

<b>PATENT ASSIGNMENT COVER SHEET</b>
--------------------------------------

Electronic Version v1.1  
 Stylesheet Version v1.2

EPAS ID: PAT7015799

<b>SUBMISSION TYPE:</b>	NEW ASSIGNMENT
<b>NATURE OF CONVEYANCE:</b>	SECURITY INTEREST

**CONVEYING PARTY DATA**

Name	Execution Date
CHARAH, LLC	11/09/2021
SCB INTERNATIONAL HOLDINGS, LLC	11/09/2021
MERCURY CAPTURE INTELLECTUAL PROPERTY, LLC	11/09/2021

**RECEIVING PARTY DATA**

<b>Name:</b>	JPMORGAN CHASE BANK, N.A., AS ADMINISTRATIVE AGENT
<b>Street Address:</b>	1300 EAST NINTH STREET, 13TH FLOOR
<b>City:</b>	CLEVELAND
<b>State/Country:</b>	OHIO
<b>Postal Code:</b>	44114

**PROPERTY NUMBERS Total: 13**

Property Type	Number
Patent Number:	7328805
Patent Number:	10195546
Patent Number:	9884311
Application Number:	15877732
Patent Number:	8876967
Patent Number:	9493376
Patent Number:	9873636
Patent Number:	9498747
Patent Number:	10130912
Patent Number:	10307711
Application Number:	16430100
Patent Number:	10759696
Patent Number:	11123660

**CORRESPONDENCE DATA**

Fax Number: (312)863-7867

*Correspondence will be sent to the e-mail address first; if that is unsuccessful, it will be sent using a fax number, if provided; if that is unsuccessful, it will be sent via US Mail.*

Phone: 312-863-7267

**Email:** jaclyn.digrande@goldbergkohn.com  
**Correspondent Name:** JACLYN DI GRANDE - PARALEGAL  
**Address Line 1:** GOLDBERG KOHN LTD.  
**Address Line 2:** 55 E MONROE ST., STE 3300  
**Address Line 4:** CHICAGO, ILLINOIS 60603

**ATTORNEY DOCKET NUMBER:** 1075.324

**NAME OF SUBMITTER:** JACLYN DI GRANDE

**SIGNATURE:** /jaclyn di grande/

**DATE SIGNED:** 11/09/2021

**Total Attachments: 15**

source=Charah Patent Security Agreement#page1.tif  
source=Charah Patent Security Agreement#page2.tif  
source=Charah Patent Security Agreement#page3.tif  
source=Charah Patent Security Agreement#page4.tif  
source=Charah Patent Security Agreement#page5.tif  
source=Charah Patent Security Agreement#page6.tif  
source=Charah Patent Security Agreement#page7.tif  
source=Charah Patent Security Agreement#page8.tif  
source=Charah Patent Security Agreement#page9.tif  
source=Charah Patent Security Agreement#page10.tif  
source=Charah Patent Security Agreement#page11.tif  
source=Charah Patent Security Agreement#page12.tif  
source=Charah Patent Security Agreement#page13.tif  
source=Charah Patent Security Agreement#page14.tif  
source=Charah Patent Security Agreement#page15.tif

## PATENT SECURITY AGREEMENT

This PATENT SECURITY AGREEMENT (as amended, restated, supplemented or modified from time to time, the "Patent Security Agreement"), dated as of November 9, 2021, is by CHARAH, LLC, a Kentucky limited liability company, SCB INTERNATIONAL HOLDINGS, LLC, a Delaware limited liability company and MERCURY CAPTURE INTELLECTUAL PROPERTY, LLC, a Delaware limited liability company (each a "Grantor" and collectively, the "Grantors"), in favor of JPMORGAN CHASE BANK, N.A., as the administrative agent (the "Administrative Agent").

### WITNESSETH

WHEREAS, pursuant to that certain Credit Agreement dated as of November 9, 2021, by and among the Grantors, the other Loan Parties party thereto from time to time, the Lenders from time to time party thereto and the Administrative Agent (as the same may be from time to time amended, restated, amended and restated, supplemented or otherwise modified, the "Credit Agreement"), the Administrative Agent and the Lenders have agreed to make loans and other financial accommodations to the Borrowers;

WHEREAS, in connection with the Credit Agreement, Grantors executed and delivered to the Administrative Agent that certain Pledge and Security Agreement dated as of November 9, 2021 (as from time to time amended, restated, amended and restated, supplemented or otherwise modified, the "Security Agreement"); and

WHEREAS, in connection with the Security Agreement, Grantors have agreed to execute and deliver to the Administrative Agent this Patent Security Agreement.

