



EUROPEAN RESPONSIBLE CARE® APPLICATION FORM

Company Name: Du Pont Asturias, S.L.

Number of Site Employees: 707

Address: 33469 Tamón – Carreño, Asturias, Spain

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Project Title:

**Replacement of acetic acid with glucose waste
as Biotreatment nutrient feed.**

Company Description.

DuPont is a science company that provides solutions aimed at improving people's lives in different fields ranging from food and nutrition to transportation and electronics.

Founded in the United States in 1802, DuPont is among the world's biggest and oldest industrial corporations. Its relationship with Spain began three years after it was founded, with its first export to our country in 1805.

The company is present in over 70 countries, with 135 manufacturing and processing complexes and more than 75 R&D laboratories. It has annual sales of over \$27 billion and employs around 77,000 people. In addition to Spain, DuPont is present in the following European countries: Belgium, France, Germany, Italy, Luxembourg, the Netherlands, Sweden, Switzerland, Turkey and the UK, with a total workforce approaching 20,000 employees. In 2002, the company's turnover in Europe reached 7 billion dollars, accounting for more than 25% of the worldwide total.

The company's main businesses include synthetic fibers, polymers, crop protection products, chemicals, pharmaceuticals, and consumer goods.

Site Activity.

DuPont Asturias Site is located in the Tamón Valley of Asturias, Spain. The complex is located in a 345-hectare valley, designated to the conservation of the natural habitat, which includes local flora and fauna.

The Asturias complex's industrial activities include the manufacture of fibers, chemicals and crop protection products. The complex also has a financial center that handles mainly European transactions, a European Human Resource center, a team providing procurement services and IT service center run by the company CSC, and support groups that provide external relations, engineering, human resources, safety, health and environmental services.

Project Title: Replacement of acetic acid with glucose waste as Biotreatment nutrient feed.

Project Summary:

Background.

The Asturias Biotreatment Plant treats effluents from various production units. In order to maintain an appropriate population of bacteria in the biological reactors, acetic acid was used as a supplemental source of readily-biodegradable organic carbon.

Most acetic acid used in the chemical industry is made from a reaction between methanol and carbon monoxide. Both raw materials are normally obtained from crude oil & natural gas, which are non-renewable resources.

In 2005, an average of 1039 Kg/day of acetic acid 80% was purchased and fed to the bioreactors. (See Appendix 1 - chart 1)

Acetic acid prices are linked to crude oil prices, and so have increased in the last 10 years, especially from 2004. (See Appendix 1 - chart 2)

Project definition.

In March 2006, a project applying 6-Sigma methodology was initiated to reduce acetic acid feed to the bioreactors. Based on an analysis of 2005 data, an objective of reducing acetic acid feed from 1039 to less than 400 Kg/day was set.

The project was focused in two different avenues:

- 1) Optimization of biological reactor operation
- 2) Actively seek a source of biodegradable organic carbon that could at least partially replace acetic acid.

Project Evaluation.

1) The optimization of the biological reactor conditions achieved a reduction in acetic acid use from 1000 Kg/day to 350 Kg/day.

2) After discussions with local industry contacts, we learnt that a candy company (Chupa Chups S.A.), was generating an aqueous effluent containing glucose. This effluent, due to its high organic load, was not treated at their site, but was sent to an external waste treatment facility, at a cost of approx. 36 Eur/Ton.

Glucose is a 100% renewable resource, obtained from enzymatic hydrolysis of various cereals (corn, wheat)

We successfully evaluated the possibility of receiving this glucose waste at DuPont Asturias Biotreatment Plant, thus saving external treatment costs for Chupa Chups and acetic acid costs for DuPont.

An agreement was reached between both companies, and in July 2006, Chupa Chups started sending their glucose waste to DuPont.

As the waste was introduced to the bioreactors, the acetic acid feed was slowly decreased.

On October 10th 2006, the acetic acid was completely stopped, and has not been used since then. Thus the goal of reducing acetic acid consumption from 1039 to below 400 Kg/day was surpassed. (See Appendix 1 - chart 3)

Impacts:

Business Cost Savings:

DuPont.

