

## **561f Multiobjective Waste Management in Existing Facilities with Stream Blending**

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We present a new methodology to evaluate under uncertainty the waste treatment options for a new product in an existing facility, considering economic and environmental objectives. The methodology highlights potential treatment problems, forecasts the required operations and estimates costs and environmental impact. The environment impact is estimated with the Swiss-ecopoint method (UBP).

The new procedure includes a rigorous evaluation of secondary, i.e. pollutant-enriched, streams. Uncertainty of waste stream composition, cost factors and separation efficiencies are accounted for and propagated by Monte-Carlo simulation.

The new procedure accounts for possible interaction and synergy between several waste streams. The blending of streams is allowed in order to increase the efficiency of central recovery operations and to achieve dilution of critical streams in the final treatment operations, e.g. the sewage treatment plant, and hence to reduce the need for expensive pre-treatments such as stripping.

The most efficient treatment paths for an original waste stream might be composed of complex combinations of the above options, e.g. some part of a stream is recovered directly in the production building, while the remainder is mixed with another stream for recovery in a central distillation, before being sent along with two additional streams to incineration.

For each waste stream a list of such combinations and the resulting economic and environmental assessments is obtained.