



surepure

PURE AND SIMPLE

our development roller-coaster
INGINEUS Sep 2010



what we do

- SurePure is a global player in photopurification technology
- It uses UV-C light to purify microbiologically sensitive liquids such as milk, fruit juice and wine
- The technology is effective for both clear and turbid liquids, a world first
- It has a world-wide patent for this technology
- The patent is now owned by a Swiss-based, privately-owned company



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where we came from

- SurePure established 2004
- A private innovation and initially a private venture
- R&D in South Africa since 1996
- First product tested was milk



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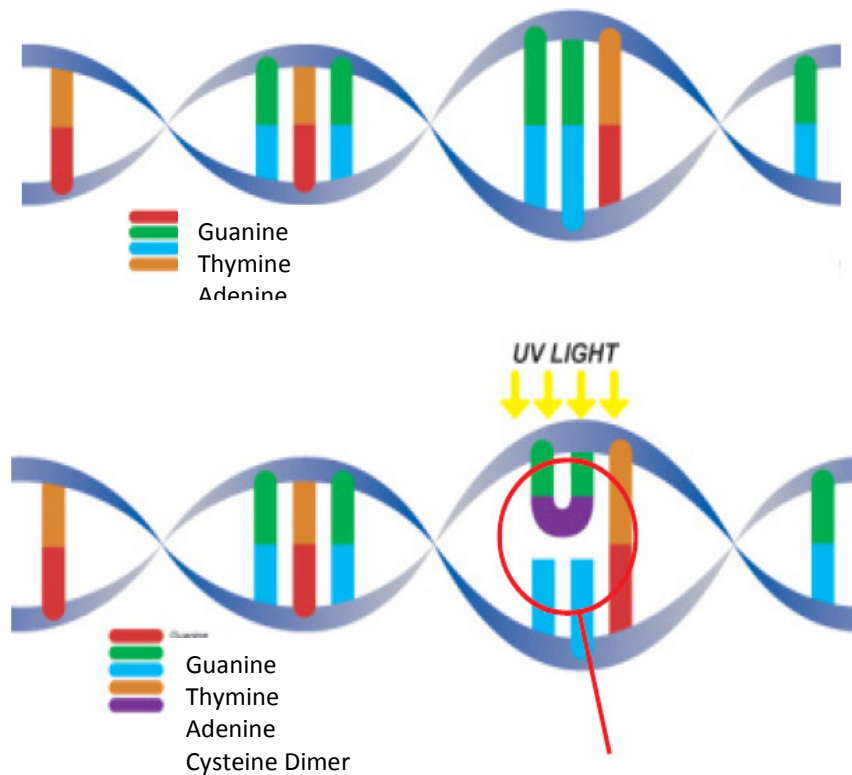
our current applications

- **Processing**
 - CIP water
 - Packaging and product rinse water
- **Raw material application**
 - Dilution water
 - Sugar syrup
 - Brines
 - Animal blood plasma
- **Finished product purification**
 - Dairy
 - Wine
 - Fruit juice and fruit concentrates
 - Light-stable beer
 - FAB's
 - Breast milk



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how we do it



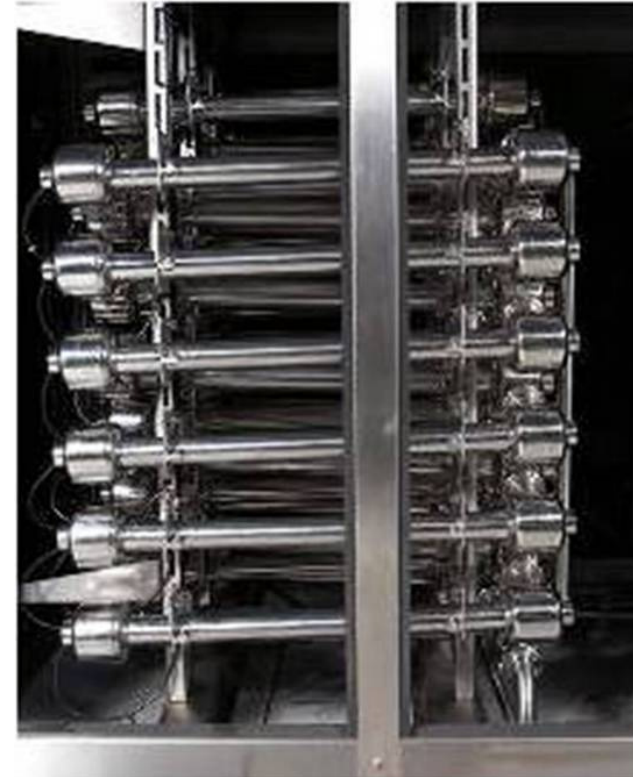
- The UV wavelength (λ) most effective for killing micro-organisms is 254 – 260 nm or 253 Angstrom (\AA)
- These wavelengths are specifically absorbed by the cellular DNA of the pathogens, causing thymine dimer (peptide bond) formation in the micro-organisms' DNA molecules
- This renders the pathogen incapable of replicating

