

Dilek Saylik and °Rowan Brown (Huntsman Corporation Australia Pty Ltd)

In the realm of agrochemicals, an ideal formulated product can be boiled down to something that is efficient, cost-effective and safe. Of the major formulation technologies today, each system aims to fulfill these key factors to varying degrees, however maximising efficiency or performance is still often the more valued factor.

One of the ‘classic’ technologies, the Emulsifiable Concentrate (EC), is often near the top of the performance spectrum. However this aspect is often counter-balanced by inferior toxicological or safety characteristics when compared to other delivery systems, often owing to the use of certain solvents. This raises the question of whether such formulations are sustainable in the modern world?

There is an increased level of awareness regarding both the environment and safety in modern society, and the apparent decline in EC formulations globally is arguably reflective. The use of toxicologically questionable solvents in many EC formulations, such as xylene and *N*-methyl-2-pyrrolidone for example, is a negative aspect that doesn’t sit well against the modern formulation prerequisites. However, these formulations are still very effective, relatively cheap and easy to prepare leaving a practical dilemma.

There are also of course the limitations of the technology: not all our active ingredients can be solvated to yield a suitably desirable product, and the solubility limits of the relevant active ingredients limit avenues for differentiation. *N*-Methyl-2-pyrrolidone as mentioned above, has frequently been the ‘go-to’ solution to these problems for many years

There are however many alternative molecules with desirable solvency traits within the limitless portfolio of organic chemistry. Many of these alternatives can work as effectively as the traditional offerings, but more importantly also be free of the toxicological constraints and thus level the balance between efficiency, cost-effectiveness and safety.

This presentation will address a series of recent additions to Huntsman’s JEFFSOL® AG solvent portfolio that are targeted toward improving the performance and sustainability balance, and strategies or considerations for their use in Emulsifiable Concentrate formularies.