

Developments in Screen Cleaning Chemistry

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CPS – Chemical Products and Services



History Lesson – The Electric Light Bulb



- Who invented the light bulb?
- Sir Joseph Swan (not Edison!)
- The Autotype company was also started by Swan in 1868 to commercialise his new photographic ‘carbon process’.
- After 140 years of service the ‘traditional’ light bulb has become a target for substitution with ‘alternative technology’

Screen Cleaning Chemistry – Fundamental Production Needs

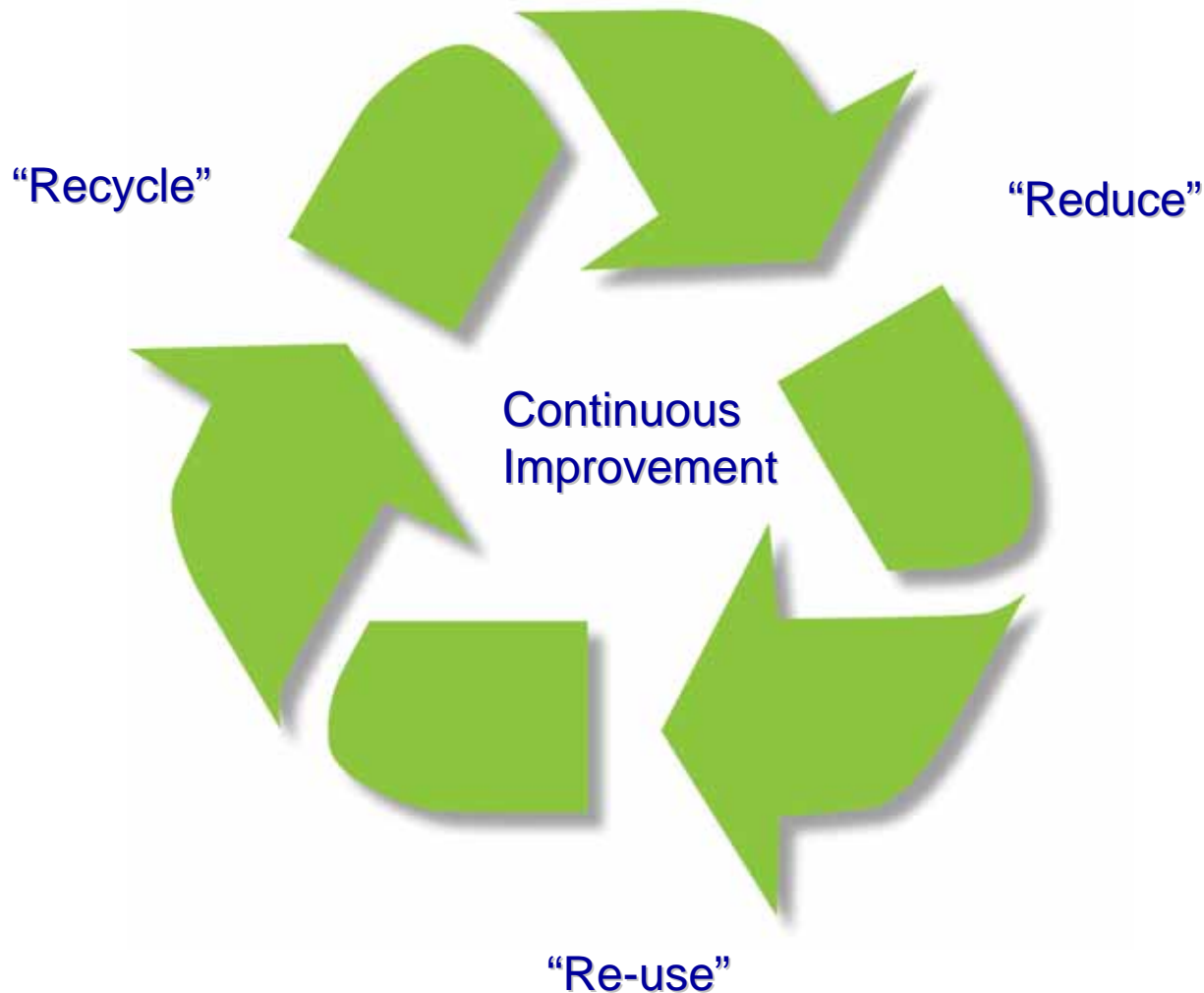
Workplace Safety
and Compliance

Better Cleaning
(Production Efficiency)

