FLUOROCHEMICALS INDUSTRY - A PLATFORM FOR OPPORTUNITIES AND GROWTH

EMPOWERING WOMEN IN THE ENERGY SECTOR OF SOUTH AFRICA

MRS HELENA HEYSTEK
PELCHEM HR MANAGER
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Presentation outline

- What are fluorochemicals?
- Applications/ Fluorochemicals in everyday life
- Mineral resource fluorspar
- Fluorspar mines in South Africa
- South Africa’s Market share
- Fluorochemicals hub at Pelindaba
- South Africa’s footprint
- Woman in fluorochemicals – current reality
- Opportunities for woman
- Conclusion
What are fluorochemicals?

- Fluorochemicals are
  - any organic or inorganic compounds containing one or more fluorine (F) atoms
  - generally industrial chemicals as opposed to consumer chemicals
  - are used in the production of a range of consumer goods
Applications ...

- producing **nuclear fuel** for nuclear power generation (HF & F₂)
- thin **film solar panels** manufacture (NF₃)
- **lithium ion batteries** for computers, cell phones and electric vehicles (LiPF₆)
- processing rare earth elements (HF)
  - e.g. neodymium (used in **super magnets** for electric vehicles, wind turbines and computers disk drives) HF
- **power transmission** (SF₆)
- production of **petroleum** (HF)
Applications .../2

- **Toothpaste** (fluoride salts)
- **Refrigerants** in fridges, freezers and air-conditioning
- Modern **construction material** (fluoropolymers)
- **Pharmaceuticals** (APIs for ARVs, anaesthetics,...)
- **Medical diagnostics** ($^{18}$F - Positron Emission Tomography (PET) scanner)
- production of **smart chips** for applications such as car air bags ($\text{XeF}_2$), smart phones, new display technologies
The source of fluorine for all fluorochemicals is the mineral **fluorspar** (CaF$_2$)
Fluorspar mines in South Africa

- Witkop mine – Fluormin (London)
- Vergenoeg mine – Minersa (Spain)
- Nokeng mine – Sephaku Fluoride (South Africa)
SA’s market share

- South Africa supplies 5% of global fluoride requirement
- However we earn less 0.3% of the total value of the global fluorochemical industry (U$16 bn);
- This is due to low levels of fluorspar beneficiation in the country
Pelchem F- Hub at Pelindaba a Platform for growth

Value of hub estimated at R200 million

Fluorspar 10,000 tons (locally sourced)

Local and export sales

Local + export sales

Preservation of commercial capability for a future nuclear fuel program

HF

NF₃

XeF₂

Fluoro Monomers (DY02P)

Surface fluorination

F-Salts

export sales

export sales

export sales

export sales

export F₂ sales

local sales

export sales

export sales
Pelchem Uniquely SA: Achieving A Global Market Presence
25 products delivered to 27 Countries on 6 Continents
Women in fluorochemicals

Current reality:

- Women being employed in industry < 15%
- Skilled women are < 10%
- Chieta support – learner apprentices at 40%
Opportunities for women

- Leveraging rich fluorspar resources – mining
- Beneficiation and downstream processing - manufacturing
- Grow technology and skills base
- Need graduates in science and engineering
- Artisans – Chieta support
- In-service training and internship opportunities for young graduates
- FEI support for Masters and PhD students
- Reasonable accommodation – positions for people with disabilities
Conclusion

• Gateway to Africa (largest emerging market);
• Grow global market penetration;
• Meet local industry demands;
• Innovation;
• Capacity and people development
• Africa Vision 2032!
Let's keep our eyes on the ball, stay focused and deliver!!

THANK YOU