Working-group 2:

Within this working group, different needs and questions linked to the operation and control of an ozonation plant were collected. The feedback of the participants (~ 15 persons, mainly representing the operator's point of view) was summarized into a "***wish-list***", with items which might be answered by the running research programs:

1. General questions:
   - "Coming into a new world":
     Introduction to APIs and the pharmaceutical issues to operators and citizens
   - up-stream decrease of APIs (e.g. less input of APIs into the wastewater)
   - No requirements (e.g. for API-removal) so far … so what's the target?
   - Does the actual benefit for the environment by removing APIs outweighed the impact of additional energy usage associated with APi removal?

2. Parameters to be measured:
   - **What parameters should be measured and where?**
   - Which APIs?
   - Transformation products:
     - better understanding on formation process and what is created
     - how to minimize formation?
     - impact of transformation products worse or better (than former API)
   - Ecotoxicity tests:
     - which ones are recommended to get a good evaluation
     - should be quick and affordable
   - Costs for the monitoring? (API measurement is expensive)

3. Operation:
   - Minimize ozone dose to avoid costs
   - Can it be bad to have overdosing of ozone … and why?
   - Health and safety:
     - how to maintain a save working environment
     - ozone leak detection: where to place it?
   - How to handle (undesired) shut-down events?
   - Differences between pilot- and full-scale plants
   - How to enable a good and efficient mixing of ozone gas and water phase

4. Control strategies:
   - relations of APIs to surrogate parameters
   - which online sensors can/should be used?
   - what about fluorescence?