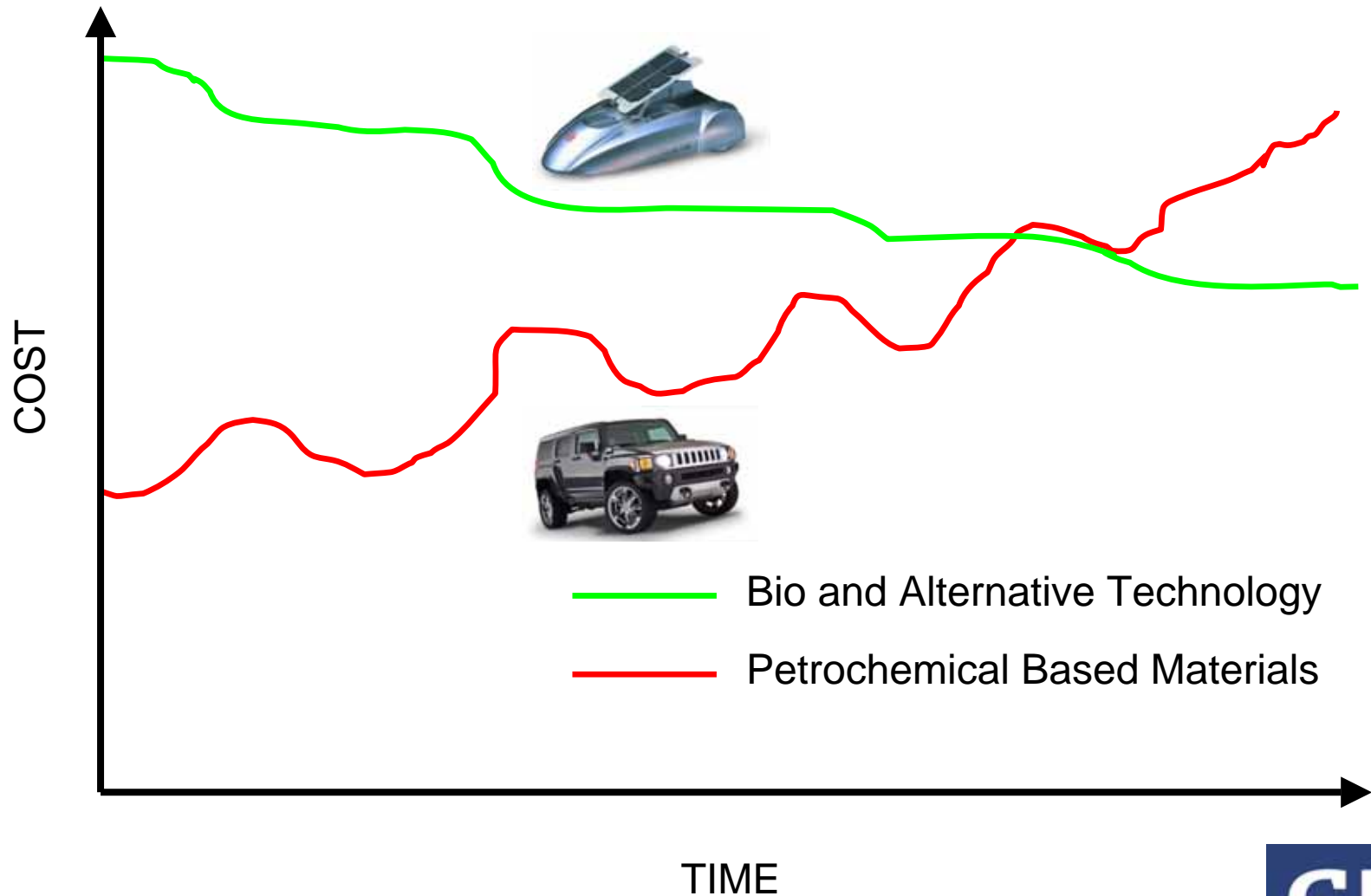
Continuous
Improvement

Reduce Overall Costs

Screen Cleaning Chemistry – Materials Usage in Production



What is the future for Petroleum Based Materials?