NOW, THEREFORE, in consideration of the premises and mutual covenants herein contained and for other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, each Grantor hereby agrees as follows:

1. Defined Terms. All capitalized terms used but not otherwise defined herein have the meanings given to them in the Security Agreement or Credit Agreement, as applicable.

2. GRANT OF SECURITY INTEREST IN PATENT COLLATERAL. Each Grantor hereby grants to the Administrative Agent a continuing first priority security interest in all of Grantors' right, title and interest in, to and under the following, whether presently existing or hereafter created or acquired to secure all of the Secured Obligations (collectively, the "Patent Collateral"): (a) any and all patents and patent applications, including those registered Patents referred to on Schedule I hereto; (b) all inventions and improvements described and claimed therein; (c) all reissues, divisions, continuations, renewals, extensions, and continuations-in-part thereof; (d) all income, royalties, damages, claims, and payments now or hereafter due or payable under and with respect thereto, including, without limitation, damages and payments for past and future infringements thereof; (e) all rights to sue for past, present, and future infringements thereof; and (f) all rights corresponding to any of the foregoing throughout the world.

3. PLEDGE AND SECURITY AGREEMENT. The security interests granted pursuant to this Patent Security Agreement are granted in conjunction with the security interests granted to the Administrative Agent pursuant to the Security Agreement. Each Grantor hereby acknowledges and affirms that the rights and remedies of the Administrative Agent with respect to the security interest in the Patent Collateral made and granted hereby are more fully set forth in the Security Agreement, the terms and provisions of which are incorporated by reference herein as if fully set forth herein

4. AUTHORIZATION TO SUPPLEMENT. If any Grantor shall obtain rights to any new patents, the provisions of this Patent Security Agreement shall automatically apply thereto. Each Grantor shall give prompt (and in any case in the next Compliance Certificate required to be delivered pursuant to

the Credit Agreement) notice in writing to the Administrative Agent with respect to any such new patents. Without limiting each Grantor's obligations under this Section 4, each Grantor hereby authorize the Administrative Agent unilaterally to modify this Agreement by amending Schedule I to include any such new patent rights of such Grantor. Notwithstanding the foregoing, no failure to so modify this Patent Security Agreement or amend Schedule I shall in any way affect, invalidate or detract from the continuing security interest of the Administrative Agent in all Collateral, whether or not listed on Schedule I.


5. COUNTERPARTS. This Patent Security Agreement may be executed in any number of counterparts, each of which shall be deemed to be an original, but all such separate counterparts shall together constitute but one and the same instrument. In proving this Patent Security Agreement in any judicial proceedings, it shall not be necessary to produce or account for more than one such counterpart signed by the party against whom such enforcement is sought. Any signatures delivered by a party by facsimile transmission or by e-mail transmission shall be deemed an original signature hereto.

6. CHOICE OF LAW. THIS PATENT SECURITY AGREEMENT SHALL BE GOVERNED BY, AND CONSTRUED IN ACCORDANCE WITH, THE INTERNAL LAWS OF THE STATE OF NEW YORK, BUT GIVING EFFECT TO FEDERAL LAWS APPLICABLE TO NATIONAL BANKS.

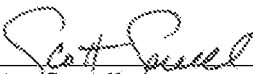
**[SIGNATURE PAGES FOLLOW]**

IN WITNESS WHEREOF, each Grantor has caused this Patent Security Agreement to be executed and delivered by their duly authorized officer as of the date first set forth above.

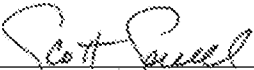
**CHARAH, LLC**, a Kentucky limited liability company

By:   
Name: Scott Sewell  
Title: President

**SCB INTERNATIONAL HOLDINGS, LLC**, a Delaware limited liability company

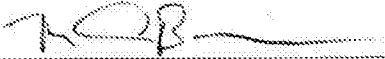
By:   
Name: Scott Sewell  
Title: President

**MERCURY CAPTURE INTELLECTUAL PROPERTY, LLC**, a Delaware limited liability company

By:   
Name: Scott Sewell  
Title: President

ACCEPTED AND ACKNOWLEDGED BY:

**JPMORGAN CHASE BANK, N.A.,**  
as Administrative Agent

By:   
Name: Mac Banas  
Title: Authorized Officer

**SCHEDULE I**

**PATENTS**

<b>Grantor</b>	<b>Title</b>	<b>Country</b>	<b>No.</b>	<b>Status</b>
Charah, LLC	Method and System for Beneficiating Gasification Slag	U.S.	Patent No. 7,328,805 B2  Publication No. 2005/005150 A1  Application No. 10/657,730	Issued on 02-12-2008
Charah, LLC	Ash Management Trench	U.S.	Patent No. 10,195,546 B2 issued on 02-05-2019  Continuation Application No. 16/266,539 filed on 02-04-2019  Publication No. 2016-0097173 A1  Application No. 14/813,052  Provision Application No. 14/813,052	Patent issued 2-5-19