1039 Kg/day of acetic acid at an average price (2005-2007) of 0.6078 EUR/Kg
230M EUR= \$ 299,000/year

Chupa Chups.

Approx 15000 Kg/week of aqueous glucose solution not sent to external waste treatment Plant at a cost of 36 EUR/Ton
26M EUR= \$ 34,000/year

Community/Society: Collaboration between two companies to save depletable resources. The local Environmental Authority was informed and they supported this venture, viewing it as a good example of collaboration between companies for reducing waste.

Environmental Footprint: All acetic acid saved is obtained mainly from oil & natural gas, so a reduction in the environmental footprint was achieved.

Appendix 1 – Supporting Documentation

Chart 1: Historical Acetic Acid price (Eur/kg) vs crude oil price (\$/Barrel)

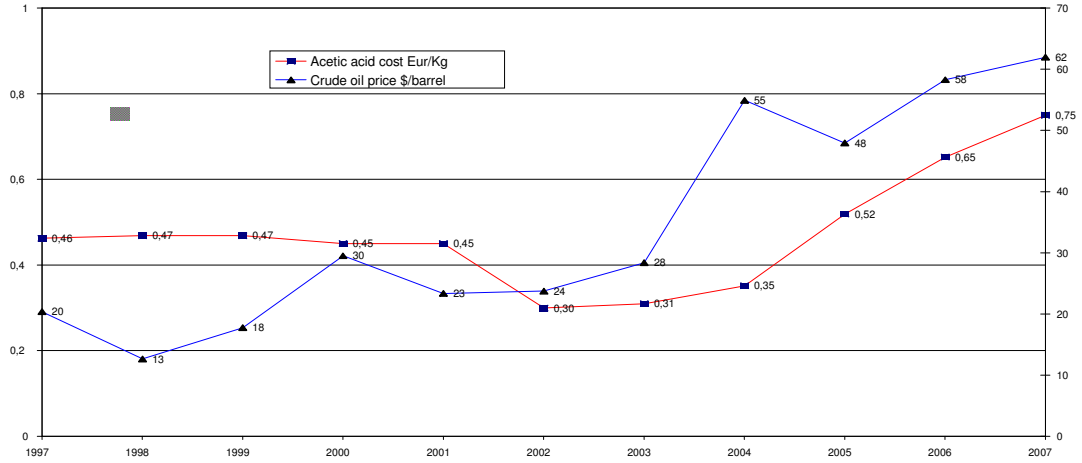


Chart 2: Acetic Acid consumption in 2005, Kg/day

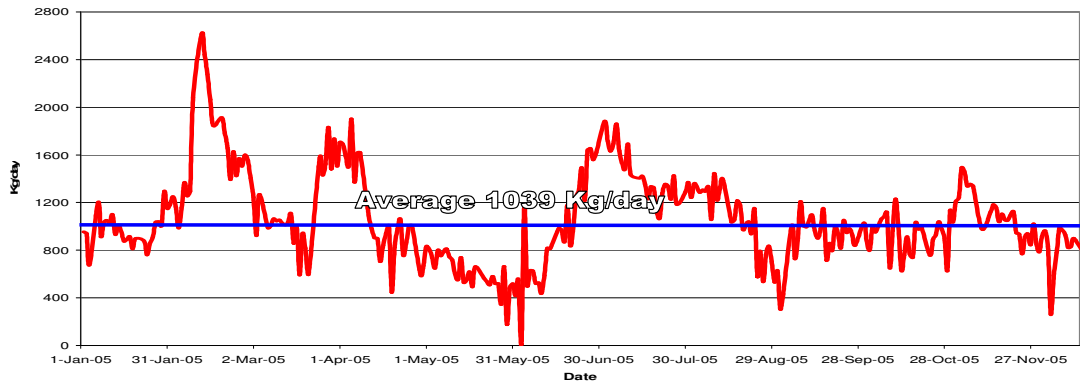


Chart 3: Acetic Acid consumption in 2006 & 2007, Kg/day