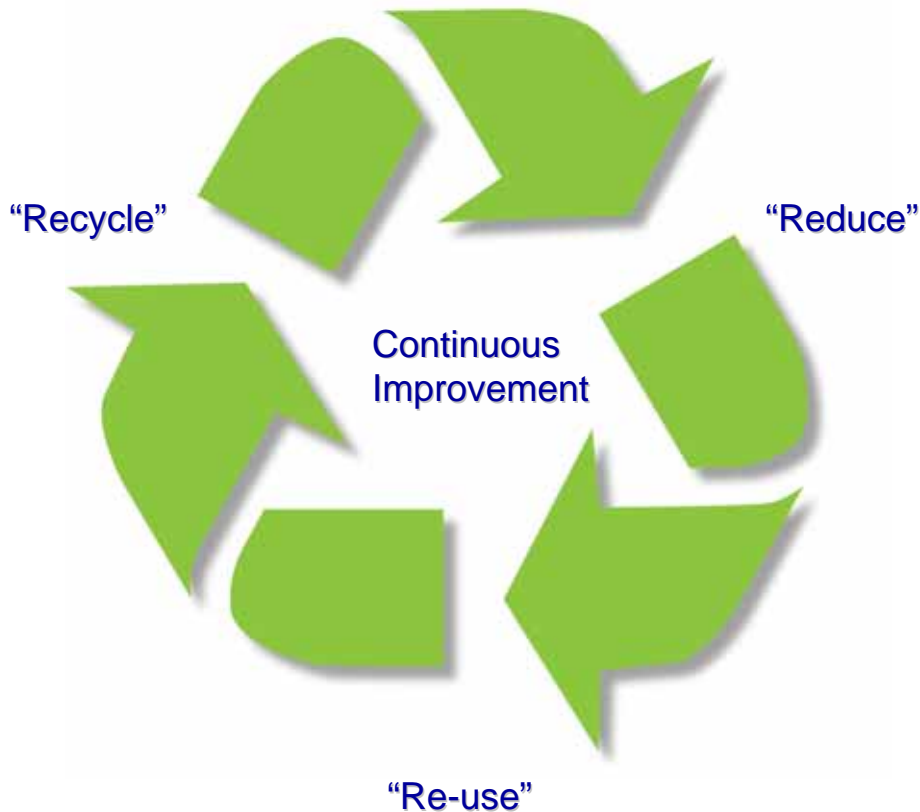
— Bio and Alternative Technology
— Petrochemical Based Materials

“Traditional” Resources are Getting More Expensive



- The days of “cheap” petrochemical based materials are numbered.
- Legislation and tax breaks accelerate change (eg. city vehicles, domestic solar panels, even light bulbs!).
- We now see ‘alternative’ and ‘hybrid’ vehicles on a daily basis.
- As manufacturers and consumers we need to be ready for change and embrace the new technology and ways of working.

What is the future for Petroleum Based Screen Cleaners?



- We need to reduce our reliance on petrochemical based materials.
- Bio derived and renewable materials will become increasingly more important, but they don't cover all applications at the moment.
- The practical focus today should be to REDUCE, RE-USE and RECYCLE where possible.
- You should SUBSTITUTE with new technology when it provides a viable solution for your application.
- PLUS - there *will* be further benefits of change.

Workplace Safety and Compliance



Workplace Safety and Compliance



- The objective should be for a safer workplace and happier, more productive operators.
- The “macho” image of a dirty, smelly printshop is hopefully a thing of the past.....
- Legislation such as COSHH, VOC limits, flammable limits, ISO14001, etc. force change:-
- Holland – Screen Cleaners must contain no aromatic hydrocarbons and $>55^{\circ}\text{C}$ Flash Point.
- Southern California – Screen Cleaners must have a VOC of less than 100 Grams/Litre (typical screen washes are 800-900 Grams/Litre).
- EU Directive EN 12921 (3rd Version) states that on-press cleaners should be $>40^{\circ}\text{C}$ Flash Point.

