

# Carbon Footprint of Recycled Chemicals: Sustainability in Action

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Making a circular economy a practical reality requires innovative transformational business models beyond waste management. Accelerating this transition within the chemical industry requires businesses to incorporate resource efficient initiatives at the initial design phase and re-engineering throughout the manufacturing process. Fundamentally, collaboration with the industry's key stakeholders, such as chemical scientists, manufacturers and waste recyclers, is paramount to move the circular economy efforts within the chemical industry. This presentation brings to life a circular economy journey from theory to reality.

This presentation builds on a previously developed methodology for carbon footprinting – introduced at ChemSpec 2014. We will briefly cover a carbon footprinting study that was commissioned by the European Solvent Recycler Group (ESRG) to assess the carbon footprint of recycled solvents produced by some of its members. The recycled solvents featured include mixed solvents, acetone, tetrahydrofuran (THF), methyl ethyl ketone (MEK), triethylamine (TEA) and perchloroethylene (PERC). Life Cycle Assessment (LCA) has been used to estimate the carbon footprint, following the ISO 14044 methodology. CCaLC V3.0 has been used to model the system and estimate the carbon footprint. The study concluded that recycling of these solvents leads to significant savings of greenhouse gas emissions (ranging from 46-92%) compared to the virgin solvents.

Five years on, we now present real life examples of the successful application of this tool in building scientific rigour into Sustainability Reporting, targeted Process Optimisation and supporting technology investments in the field of recycling and circular economy.