



LIFE 08 ENV/F/000487

From the proposal

Preparatory actions

Action P1: - Laboratory testing of photocatalytical material

Aim:

- (i) Investigations on the influence of photocatalytic surface films on atmospheric relevant reactions by flow-tube experiments
- (ii) Identification of gas phase and particulate “tracer” compounds for photocatalytic heterogeneous reactions to be searched for in the field measurements
- (iii) Identification of low volatile photocatalytic reaction products in the aqueous runoff of coated model surfaces by bench-top reactor experiments identify “tracers” to be searched for in the field

Action

Expected results (quantitative information when possible)

Results from this work package will be essential for the planning and performance of the later field measurements in Actions I1 and I2. Action P1 will provide a complete chemical characterization of the gas phase products and the runoff samples as well as an identification of new chemical reactions on urban surface films. Flow tube experiments will deliver kinetic and mechanistic information of important surface reactions, which will be needed for the preparation of chamber experiments and as input for modeling studies. Chamber studies and laboratory experiments will allow an identification of specific tracer compounds for photo-catalytic reactions at surfaces. These tracer compounds can be used in the following stages of the project as target compounds for the field measurements. An identification of potentially harmful conversion products will be another important result of this work package for health aspects. Bench-top reactor experiments will answer the question to what extent surface reactions influence the acidity of the aqueous runoff from coated surfaces. Furthermore, this work package will provide analytical method development for the measurements of selected target compounds in the later field studies.

Broken down into single deliverables:

- P1-D1: Chemical characterization of gas phase and surface products from photocatalytic NO_x and NO_y processing
- P1-D2: Chemical characterization of gas phase and surface products from photocatalytic NO_x and NO_y processing
- P1-D3: Design, construction and application of a continuous runoff reactor. Chemical characterisation of runoff from NO_x and organics conversion
- P1-D4: Identification of tracer species for field experiments
- P1-D5: Materials testing for the field experiments in actions I1 and I2