Recovery of triphenylphosphine from production residues

Fact Sheet

Objective

- Demonstration of the technical realisation in a production plant and the economic feasibility of the recovery of TPP from residues arising in the synthesis of pharmaceuticals and vitamins
- Utilisation of ca 5000 t of residue containing TPPO by recycling to the synthesis
- Avoiding of 130 000 m³ of waste water and saving of ca 4000 t raw materials and ca 1000 m³ of disposal site space by realisation of the projected plant.

Triphenylphosphine (TPP) is an essential component in the Wittig Synthesis. The
synthesis method is used widely in the EU for the production of specialised active substances for pharmaceuticals and plant protection, and also for the production of vitamin A and beta-carotene and derivatives.

During the synthesis, TPP is converted to Triphenylphosphine oxide (TPPO) which remains as a production residue. Additional residues containing TPPO are obtained from oxo-syntheses. In total, several thousand tonnes of TPPO must be disposed of in the EU each year. Disposal poses a problem, as the residue cannot be completely eliminated in a waste water treatment plant. On incineration, aerosols containing phosphorus are formed which cause blockages in the dust filters, and drastically reduce the lifetime of the catalysts used for the removal of nitrogen oxides.

This project aims to solve the disposal problem by the chemical conversion of TPPO to TPP. The reduced requirement for synthesised TPP - as opposed to regenerated TPP - will result in savings in raw materials and energy, as well as avoiding the associated residues and effluents. The design is flexible, so that residues containing TPPO from BASF plants, as well as those from other operators can be processed.

Since the plant is to process residues containing TPPO from the plants of other operators, the project represents a demonstration for increased collaboration in environmental protection measures.

Programme(s)

ENV-LIFE 1 - Regulation (EEC) establishing a financial instrument for the environment (LIFE), 1992-1995

Topic(s)

A13 - Development of techniques for the collection, storage, recycling and disposal of waste, particularly toxic and dangerous waste and waste water

Call for proposal

Data not available

Funding Scheme

DEM - Demonstration contracts

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