

MINUTES OF THE MEETING

WSSTP – Urban Areas

WG: Sludge management

4th to 5th October 2007 in Prague

Objective

- Create a network of stakeholders interested by cooperation on Sludge management topics
- Dress a state-of-the-art on sludge management in Europe
- Define the needs/problems/priorities of large cities
- Establish first R&D proposal based on priorities of large cities

Stakeholders

- Prague
- Lyon
- Manchester
- Lisboa
- Genoa
- Oslo
- Barcelona
- Veolia Water Paris
- Suez Environnement Paris

Participants

Name	Company	Confirmation	e-mail
Pavel Chudoba	Veolia Voda Czech republic	yes	pavel.chudoba@veoliavoda.cz
Emmanuel Trouve	Veolia Eau France	yes	emmanuel.trouve@veoliaeau.fr
Patrick Faivre	Veolia Eau France	yes	patrick.faivre@veoliaeau.fr
Pascal Dauthuille	Suez Ondeo France	yes	pascal.dauthuille@suez-env.com
Pierre Buffiere	INSA Lyon France	yes	pierre.buffiere@insa-lyon.fr
Roberto Porro	Genoa, Italy	yes	
Andrea Borsarelli	Genoa, Italy	yes	andrea.bor@tin.it
Michal Dohanyos	VSCHT Praha, Czech rep.	yes	michal.dohanyos@vscht.cz
Bjarne Paulsrud	Aquateam Oslo, Norway	yes	bjarne.paulsrud@aquateam.no
Eric Judenne	Dégremont group	excused	eric.judenne@degremont.com
Josef Flores	Agbar, Spain	yes	jflores@agbar.es
Paolo Fernandes	Veolia Environnement	yes	PauloJ.Fernandes@veolia.com
Carlos Povoá	Aguas de Portugal	yes	c.povoá@adp.pt
Leonor Amaral	Universidade Nova de Lisboa	yes	Imma@fct.unl.pt

Updated agenda of the meeting

4th October 2007

- 13:00 Welcome of participants, lunch-buffet in Veolia Environnement - Institute of Environmental Services, Prague 4, Podolska 15
- 14:00 Introduction, presentation of the programme, up-dated agenda by P. Chudoba
- 14:10 ; Summary and conclusions from “Sludge questionnaire” (P. Chudoba)
- 14:30 Introduction of each participant (approx. 10 min by presentation, objective – detection of problems/wishes of large cities Oslo, Prague, Barcelona, Lisboa, Lyon)
- Presentation of the state-of-the art in each country/city (sludge management)
 - Technical & legal aspects, contractual aspects
 - Final sludge issues – current status and future trends
- 16:00 Improvements of anaerobic digestion of sludge in the Czech republic - mechanical disintegration, thermophilic digestion, rapid thermal reactor, energy production (Professor M. Dohanyos)
- 16:30 Coffee break
- 16:45 Summary of the state-of-the art, priority topics
- 18:00 End of 1st day programme, individual transfer to the hotel
- 20:00 Evening event – dinner in downtown

5th October 2007

- 9:00 Workshop – priority topics - discussion
- 10:30 Coffee break
- 11:00 Workshop – priority topics - definition
- 12:00 Summary and final proposal
- 12:30 Lunch-buffet at the “Prague water museum”
- 14:00 End of the meeting

Priority topics according to WSSTP Board proposal

TOPIC AREA	Number of Topics	Sum of priority scores	RANK
Flooding	8	641	1
Asset management	7	571	2
Supply/demand balance	7	480	3
Sludge management	5	386	4
Sensors	6	353	5
Drinking water treatment	2	110	6
Pollution control	1	59	7

Research topics grouped as “SLUDGE MANAGEMNT”

Reference number	Brief description	Priority score
E 15	Conceptual improvements of existing treatment technologies, new technologies	59
G 15	Design of processes using less non renewable energy and materials, and less polluting chemical inputs	63
E 18	Optimization of sludge production, pre-treatment and use	76
E 11	Optimization of sludge treatment and disposal	93
G 16	Optimization strategies on both wastewater and sludge treatments, considering global impacts	95

G – generic research
E – enabling technologies

Methodology

- “Sludge questionnaire” sent to all interested stakeholders before the meeting. The answers were summarized and gave first priority trends.
- Each stakeholder presented the situation in his city/country, problems, needs, wishes and priorities.
- 8 main priority topics were selected for further discussion.
- A methodology for priority R&D topics has been defined and applied to each topic :
 - Objective to be attained
 - Legal obligation, technological situation and our knowledge, limitations,...
 - Existing technologies (what progress has to be done)
 - Future technologies to be developed
 - Definition of eventual demonstration site
- A list of 6 main topics, issued from this discussion, has been established, with information about needs for Road map, Enabling Framework, Present technologies, Future technologies and Demonstration unit.

