

THE MEDIUM (since 2010) FOR QUICK ELECTRONIC COMMUNICATIONS WITH THE MEMBERS OF THE SACAA

INTRODUCTION

Again, SACAA has attempted to inform and share relevant Ash related matters for your perusal.

- ❖ Membership news
- ❖ Feedback on the Kusile Power Station field trip
- ❖ Grizelda Du Toit graduates with a PhD – She is a SACAA member and works for AfriSam
- ❖ Food for thought on the extraction of Rare-earth elements (REE's)

Kind regards

Mark Hunter

SACAA GM

MEMBERSHIP NEWS

Membership – Ntendeni Maduna who was employed by Eskom Rotek Industries as an Ash Disposal Specialist has resigned from ERI and her ash knowledge from that perspective is going to be sorely missed. Ntendeni has advised that she is going to join SACAA as an Ordinary member, so her skills will not be lost to the association. Welcome back Ntendeni.

Welcome - to BB Cement (Pty) Ltd who have joined SACAA as an Ordinary Member. Eddie, hope you participate in SACAA events to build up a networking with other members, as it is here where the ideas are generated.

Loss of Corporate Member – PPC Cement who have been a founder member of the South African Coal Ash Association, have advised that they are no longer going to be an independent Corporate Member of SACAA and that they now combining the association under the Ulula Ash banner who are wholly owned by PPC. We would like to thank all the PPC representatives that have been stalwarts in SACAA meetings, events and support during the somewhat 30 years relationship. Your loss of membership is regrettable but understandable.

Just a reminder that SACAA's financial year ends in June. The new membership rates will be tabled at the AGM on 7 August 2019. Please diarise this date.

Feedback?

Kusile site Visit - 18 June 2019

It was a privilege to be hosted by the Kusile Power Station management for some 25 members of SACAA and ASPASA fraternity with emphasis on the coal handling, Fly Ash, Bottom Ash and the Gypsum operations of the station. The Kusile power station project will comprise six units, each rated at an 800 MW installed capacity for a total capacity of 4 800 MW. Once completed, Kusile will be the fourth-largest coal-fired power station in the world. Unit 1 is in commercial operation and the Unit 2 in the final throws of acceptance testing for commissioning sometime in July 2019.

The power station is the first in South Africa to install flue-gas desulphurisation (FGD) – a state-of-the-art technology used to remove oxides of sulphur, such as sulphur dioxide, from exhaust flue gases in power plants that burn coal or oil. This technology is fitted as an atmospheric emission abatement technology, in line with current international practice, to ensure compliance with air-quality standards, especially since the power station is located in a priority air shed area. The by-product from the FDG will be synthetic gypsum, which as a waste has a massive commercial beneficiation potential.

The highlight of the guided tour was just to witness the enormity of the project as well as seeing all the Fly Ash, Bottom Ash and Gypsum being separated at source and could easily be adapted to have harvesting equipment installed to remove the different waste products for commercial applications.

SACAA would like to thank all those involved in making the tour successful. Thank You.



Team photo of the group visiting the Kusile site



Dr Grizelda Du Toit

Grizelda Du Toit graduated on 11 April 2019 with a PhD (summary attached) from the University of Pretoria. Ash Flashes interviewed her and her story is as follows:

I guess my AfriSam journey, which ultimately lead to my PhD, dates to 2007, when I was a student at the North-West University in Potchefstroom. I used to work every single school holiday and every other weekend ever since I was 16 years old and continued well into my 2nd year at varsity. I worked at a printing house, stood in for my mom at her job when she went on leave, and finally, worked as a cashier in the local Spar. Finally, in 2007, I received an opportunity to do some student vacation work at the AfriSam Dudfield factory. At that stage I had never set foot on a proper production plant of any kind and felt nauseous almost ALL the time!

Once I completed my December vacation work in 2007 and presented my results to one of the managers, namely, Reinhardt Swart and his team, it was proposed that I apply for a bursary. This was a massive relief since I had been studying with NSFAS loans up until then. AfriSam awarded me with a bursary for the final year of my undergraduate degree (B.Sc. Chemistry, Mathematics & Applied Mathematics), as well as my

Honours degree in Chemistry. I believe at that stage I was the first non-engineering student ever to receive a bursary from AfriSam. I also completed my MSc in Atmospheric Chemistry in 2010.