Mercury Capture Intellectual Property, LLC	Activated Carbon and Coal Combustion Residue Treatment System and Method	U.S.	Patent No. 9,884,311 Publication No. 2015/0038 321 A1 Application No. 14/385,285 Provisional Application No. 61/685,240	Issued on 02-6-18
Mercury Capture Intellectual Property, LLC	Coal Ash Treatment System and Method	U.S.	Application No. 15/877,732 Publication No. 2018-0154336 Provisional Application No. 61/685,240	Published on 06-07-2018
Mercury Capture Intellectual Property, LLC	Activated Carbon and Coal Combustion Residue Treatment System and Method	Australia	Application, Publication, and Patent No. 2013232030	Issued on 08-11-2016
Mercury Capture Intellectual Property, LLC	Method and System for the Treatment of Combustion Residue of Coal and Carbon Activated	Brazil	Application and Publication No. 112014022 50 28 A8	Published on 06-20-2017



Mercury Capture Intellectual Property, LLC	Activated Carbon and Coal Combustion Residue Treatment System and Method	Canada	Application, Publication, and Patent No.  2867065	Issued on 03-07-2017
Mercury Capture Intellectual Property, LLC	Activated Carbon and Coal Combustion Residue Treatment System and Method	EP Validations: BE, DU, FR, IE, IT, LU, MC, NL, PL, PO, RU, SP, SW, SW, UK	Publication No. 2825293 A1 Application No. 13761498.8	Published on 01-21-2015
Mercury Capture Intellectual Property, LLC	Activated Carbon and Coal Combustion Residue Treatment System and Method	Japan	Patent No. 5973647 B2  Publication No. 2015-518413 A  Application No. 2015-500621	Issued on 07-22-2016
Mercury Capture Intellectual Property, LLC	Activated Carbon and Coal Combustion Residue Treatment System and Method	New Zealand	Application, Publication, and Patent No.  630439	Issued on 07-01-2016
Mercury Capture Intellectual Property, LLC	System and Method of Cleaning Activated Coal and Coal Combustion Residues	Russia	Patent No. 2595690 C2  Application and	Issued on 08-27-2016

			Publication No. 2014141172 A	
Mercury Capture Intellectual Property, LLC	Cement Kiln Dust Treatment System and Method	U.S.	Patent No. 8,876,967  Publication No. 2012-0272872 A1  Application No. 13/512,125  Provisional Application No. 61/374,745	Issued on 11-04-2014
Mercury Capture Intellectual Property, LLC	Cement Kiln Dust Treatment System and Method	U.S.	Patent No. 9,493,376  Publication No. 2015-0053119 A1	Issued on 11-15-2016

			Application No. 14/532,457	
			Provisional Application No. 61/374,745	
Mercury Capture Intellectual Property, LLC	Cement Kiln Dust Treatment System and Method	U.S.	Patent No. 9,873,636	Issued on 01-23-2018
			Publication No. 2012-0272872 A1	
			Application No. 13/512,125	
			Provisional Application No. 61/374,745	
Mercury Capture Intellectual Property, LLC	Cement Kiln Dust Treatment System and Method	Australia	Application, Publication, and Patent No. 2011291643	Issued on 02-27-2014
Mercury Capture	Cement Kiln Dust Treatment System and Method	Australia	Application, Publication, and Patent	Issued on 08-11-2016

Intellectual Property, LLC			No. 2014200531	
Mercury Capture Intellectual Property, LLC	Cement Kiln Dust Treatment System and Method	Brazil	Application and Publication No. 11201300049 91 A2	Published on 05-31-2016
Mercury Capture Intellectual Property, LLC	Cement Kiln Dust Treatment System and Method	Canada	Application, Publication, and Patent No. 2803691	Issued on 08-04-2015
Mercury Capture Intellectual Property, LLC	Cement Kiln Dust Treatment System and Method	EP  Validations: BE, CH/LI, DE, ES, FR, GB, IE, IT, LU, MC, NL, PL, PT and SE	Patent No. 2576009 B1  Application No. 11818789.7	Issued on 01-04-2017
Mercury Capture Intellectual Property, LLC	Cement Kiln Dust Treatment System and Method	EP  Validations: BE, DE, FR, IE, IT, LU, MC, NL, PL, PT, SP, SE, SW, UK	Publication No. 3178538 A3  Application No. 17150180.2	Published on 10-04-2017

