



Novel Sustainable Bioprocesses for European Colour Industries



SOPHIED project

The traditional colour industry was an important activity in Europe until the end of 20th century. It suffers now displacement to the developing world due to increasing production related environmental costs as well as high labour costs in Europe.

New European legislations and directives though very useful for health and environment will nevertheless reinforce the industrial difficulties:

- **DIRECTIVE 2002/61/CE, 19th July 2002 limiting the use of azoic dyes** for clothing textile, leather articles, games containing textiles...
- **"Assessment Strategies for Hair Dyes" (SCCNFP/0553/02):** there is an epidemiological evidence that indicates that the regular and long term use of hair dyes for women can be associated with the development of **bladder cancer**.
- **REACH: Registration, Evaluation, and Authorization of Chemicals.** Dye market benefits from thousands of molecules with low added value. Considering that the dye industry is low in RTD, it is clear that the new regulations will considerably **limit the capacities to develop new dyes**.
- **Water framework directive:** during dyeing processes approximately 10 % to 40 % of the dyes are not consumed on the substrate to which they are applied, and find their ways into wastewaters. They are flushed into the environment and constitute a non-negligible risk to living organisms.

As an answer to their problems (economics, lack of innovation, toxicity to human, non environmentally -friendly, non worker-friendly processes), an integrated project is actually active. This flagship project consists of a biotechnological approach covering three parallel objectives:

- To develop **new bioremediation technology** to detoxify coloured wastewaters.
- To develop **new safe enzyme-assisted processes** for the production of existing dyes.
- To create **new molecules of dyes which are less toxic** and synthesised biotechnologically for high added value markets.

The SOPHIED project establishes a partnership among 16 SMEs, 7 Universities, 3 Research Centers and 2 external advisors from 10 countries (total budget of 9 655 200 euros with a financial networking plan deep rooted into regional and national funding. The project is led by a high-technology Belgian SME, Wetlands Engineering, under the strong administrative support of the coordinator, the, catholic University of Louvain (Louvain-la-Neuve, Belgium).

The four years project is based on a multidisciplinary approach that encompasses the value chain from the industrial needs, development of biotechnological processes, engineering, up to technology transfer. New production models "based on knowledge" to replace "trial-error" will be proposed to low-RTD sectors in the value chain.

It is expected that this will lead to a concrete evolution of the traditional colour industries towards high tech SMEs, which will become more competitive, innovative and sustainable.

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SOPHIED project



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To contact us
<http://www.sophied.net>





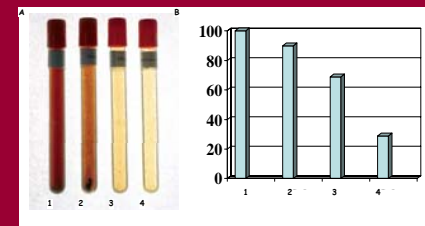
SOPHIED Work Packages



Collecting expedition: 1 and 2. Collecting in the forest, 3. Field work, 4. Fungus, 5. Culture in Petri dish.



New wastewater treatment process

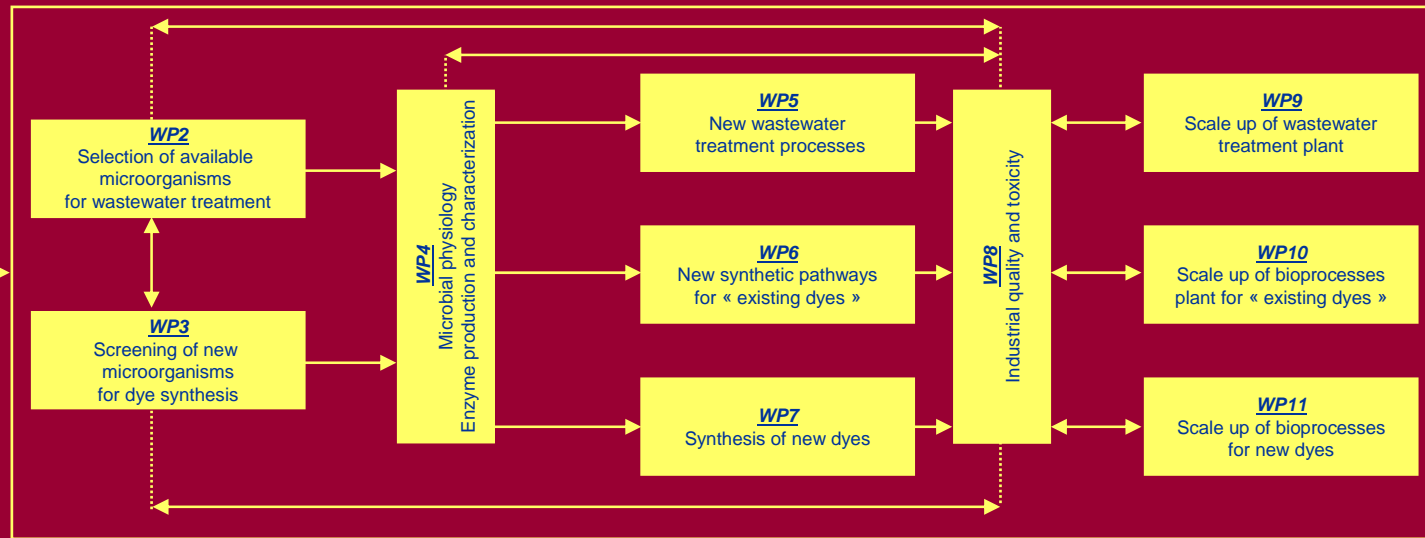


A. Decolorisation and B. Toxicity reduction of an industrial effluent
1. raw wastewater, 2. after ozone treatment, 3. after fungal treatment, 4. after combined ozone-fungal treatment.



Rivers polluted by industrial wastewaters and dyes

WP1
Industrial needs analysis and target(s) selection



Protection of the environment



Screening of microorganisms for wastewater treatment and dye synthesis



Studies of the microbial physiology and the enzyme production



Synthesis of dyes



Scaling up of the bioprocesses