Bacteria, Yeasts, Moulds and Viruses



our competitive edge

- The patented Turbulator delivers replicable, predictable germicidal efficacy
- The design increases the liquids' exposure to UV-C for greater effectiveness and consistency in purification
- The turbulent flow of the liquid over the lamps ensures a foul-free system



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core commercial benefits

- An effective adjunct or alternative to pasteurization
- Significant energy and water savings
- Extended shelf life
- Preserves the sensory integrity of the raw materials or finished product





key clients

- SABMiller (Global)
- GEA FarmTech (USA)
- APC (USA)
- DairyCrest (UK)
- Woolworths (SA)
- L'Ormarins (SA)
- Wal-Mart (USA)
- DMI (USA)



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the early development days

- Concept testing
 - University of Stellenbosch (ZA) Veterinary Dept., Elsenberg
- Local evaluation
 - University of Stellenbosch (ZA) Biochemistry Dept.
 - University of the Western Cape (ZA) Microbiology Dept.
- International review and confirmation
 - University of Wisconsin (US) Centre for Dairy Research and Dept.
 - Queens University (Ireland) Dept. Food Microbiology



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and the later commercial relationships

- Further applications
 - University of Stellenbosch (ZA) Biochemistry Dept.
 - University of the Western Cape (ZA) Microbiology Dept.
 - CPUT (ZA)
- International validation and approval
 - University of California (Tulare)
 - CalPoly (USA)
 - Illinois Institute of Technology (USA)
 - University of Birmingham (UK)
 - OIV (France)
 - University of Verona (Italy)
 - FDA (USA) 'no objection'
 - Novel Foods acceptance (EU)



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our lessons in research relationships: neonatal beginnings

- Impediments
 - Academic relationships developed haphazardly and personally
 - No formal access to intellect, or the discernment to match opportunity to needs
 - Costs outstripped inventors means
 - Entrepreneurial optimism blunted by academic skepticism
- Benefits
 - Action was swift and entrepreneurial
 - Research was tightly focused
 - Development was pragmatic
 - Costs were tightly controlled
 - Small group of researchers became expert
 - Regional focus forced local applications (e.g. milk, wine, fruit juice)



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our lessons: youthful development

- Impediments

- Bureaucracy and SA government departments, especially Department of Health, a major impediment
- Costs escalated – inventors sold out
- Duplication of research work occurred
- Early international forays were expensive and dismal
- Multiple liquids, applications and academics became time-consuming

- Benefits

- Forced us to focus outside of South Africa on bigger and more lucrative markets and global clients
- Highlighted the need for patent protection
- Costs and scale forced IP sale to investment consortium which accelerated development



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our lessons: tempestuous teenage years

- Impediments

- SA research not acknowledged internationally by standards authorities, despite internationally competitive standards, staff, equipment and methodology
- Serious duplication of work and costs for a small company
- Early commercialization has attracted hostile attention
- Little or no government support
- Significant national impediments from organised agriculture

- Benefits

- Has offered us a global perspective on focused applications
- Has forced a pragmatic international distribution, marketing and sales approach
- Has proven the technology over and over again
- Has highlighted the benefit of local first-order research
- Has given access to major global clients and partners



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summary: our development journey

- Characterized by a series of expansions and contractions
- Largely haphazard and tactical
- A “go-it-alone” programme without formal support or guidance
- Research, development, legality and nationalism seem integrally intertwined!
- Satisfying but frustrating



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Steve Miller +27 21 526 2580

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