Mercury Capture Intellectual Property, LLC	Cement Kiln Dust Treatment System and Method	Japan	JP Patent No. 6484162 Publication No. 2016-093806 A Application No. 2015-219575	Patent issued 02-22-2019
Mercury Capture Intellectual Property, LLC	Cement Kiln Dust Treatment System and Method	Japan	Application No. 2018-000264	Filed on 01-04-2018
Mercury Capture Intellectual Property, LLC	Cement Kiln Dust Treatment System and Method	New Zealand	Application, Publication, and Patent No. 606034	Issued on 03-25-2015
Mercury Capture Intellectual Property, LLC	Cement Kiln Dust Treatment System and Method	Russia	Patent No. 2538586 C2 Application and Publication No. 2013111776	Issued on 01-10-2015
Mercury Capture Intellectual Property, LLC	Cement Kiln Exhaust Gas Pollution Reduction	U.S.	Patent No. 9,498,747 Publication No. 2013-0291725 A1	Issued on 11-22-2016

			Application No. 13/808,031	
			Provisional Application Nos. 61/360,980 and 61/373,299	
Mercury Capture Intellectual Property, LLC	Cement Kiln Exhaust Gas Pollution Reduction	U.S.	Patent No. 10130912 2017-0065933 A1 Application No. 15/357,261 Provisional Application Nos. 61/360,980 and 61/373,299	Issue Date 11-20-18
Mercury Capture Intellectual Property, LLC	Cement Kiln Exhaust Gas Pollution Reduction	U.S.	Patent No. 10307711 issued on 06-04-2019 Application No. 16/131,881 Provisional Application No. 61/360,980 and 61/373,290	Patent issued 6-4-2019

Mercury Capture Intellectual Property, LLC	Cement Kiln Exhaust Gas Pollution Reduction	Australia	Application, Publication, and Patent No. 2011272725	Issued on 03-05-2015
Mercury Capture Intellectual Property, LLC	Cement Kiln Exhaust Gas Pollution Reduction	Brazil	Application and Publication No. 1120130000953 A2	Published on 05-17-2016
Mercury Capture Intellectual Property, LLC	Cement Kiln Exhaust Gas Pollution Reduction	Canada	Application, Publication, and Patent No. 2803662	Issued on 12-29-2015
Mercury Capture Intellectual Property, LLC	Cement Kiln Exhaust Gas Pollution Reduction	EP	Publication No. 2583286 A2  Application No. 11801474.5	Published on 04-24-2013
Mercury Capture Intellectual Property, LLC	Cement Kiln Exhaust Gas Pollution Reduction	Japan	Patent No. 5959683 B2  Publication No. 2015-211962  Application No. 2015-083329	Issued on 07-01-2016

Mercury Capture Intellectual Property, LLC	Cement Kiln Exhaust Gas Pollution Reduction	New Zealand	Application, Publication, and Patent No. 605206	Issued on 02-03-2015
Mercury Capture Intellectual Property, LLC	Cement Kiln Exhaust Gas Pollution Reduction	Russia	Application and Publication No. 2015154742	Published on 06-26-2017
Mercury Capture Intellectual Property, LLC	Exhaust Gas Pollution Reduction	U.S.	Application No. 16/430,100	Filed 06-03-2019
Mercury Capture Intellectual Property, LLC	Cement Kiln Dust Treatment System and Method	European	Application No. 17150180.2	Filed on 9-3-19
Mercury Capture Intellectual Property, LLC	Activated Carbon and Coal Combustion Residue Treatment System and Method	European	Application No. 13761498.8	Filed on 9-23-2019
SCB International Holdings, LLC	Cement Kiln Fuel Treatment	U.S.	Patent No. 10759696 Publication No. 2016-0221872 A1 Application No. 15/011,019 Provisional Application	Issue date 9-1-20



			No. 62/110,292	
SCB International Holdings, LLC	Cement Kiln Fuel Treatment	Canada	Application No. 2972154	Filed on 06-22-2017
SCB International Holdings, LLC	Cement Kiln Fuel Treatment	EP	Publication No. 3250661 A1  Application No. 16744207.8	Published on 12-06-2017
SCB International Holdings, LLC	Cement Kiln Fuel Treatment	India	20174702532 7 A	Published on 07-21-2017
Mercury Capture Intellectual Property, LLC	Cement Kiln Fuel Treatment	Russia	Patent No. 2015154742	
Mercury Capture Intellectual Property, LLC	Cement Kiln Exhaust Gas Pollution Reduction	European	Application No. 11 801 474.5-1101	
Charah, LLC	ASH MANAGEMENT TRENCH		11123660	9/21/21

**PATENT APPLICATIONS**

None