Summary of “sludge questionnaire”

WSSTP Sludge management – summary of sludge questionnaire

2. Final sludge destinations

in %	Agriculture directly	Compost (agriculture)	Re-cultivation	Landfill	Thermal/Incineration	Other
Prague			100			
Czech republic	20		50	9		21
Barcelone/Spain	40	25,5		14	6,5	
Genoa/Italy		18		33	7	42
Lisboa/Portugal	90	0,5		9	0,5	
Manchester/UK	65	1		1	19	14
Oslo/Norway	60	5	31	4		

- Direct agricultural use : Spain, Portugal, UK, Norway
- Re-cultivation (definition ?) : Prague, Oslo
- Landfill : Genoa
- Incineration : UK
- Landfill vs. Discharge ?

WSSTP Sludge management – summary of sludge questionnaire

3. Future trends in sludge destinations

	Agriculture directly	Compost (agriculture, re-cultivation)	Energy recovery (biomass, biogas)	Landfill	Thermal/Incineration	Other
Prague	5	1	2 to 3	4	2 to 3	
Czech republic						
Barcelona/Spain	1	2	3	5	4	
Genoa/Italy	3 to 4	3 to 4	1 to 2	5	1 to 2	
Lisboa/Portugal	2		1	3		
Manchester/UK	1		2 to 3	5	2 to 3	4
Oslo/Norway	1 to 2	3	1 to 2	4 to 5	4 to 5	

1. Energy recovery : Prague, Genoa, Lisboa, Oslo, Manchester
2. Direct agricultural use : Barcelona, Lisboa, Manchester, Oslo
3. Thermal/Incineration : Prague, Genoa, Manchester
4. Composting, re-cultivation : Prague, Barcelona
5. Landfill : no perspectives

4 - Présentation électronique



Priority R&D topics

Priority topics – resulted from discussion

- 1) **Energy recovery from the sludge (self-sufficiency,...),**
 - 1) optimisation of anaerobic digestion (co-digestion, sludge pre-treatment,...), objective up to 80% of OM removal...
 - 2) waste valorization together with sludge (agricultural, municipal waste, industrial...) „waste to energy“
 - 3) raw material characterization
- 2) **Biogas quality/composition monitoring, treatment (siloxanes,...) for different users**
- 3) **Sludge incineration – „100%“ ecological incineration...**
- 4) **Sustainable sludge management → diversification of sludge treatment & management alternatives (based on drying, gaseification, pyrolysis,...), assessment of environmental risks/benefit, odours management, ...**
- 5) **Fuel Cells (FC) applied to biogas valorisation**
- 6) **Interactions between ww treatment line and sludge treatment (N, P,...)**

7 - Présentation électronique



WSSTP Sludge management – priority topics issued from the discussion

	RM	EF	PT	FT	D	Remarks
Topic 1	Y	Y	Y	Y	N	to be subdivided on 28.11.
Topic 2	Y	Y	Y	Y	Y	
Topic 3	Y	N	N	Y	N	
Topic 4	Y	Y	Y	Y	N	to be subdivided on 28.11.
Topic 5	Y	Y	Y	Y	Y	
Topic 6	N	N	Y	Y	N	

RM – Road map : need deeper understanding, more information,...

EF – Enabling framework : legal and technical conditions of operation have to be defined

PT – Present technology

FT – Future technology

D – Demonstration unit

8 - Présentation électronique



Further actions

- Several topics have to be discussed in a more detailed way – next meeting of WG will take place on 28th November in Paris.

	Action	Responsible		Deadline
Action 1	Minutes of the meeting	Pavel	to be sent to WSSTP board	15.10.2007
Action 2	CD rom with presentations	Pavel	to be sent to WG stakeholders	15.10.2007
Action 3	develop ideas topic 1 and 4	All	prepare for Paris meeting	28.11.2007
Action 4	prepare Paris meeting	Pavel/Pascal		28.11.2007
Action 5	Paris meeting	All	finalise topics 1 and 4	28.11.2007