Emergent Waste Solutions Inc. Commissions a Study to Identify the Potential of Refining Biochar into a Highly Conductive Carbon Black

Vancouver, B.C. May 26, 2020 – **Emergent Waste Solutions Inc.** ("**EWS**" or "the Company"), is pleased to announce that it has commissioned a study that will determine the viability of producing **Highly Conductive Carbon Black (HCCB)** by further refining the biochar produced by ATS Plants.

"The term "carbon black" refers to a group of industrial products that consist of elemental carbon in the form of near spherical particles of colloidal size, coalesced into particle aggregates and agglomerates, and are obtained by the partial combustion or thermal decomposition of hydrocarbons. It is widely used as a filler in elastomers, plastics and paints to modify the mechanical, electrical and the optical properties of the materials in which they are dispersed and consequently determine their applications in a given market segment. Carbon black when compounded with plastics imparts unique properties such as UV protection, electrical conductance, range of darkness (jetness), opacity and reinforcement." [1]

Expanding on that definition, the Swiss Science publisher, Springer, explains the significance of the conductive properties of HCCB, *"Carbon black is incorporated into polymers for permanent electrostatic discharge protection, explosion prevention, and polymer applications that require electrical volume resistivities between 1 and 106 Ω cm. Typically, the so-called conductive carbon black is used since grades that belong to this specialty carbon black family impart electrical conductivity to polymers at lower critical volume fractions than conventional carbon black. Hence, conductive carbon black materials influence to a lower degree the mechanical properties of the resulting conducting polymer compound."* [2]

This EWS study follows up on the findings of Dr. Amir Dehkhoda, who conducted a study in 2017 at the University of British Columbia that was funded by the Natural Sciences and Engineering Research Council of Canada. Dr. Dehkhoda included the following in his conclusions:

> *"The presented results in this report confirm the potential of EWS black spruce biochar as a valuable activated biochar material for capacitive double layer applications. The prepared activated biochar sample showed considerable capacitive behaviour and total capacitance values comparable or superior to other carbon-based material with much complicated and costly preparation steps reported for electrochemically assisted adsorption applications.*
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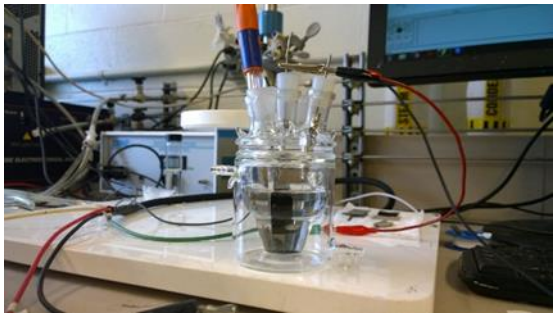
> *The obtained total capacitance values are comparable and in most cases higher than those reported for the active material for capacitive double layer applications."*

Dr. Dehkhoda in the background (left) – Nickel Mesh Electrode with HCCB coating in the foreground.



Lab Bench at UBC where the Nickel Mesh electrode was created with EWS biochar.

Initial research shows that North American market prices for Highly Conductive Carbon Black range from $68,500 to $141,250 per 100 kilograms, depending on quality and particle size. Dr. Dehkhoda estimates the cost for EWS to produce 100 kg of HCCB from Emergent Biochar is $27,500, allowing increased profitabiliy and revenue from its existing plant.

To accomplish this study, the Company has signed an agreement with Erik Lehmann, a consultant in Ohio, which will see him collaborate with Dr. Dehkhoda to confirm the capital outlay and operational costs associated with the production of HCCB from Emergent Biochar. The study will also identify potential buyers for Emergent HCCB and specifically the characteristics buyers require in an HBBC product. Mr. Lehmann will also confirm market prices for HCCB and ascertain specifically who EWS needs to talk to concerning sales opportunities for our HBBC.

This agreement will see Mr. Lehmann remunerated through a combination of consulting fees and stock options. It is expected that he will present his findings to EWS before the end of June.

Kevin Hull, EWS CEO, stated: “we believe that the market for HCCB will grow dramatically over the next few years as increased supply will bring more users (and uses) to the market, efficiency of production will reduce prices, and potential buyers will become educated and aware.”

About Emergent Waste Solutions Inc.

EWS is a British Columbia company with the exclusive Canadian rights to market and deploy the world leading Advanced Thermolysis System (“ATS”) technology. The ATS is an innovative, secure, efficient, and proven method incorporating a combination of medium and slow thermolysis systems for the converting of waste materials into marketable products, such as activated carbon, carbon black, biochar, syngas, and bio-oil.

The ATS plant is able to convert a variety of carbon-based waste materials, including municipal solid waste, petrochemical compounds, plastic waste, biomass, animal waste, electronic waste, coal and used tires into marketable products while eliminating residual waste.

EWS has commissioned and commercially tested an ATS500 plant in Canada. After thorough testing, this plant has been relocated to the Hope BC area in a partnership with Yale First Nation.

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[1] *Carbon Black / edited by Jean-Baptiste Donnet, Roop Chand Bansal, Meng-Jiao Wang. ISBN 0-8247-8975-X*

[2] *Spahr M.E., Gilardi R., Bonacchi D. (2017) Carbon Black for Electrically Conductive Polymer Applications. In: Rothon R. (eds) Fillers for Polymer Applications. Polymers and Polymeric Composites: A Reference Series. Springer, Cham*