Workplace Safety and Compliance

– Substitution of ‘Harmful’ Materials



- Harmful, flammable, strong smelling cleaning solvents can be replaced with hazard-label-free products that work better and last longer.
- The biggest improvement will be in workplace air quality and worker exposure, (*remember smoke filled bars and restaurants?*).
- Other benefits will be to “REDUCE” solvent usage, “REDUCE” waste, and minimise losses to the atmosphere.
- Explore hazard-label-free options for your application.

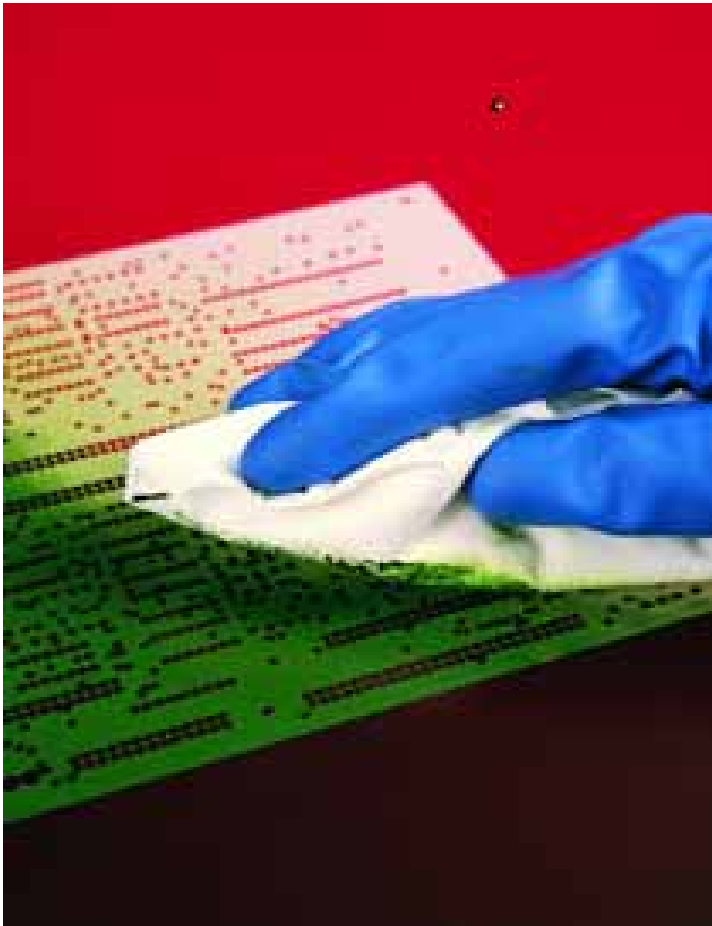
Workplace Safety and Compliance – Measuring the Benefits



- Substituting ‘harmful’ materials should be viewed as a process improvement activity.
- The benefits can be quantified and proven with on-site air monitoring.
- It is relatively simple and inexpensive and does not disrupt production activities.
- Small tags are worn by operators for a set period of time (15 mins or 8 hours) and the results determined by analysis.
- Your Production team will all benefit from a pro-active regime!

Workplace Safety and Compliance

– On-Press Cleaning



- On-Press Cleaning is now covered by Eu Directive EN 12921 3rd Version .
- Although it is not law, it is “Best Practice” and states that on-press cleaning solvents should have a flash point $> 40^{\circ}\text{C}$.
- Products are now available that work well with even difficult to clean industrial inks, and are hazard-label-free for the user.
- Consider switching to a compliant on-press product to meet “best practice”.
- Again, on-site air monitoring can quantify benefits.

Better Cleaning and Production Efficiency



- The adoption of ‘Greener’ and ‘safer’ cleaning materials should not compromise cleaning or production efficiency.
- It is often a case of “working smarter – not harder”.
- Sometimes traditional working practices need to be reviewed as part of the improvement process.