On the 9th of January 2011, I started work at the Roodepoort operation as a Trainee Chemist. I paid back my NSFAS loan in 2 years' and got my first promotion to Works Chemist in 2012. During 2014, I decided to further develop my scientific abilities in cement and registered for a part-time PhD in Chemistry at the University of Pretoria. This was done with the support of AfriSam and my direct manager, Mike McDonald.

The past 5 years, since I registered for my PhD, has been a roller coaster ride for me. I had the privilege to travel overseas (Switzerland, Nashville and Tanzania) for the first time in my life for both work and studies. I had my first child in 2016. I received recognition as a pioneer of innovation in 2017 at the Women in Construction Awards and lost my dad to cancer in the same year. I served on the judging panel for the Women in Construction Awards in 2018 and then published an article in an international scientific journal, *Advances in Cement Research*. Finally, I authored a chapter in the new edition of *Fulton's Concrete Technology*, to be released later this year, and lectured on Cement Hydration to the 2019 students of the Advanced Concrete Technology Course at The Concrete Institute. I sincerely want to thank everyone who played a role in my journey."

Grizelda du Toit



Summary Grizelda's
PhD work.docx



Grizelda du Toit -
Resume 2019.pdf

RARE EARTH ELEMENTS

Food for thought?

With the trade debate going on between the USA and China, one of the items that formed part of the potential risks was the accessibility of Rare Earth Elements (REE) that is mainly utilised in the computer manufacturing industry. This gave some thought as to the number of research papers done elsewhere of producing REE's from ash that could be explored in South Africa.

Wikipedia – June 2019

Rare Earth Element

A Rare Earth Element or Rare Earth Metal (REM), as defined by IUPAC, is one of a set of seventeen chemical elements in the periodic table, specifically the fifteen lanthanides, as well as scandium and yttrium. Scandium and yttrium are considered REMs, because they tend to occur in the same ore deposits as the lanthanides and exhibit similar chemical properties. Rarely, a broader definition that includes actinides may be used, since the actinides share some mineralogical, chemical, and physical characteristics.

Coal ASH as a resource for Rare Earth Element extraction

Rare Earth Elements have been recognised as critical raw materials, crucial for many clean technologies. As the gap between their global demand and supply increases, the search for their alternative resources becomes more and more important, especially for the countries which depend highly on their import. Coal Fly Ash (CFA), which when not utilised is considered waste, has been regarded as the possible source of many elements, including REE. Due to the increase in the energy demand, CFA production is expected to

grow, making research into the use of this material a necessity. As Poland is the second biggest coal consumer in the European Union, the authors have studied different coal fly ashes from ten Polish power plants for their rare earth element content. All the fly ashes have a broadly similar distribution of rare earth elements, with light REE being dominant. Most of the samples have REE content relatively high and according to Seregin and Dai (Int J Coal Geol 94: 67–93, [2012](#)) classification can be considered promising REE raw materials.

Acknowledgements: [Wojciech Franus](#), [Małgorzata M. Wiatros-Motyka](#), and [Magdalena Wdowin](#)

What is the South African potential?

LOCAL CONFERENCE

SACAA Coal Ash Conference 2019

Johannesburg (Sandton: Sasol Place)

14 & 15 August 2019

Accelerating Ash Beneficiation

Collaboration of stakeholders across the value chain with particular emphasis on the Phakisa Initiative opportunities

Please register for this conference early - the booking form is available on our website



SACAA 2019 Ash
Conference Invitatio

SACAA DIARY

DATES FOR 2019

- 7 August 2019 – SACAA AGM
- 14 & 15 August 2019 – SACAA Ash Conference
- 13 November 2019 – Council Meeting and Technical Talk

Please share any news, activities or articles that you feel will be interesting to the members.
ALL FOR NOW ...

Regards

SACAA Manco