Well

June 21, 2019

Heather Farr, Program Supervisor
South Coast Air Quality Management District's Refinery Committee
21865 Copley Drive
Diamond Bar, CA 91765

Dear Heather:

Re: Commercially Proven, Safe and Environmentally Friendly Alkylation Process

Within the last few years, two high-profile refinery explosions in California (2015) and Wisconsin (2018) have raised the alarm over the use of toxic and hazardous chemicals such as hydrogen fluoride (HF) close to urban centers. Further, in early 2019, five workers were hospitalized after HF accidentally leaked in a Pennsylvania refinery. We are writing to notify you of the existence of a commercially viable alternative alkylation technology that eliminates reliance on HF and other corrosive chemicals.

Well Resources Inc. is a Canadian company that licenses clean technologies. Our **Ionikylation** technology is a commercially proven alkylation process that uses a non-hazardous and environmentally friendly composite ionic liquid as the catalyst and carbon steel for its entire system.

Ionikylation was developed over a 20-year period; the first commercial demonstration was in 2005. Since then, five commercial Ionikylation units have been constructed across the Asia-pacific and a total of 10 units will be built by 2020 to meet the increasing demand for high quality gasoline in the region. A number of US refineries are already looking at implementing Ionikylation. The enclosed Appendices A and B provide additional details.

As you are aware, a number of alternative alkylation technologies already exist in the market that use sulfuric acid or other catalysts. Unfortunately, these systems are still corrosive in nature and require using costly materials for construction. Moreover, the large volumes of spent catalysts and by-products from these systems require additional treatment. In consideration of these factors, it understandable that the HF alkylation operators claim to have no viable alternative options. Ionikylation overcomes all of these hurdles, and more importantly, resolves the critical safety concerns.

There have been additional commentaries that "alternative non-acid alkylation technologies are risky" or "newer alkylation alternatives are not yet commercially proven and implementation consequently poses a business risk". Such

commentaries are based on incomplete information and an unawareness of global technology developments.

At your invitation, we would be happy to provide an in-person informational presentation on Ionikylation to you and participate in further discussions that aim to create equitable outcomes for all stakeholders.

Yours truly,

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President, Well Resources Inc.

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Enclosure(s):	■	Yes	☐	No			
Document delivery:	■	Email	☐	Courier	☐	Fax	☐ Hand delivered

Appendix A: Listing of Commercial Scale Ionikylation Units

No.	Unit Location and Operator	Size (ktons/y)	Status	Startup Date
1	Dongying, Shandong, Deyan Chemical Co., Ltd.	100	Commissioned	Q3 2013
2	Harbin, Heilongjiang, PetroChina	150	Commissioned	Q4 2018
3	Golmud, Qinghai, PetroChina	50	Commissioned	Q1 2019
4	Jiujiang, Jiangxi, Sinopec	300	Commissioned	Q1 2019
5	Anqing, Anhui, Sinopec	300	Construction Complete	Q2 2019
6	Wuhan, Hubei, Sinopec	300	Under Construction	Q3 2019

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Appendix B: Listing of Ionikylation-Related Publications

Liu, Z., Zhang, R., Xu, C., and Xia, R., "Ionic Liquid Alkylation Process Produces High-Quality Gasoline", Oil & Gas Journal, October 23, 2006.

Liu, Z., Zhang, R., Meng, X., Liu, H., Xu, C., Zhang, X., and Chung, W., "Composite Ionic Liquid Alkylation Technology Gives High Product Yield and Selectivity", Hydrocarbon Processing, March 2018.

Ma, Y., and Zhu, L., "PetroChina's First Ionic Liquid Alkylation Unit", Hydrocarbon Processing, November 14, 2018.

Brelsford, R., "Chinese Refiners Ramp Up Alkylation Capacity", Oil & Gas Journal, January 7, 2019.

Jaremko, D., "Failed Oilsands Tech Idea Finds Growing Commercial Success With Chinese Refiners", Daily Oil Bulletin, February 21, 2019.

Chen, A., and Sahu, S., "Sinopec's Jiujiang Refinery Starts New Unit for Cleaner Gasoline", Reuters, March 31, 2019.

Brelsford, R., "Sinopec Starts Up Composite Ionic Liquid Alkylation Unit", Oil & Gas Journal, April 2, 2019.

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