for graphite in batteries, requiring the equivalent of six new mines to come into production, according to Industrial Minerals’ Moores. Battery makers include Sony Corp. (6758), Panasonic Corp., Samsung Electronics Co. Ltd. and NEC Corp.

Instead, China is cutting back production as it battles more damaging environmental issues stemming from its reliance on coal for electricity and conventional automobiles.

As many as 55 graphite operations were suspended in Shandong province, which controls 10 percent of global supply, in December last year on a range of environmental breaches. The government intervention could easily extend to other poorly-run producers in Heilongjiang Province, said Credit Suisse Group AG analyst Michael Slifirski.

More damaging than the graphite rain, the silver dust that falls from carelessly managed mines, is the hydrochloric acid used in China to process raw graphite into a usable form. The acid is highly corrosive and when released untreated as waste water into the environment is harmful to all forms of life.

New Mines

No significant new mines have been added outside China since the 1980s, according to Industrial Minerals. That's about to change. Concern about diminished supply from China is prompting a rush to secure other sources, including the Uley graphite mine in Australia that's due to re-open this month after being shuttered for more than two decades because of rising output from China that depressed prices.

The demand for lithium-ion batteries, which use graphite, will drive up the total value of the rechargeable battery market by 52 percent to $41 billion by 2018, according to Cosmin Laslau, a Boston-based analyst at Lux Research Inc.

The lion's share of growth will come from products such as Apple's iPad and Amazon.com Inc.'s Kindle, as well as smart phones, Laslau said in a presentation.

A spokesman for Toyota, the world's biggest carmaker, said in an e-mail that it is "important to maintain a stable supply of any raw material, and we work with our suppliers to do so."

Tesla, Apple, Panasonic and Sony declined to comment on the potential effect of higher graphite prices for its batteries and production practices in China.

Supply Security

Seiichiro Toda, a Tokyo-based spokesman for NEC, said prices hadn't increased at this point. Samsung said it didn't expect an impact from capacity closures in Shandong province.

Bayerische Motoren Werke AG last month said it had 11,000 orders for its fully electric four-door i3 car, while BYD Co., the Chinese automaker backed by investor Warren Buffett's Berkshire Hathaway Inc., is preparing to begin U.S. production of electric buses in March.

China's graphite pollution crackdown is raising concern among battery makers over supply security, according to Chris Darby, chief executive officer of Valence Industries Ltd. (VXL), the developer of the Uley in South Australia. The company already has commitments for initial output from stockpiles, he said.

"They can see demand growing," Darby said. "They want certainty of supply, and they're uncertain about the supply that's coming out of China, or any of the other regions around the world."

A 30-percent increase in graphite prices could increase the price of battery packs for electric vehicles by as much as 5 percent, according to Brian Warshay, a New York-based analyst for Bloomberg New Energy Finance.

"It would slow the expected decline in battery prices," he said in an interview.

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