



3R-BioPhosphate Ltd.

Foundation

- 1989

Employees

- 13

Branches

- Recycling and Reuse
- Organic - low input farming
- Water treatment

Key materials

- Phosphorus biofertiliser
- Adsorbents

Key products

- ABC Animal Bone Char**
- BioPhosphate**
high concentrated recovered calcium phosphate products for organic farming and adsorbent applications

3R-BioPhosphate

The Swedish origin technology intensive innovative SME company is specialised on the application driven research, technical development and industrial engineering of recycling and high added-value reuse of by-products and unexploited biomass from the agriculture, food industry and other industries. **Core competences:** circular economical recovery of materials; Phosphorus recovery technologies and products, P reuse commercial applications; 3R zero emission pyrolysis technology; EU policy and recovered product standardisation. Strategic business organisation for European recycling innovations with global market dimension, related to the organic fertilizer, bio-energy and water treatment sectors. The BioPhosphate processing and applications are specific designed and complex high-end technology. The output products are of high quality/safety with unique character for unique applications and market competitive economical. The legal, business and IPR status is clean, clear and transparent; that is owned by the sole inventor and Swedish senior engineering designer Edward Someus.

Original solution:

„3R“ zero emission pyrolysis technology and 3R-BioPhosphate products: an unique business opportunity

The product:

https://nutriman.net/farmer-platform/product/id_192

The technology:

https://nutriman.net/farmer-platform/technology/id_193

Lawful applications as of EU 1009/2019, EU 515/2019, MS permits

Efficiency tests

ABC BioPhosphate
safer - better - less costly

Product Functional Category applications:

- PFC1: Solid organic fertilizer
- PFC2: Liming material
- PFC3: Organic soil improver
- PFC4: Growing medium
- PFC5: Agronomic additive inhibitor
- PFC6: Plant biostimulant-microbial/non microbial
- PFC7: Fertilizing product blend

Leibig's Law of Minimum

❖ "The nutrient present in the least relative amount is the limiting nutrient"

Limiting nutrient Phosphorus

❖ "even if all but one of the essential elements be present, the absence of that one constituent renders the crop barren"

The Barrel concept

Phosphorus use efficiency not more than 20%

Lawful applications meet

- ✓ EU1009/2019
- ✓ EU 515/2019
- ✓ EU/MS - US - AU permits
- ✓ Producer Responsibility

www.3Ragrocarbon.com

"ABC" Animal Bone Char BioPhosphate - CalciumPhosphate product
High Phosphorus concentrated macroporous organic fertiliser/adsorbent

Made of food grade animal bones at 850°C carbon refinery temperature

100% ORGANIC

WATER TREATMENT

Specific environmental and industrial applications, drinking, food industrial and process water treatments. Efficient removal of: macromolecular organics & metals

ADSORBENT

\$ Economical applications €

www.3Ragrocarbon.com

✓ 92% CalciumPhosphate
✓ 8% Carbon
✓ 30% - <35% P₂O₅
✓ No contamination, safe
✓ Controlled P release
✓ Macroporous structure
✓ P = critical raw material

Recommended crops:
vegetables, fruits, rice, tobacco, viticulture, medicinal plants, herbs

USERS: Organic farming
Low input farming

Improving drought tolerance Recommended dose: 0.2 t/ha - 1.5 t/ha

Phosphate is critical raw material as of EU (2017) 490. Phosphorus cannot be replaced. **No Phosphorus = no life = no agriculture = no food = the thing of cheap fertiliser is already history.**

Converting food grade animal bone grist by-products into high added value pure and concentrated ABC-BioPhosphate organic/low input fertilizer. The goal is to substitute the cadmium/uranium contaminated chemosynthetic mineral phosphate fertilizers and make wide range of high added value applications. Specific 3R zero emission technology applied with 850°C material core processing temperature.



BIO P HOSPHATE

Key enabling technology

The 3R zero emission pyrolysis is key enabling technology and its recovered innovative BioPhosphate products targeting commercial implementation in 2020. The focus is on cheapening the Phosphorus value chain by valorisation of unexploited biomass cattle bones in economical industrial scale, while improving material safety and P supply security (Authority permit no. 6300/13393-2/2019)

The project is based on large scale EU Commission co-financed RTD projects, which have been coordinated and implemented by Edward Someus past decade (trusted EU references). Environmental and food safety impacts targeted, such as elimination of cadmium and uranium contamination from food chain and **improvement of food safety for less cost**, which impacts are well defined and integrated into the market driven business model and systematically measured. The project demonstrating sustainable growth of the business to deliver impact through a promising and realistic business planning, and a significant growth potential at a relatively modest capital investment, with a realistic exit strategy capable of supporting financial and non-financial returns.

Welcome to ask questions and make business contacts.

Contact

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"3R" zero emission carbon refinery technology application map 2020 for flexible reductive thermal processing in any range up to <850°C material core temperature.



High temperature reductive thermal processing
<850°Celsius material core temperature processed
Pyrolysis - Autothermal Carbonization



Activated Carbon
Virgin & Regeneration-
ADSORBENTS

ABC-BioPhosphate
Animal Bone Char
BIOPHOSPHATE

High C content
Plant BioChar
BIOCHAR

Special adsorbents and surface modified substances. Biofertilisers. Green energy.

www.3Ragrocarbon.com
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... and many other application
areas, incl. petroleum jelly,
coatings, preservative...

Torrefaction
Torrefied Biomass
BIO-ENERGY

Browncoal processing
RECOVERED
ANTHRACITE

Pyrolysis oil refinery
Renewable energy
GREEN ELECTRICITY

Converting Trash into Cash.
Converting unexploited
biomass into \$ values.

Low temperature reductive thermal processing
<450°Celsius material core temperature processed
Torrefaction - Thermal Desorption