Example – Prevention of Mesh Staining and Stencil ‘Fusing’



- On-press cleaning can actually cause ink staining and difficulty reclaiming the stencil *(especially if volatile aromatic hydrocarbon cleaners have been used)*.
- Most ink staining and stencil residues can be prevented by using the correct cleaning regime and materials.

Example – Prevention of Mesh Staining



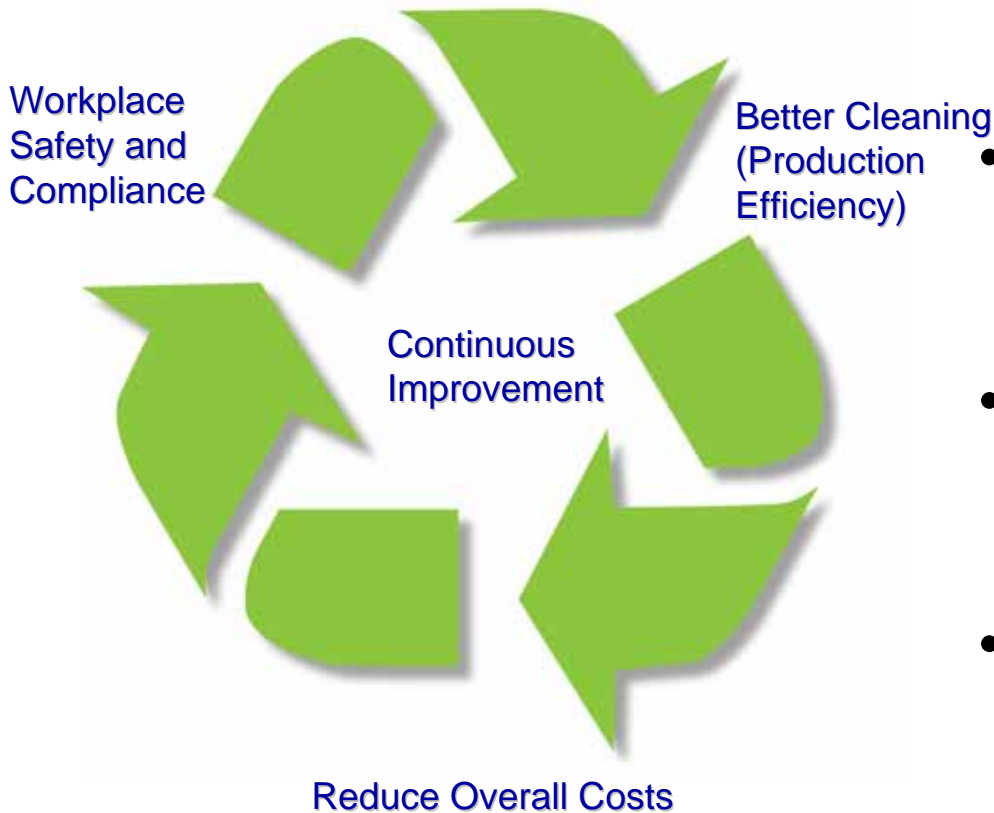
- Cleaning screens immediately using the correct screen wash should eliminate 90%+ of mesh staining.
- If screens cannot be cleaned immediately, 'Stain Preventer Gels' can be used.
- The objective should be a clean screen 1st time with minimal 're-work'.

Screen Cleaning Equipment



- Automatic screen cleaning equipment encloses and recirculates cleaning materials.
- “RE-USE” cleaning solvents by at least 10x.
- “REDUCE” the use of wipes and solvent based waste.
- “REDUCE” workplace emissions and worker exposure.
- If you are not automated today consider this as a route to process improvement.

Screen Cleaning Chemistry - Today and the Future



- The practical focus should be to REDUCE, RE-USE and RECYCLE where possible.
- Bio derived and renewable materials already have a place today and should be the 1st choice for the future.
- New materials and ‘hybrid’ systems are being developed to cover ever wider applications.
- It is possible to optimise the needs of production and create process improvement with ‘Green’ technology.



Thank You