

Daily Oil Bulletin

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Company Looking At Non-Energy Uses For Asphaltenes

BY [PAT ROCHE \(/AUTHOR/PAT-ROCHE/\)](#) – FEB. 5, 2018 – [VIEW ISSUE \(/HEADLINES/2018-02-05\)](#)

Fort McMurray area upgraders that convert semisolid bitumen into refinery-ready crude oil produce large volumes of petroleum coke — also called petcoke — a waste product that can't be converted to transportation fuel.

Stockpiles of this black solid materials reached 106 million tonnes in 2016, up by eight million tonnes from 2015, according to [Alberta Energy Regulator](http://aer.ca/data-and-publications/statistical-reports/crude-bitumen-production) data (<http://aer.ca/data-and-publications/statistical-reports/crude-bitumen-production>).

Ninety per cent of coke produced by Alberta upgraders is dumped into pits in the ground. The AER says most operators plan to eventually use the stockpiled coke in reclamation processes.

[Suncor Energy Inc. \(/company/suncor-energy-inc/\)](#) and [Syncrude Canada Ltd.](#) burn a small amount of coke as fuel, while the coke produced at [Canadian Natural Resources Limited \(/company/canadian-natural-resources-limited/\)](#)'s Horizon project is all stockpiled. Suncor hopes to stop using coke as fuel by 2022 ([DOB, Dec. 19, 2017 \(http://www.dailyoilbulletin.com/article/2017/12/19/suncor-proposing-replace-coke-fired-boilers-base-p/\)](#)).

Conventional heavy oil and bitumen upgrading generally uses either carbon rejection (lightening the heavy oil molecules by removing carbon) or hydrogen addition (lightening heavy oil molecules by adding more hydrogen).

The **Royal Dutch Shell plc**-operated Scotford complex near Edmonton, which upgrades bitumen from CNRL's Athabasca oilsands project, uses the latter process and does not produce coke.

The proponents of a partial upgrading process now being used on a small scale in China say they can avoid coke production as well as the cost and complexity of hydrocracking. **Well Resources Inc.** says its selective extraction of asphaltenes (SELEX-Asp) process removes asphaltenes as dry granulates.

The dry solid asphaltene material that SELEX-Asp produces is chemically different from coke and "we're currently working on ways we can utilize it for other commercial processes," said **Warren Chung**, president of Well Resources.

"The thing that's going to bring everything full circle for us is when we're able to—hopefully this year—submit our patent application for commercial uses for our asphaltene product."

Those uses don't include burning it as fuel, which would release the carbon into the atmosphere.

"Our long-term outlook is not to use our asphaltene product as an energy source," said Chung. "We're looking at other commercial uses. I think it's better for the environment — you're not releasing those carbon atoms into the atmosphere. ... We view this as a carbon sink."

In other words, it could possibly be used as building material or to make value-added consumer products.

He added: "It's ultimately going to come down to what we see as economically feasible and what markets are out there that can use these asphaltenes."

Outside Alberta, meanwhile, markets for petroleum coke have changed.

U.S. steel mills were once a major consumer of U.S. petcoke, but much of that manufacturing capacity has moved overseas. And now crackdowns on air pollution in India and China have affected those markets.

Last month, for example, India raised the effective import duty on petcoke to 10 per cent from 2.5 per cent. The duty rose after the government ended an exemption to tax payable on importing the fuel that releases several times more sulphur dioxide, which is associated with lung diseases (DOB, Dec. 15, 2017 (<http://www.dailyoilbulletin.com/article/2017/12/15/india-ups-import-tax-petcoke-blow-us-refiners/>)). India is the world's biggest petcoke consumer, according to *Reuters*.

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