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May 26, 2017

To Joshua Creek Residents' Association
c/o Mr. Neil Westoll, Director JCRA
(sent by email)

Dear Neil,

Thank you for the update regarding the AGM of the Joshua Creek Residents Association. It is very much appreciated, as we are pleased to have the opportunity to respond to the detailed summary. We are committed to remaining transparent with our neighbours and ensuring ongoing dialogue.

As you will recall from our CAP meetings, we introduced that Region of Peel requested information regarding the "technical" suitability of cement kilns as a method to recover potential low carbon materials rather than ending up in landfill. Peel engaged Waterloo University and CRH to conduct analysis of a very select number of recovered materials. We are expecting the results to be available shortly. Once the results are available, we will schedule a meeting with our CAP and additional stakeholders.

Our corporate team is currently working on additional content for our website to provide more information specific to the Mississauga Plant. The intent will be to provide information regarding the plant's initiatives to lessen our environmental footprint through innovative product solutions, low-carbon alternative fuels and improvements in our processes and operations. We expect to have our website modified this year, however in the meantime I will respond directly to the questions that came up at the AGM.

As the plant considers future process changes, such as the use of low-carbon fuels, our commitment to outreach and transparency with our stakeholders is paramount.

In terms of questions related to any potential investigation of mechanisms to reduce carbon emissions and using low carbon alternatives, we support both provincial and local initiatives to reduce carbon emissions and realize we need to be part of the solution. That being said, while we may consider future opportunities, such as the testing of low-carbon fuels, we are not considering receiving or processing any unsorted waste materials at our plant. The use of any low-carbon fuels, including those potentially derived from waste materials, would only be received at the plant as a ready to use fuel product that had been developed under a controlled process, meeting specific quality criteria. The plant would not receive any material that did not meet our required specifications for environmental performance and product quality. Given that the plant has invested significantly in a comprehensive process control and emission monitoring program to control and reduce emissions over the years, we remain committed to upholding our performance and ensuring that we do not risk the standard we have set.

Any proposal to utilize low-carbon fuels in the future would differ significantly from the former idea of using municipal waste as fuel (Refuse-Derived Fuel) from the 1990s in; the types of low-carbon fuels that might be proposed, and technological advances at the plant regarding process and emission controls. At the time of the former Refuse-Derived Fuel project, there were few options for off-site municipal waste separation or preparation. CRH is not considering the use of RDF (which is essentially shredded or pelletized unsorted waste). The new approach is to recover and utilize specific low-carbon fuel products from the municipal waste stream.

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Any proposal to consider the use of low carbon fuel would include an assessment of any potential impact in emissions for all parameters based on a specific fuel. The importance of quality control in the fuel production process is critical.

The Mississauga plant has evolved in its production operations, environmental monitoring and controls, and Stakeholder relations since the 1990s. Since that time the plant has invested significantly in a comprehensive process control and emission monitoring program to control and reduce emissions. Some of the key installations and initiatives are:

- 1996 - Main Kiln (System) Baghouse installation, replacing what had previously been an Electro-Static Precipitator. This resulted in a significant improvement in particulate emissions control from the Main Stack.
- 1999 – Main Stack Continuous Emissions Monitors (CEMS) installed for a number of parameters including Opacity.
- 2000 – Installation of the Alkali Bypass Stack & Raw Meal injection system, resulting in an improvement in the control and reduction of emissions from the kiln process.
- 2001 – Installation of CEMS on the Alkali Bypass Stack.
- 2002 – Installation of a flue gas treatment system (hydrated lime) for SO₂ (and plume) control for kiln process gas and the Main Stack.
- 2003 – Installation of CEMS on the Aerofall Mill (AFM) stack.
- 2008 – Vertical Roller Mill (VRM) installation with CEMs, providing effective scrubbing (virtual elimination) of the SO₂ in the kiln process gas directed to it while in operation.
- 2009 – Installation of a 19% Ammonia-water solution (SNCR) system for NO_x emissions control.
- 2009 – Leading member and Co-Chair of Clarkson Air Shed Industrial Association - CASIA
- 2009 – Establishment of Community Advisory Panels, one for Mississauga and one for Ogden Quarry.
- 2010 – Installation of Teflon Bags in the AFM, VRM and System Baghouses, as well as our cement mills.

In response to the query from the Mayor of Oakville, our emission control processes are described below for your information. The plant does operate a number of baghouses, as you have pointed out (over 130 dust collectors, with over 38,000 bags). A significant number of the bags are Teflon, with specifications to control particulate emissions down to PM_{2.5}. Over the past decade, in addition to the baghouses, the plant also has the following emission control systems (as introduced above):

- Flue gas treatment system – The plant has operated a scrubbing system using Calcium Hydroxide (hydrated lime) to reduce Sulphur Dioxide and Hydrogen Chloride emissions from the kiln process. Sulphur is a component of both the raw materials and fuels. The reaction between the exhaust gases and the calcium hydroxide results in the conversion of Sulphur dioxide gas into solid sulphur compounds that are captured by the baghouses and recycled into the cement manufacturing process.
- Selective non-catalytic reduction (SNCR) system – This system has reduced the emissions of Nitrogen Oxides from the process using an aqueous ammonia solution that is sprayed into the kiln's exhaust gases. Nitrogen Oxides may form as a result of the nitrogen content in fuels such as coal as well as combustion air. The SNCR system controls Nitrogen Oxides through chemical reactions with the ammonia solution to form nitrogen and water.

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- Vertical Roller Mill (VRM) - a system that enables the recovery of kiln process gases during its operation, acting as an effective scrubber, removing a significant portion of SO₂ from the process gases. The recovery of kiln process gases for slag is used to produce CRH slag cement which promotes sustainability in our sector by reducing the amount of cementitious materials required for concrete production and producing a product with a lower carbon footprint.

We appreciate having the opportunity to share this information with our neighbours and remain committed to respecting our place within our community.

Should you have any further questions or suggestions, I am always available to meet to discuss them.

Yours truly,

A handwritten signature in blue ink, appearing to read 'Kevin Hughes', is positioned above the printed name and title.

Kevin Hughes
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