Nufarm Limited - Chlorophenoxy Waste

- Waste treated - Chlorophenoxy waste from 2,4-D Herbicide Manufacture.

- Nufarm Limited in Laverton, Australia.

- This case study includes Company History, Simplified Reaction Chemistry and Destruction Efficiency.

Background

PLASCON® rig at Nufarm Ltd

- Nufarm Limited is Australia's largest manufacturer of agricultural chemicals.

- The company has plants in Australia, New Zealand, Asia & Europe and exports its products throughout the world.

- In the late 80's and early 90's Nufarm embarked on a waste minimisation program. In particular the company sought to minimise the quantity of chlorinated waste discharged from their 2,4-D manufacturing process. After a worldwide review of available technologies in 1990, Nufarm entered into an agreement to build a 150 kW PLASCON® plant capable of being integrated into their 2,4-0 production process.

- A licence was granted to Nufarm Limited for the commercial use of PLASCON® in 1992.

Waste Treated

Typical composition of Nufarm's "sprung phase" waste which is destroyed "on-line" in their PLASCON® plant.

- Chlorophenols 34.2% w/w.

- Phenoxies 46.7% w/w.

- Toluene 19.1 % w/w.

- Dioxins/Furans 6ppb TE

- NB: Toluene is added to reduce the viscosity of the waste for easier transfer into the PLASCON® process.

Chemistry

A simplified reaction scheme for Nufarm.

Note: Sufficient oxygen is added to convert carbon to carbon monoxide which is subsequently converted to carbon dioxide in a flare.

Operational Performance

Nufarm's two PLASCON® plants each destroy waste at a rate of 35 kg/h, 24 hours a day. Both plants operating at Nufarm are approved by the Victorian EPA and all of the emissions from the site comply with the EPA's site licence. The Destruction Efficiency is typically 99.9999%.

The levels of dioxin/furan in the off-gas have been measured using the I-TEQ (International Toxic Equivalent) standard at 0.06 ng/Nm3 including LOD values, which compares very favourably to the stringent German emission limit of 0.1 ng/m3.