Precious Metals and Rhenium Consortium Silver Work Group & Nano Task Force – Technical Conference call

17 July 2013, 10:30am-12:30pm CET

Agenda

1. Welcome and introduction
2. Ongoing testing
3. Update on external research
4. Planned testing
5. Exposure scenarios
6. AOB, next meetings/calls and closing remarks

1. Welcome and introduction

Rob Garrett

Welcome and introduction

- Confidentiality and Competition Law
- Tour de table & Apologies
- Approval of the agenda
- Status of actions agreed at and approval of minutes of the last meeting (27 March 2013)
- Feed-back on Ag IUCLID 5 file *(All)*

Actions 27 March 2013 Ag WG CC

Action	Who?	Status
PNEC marine water		
Prepare test outline and get cost quotes from suitable CROs	WCA	Ongoing
Prepare position paper discussing the merits of Ringwood and putting it into context of the other available data on oysters	WCA	Ongoing
Prepare a technical review of the RIVM marine limit value derivation	WCA	Ongoing
Outline strategy/ tests required to develop a marine species sensitivity distribution	WCA	Done
Develop long-term strategy to defend safe use of Ag	PMC Sec	Ongoing
Soil testing at CSIRO		
Discuss study reporting with CSIRO	PMC	Done
Facilitate direct contact WCA with CSIRO to discuss nano-specific results	PMC	Done
Update nano Ag TF		
Share the nano Ag ES with the full Ag WG once completed	PMC	Done
Preparation for Evaluation		
Consider information shared by DuPont and re-circulate revised letter	PMC	Done
Share feed-back from RIVM on process and timing of Substance Evaluation	DuPont	Done
Advise as to how to reach NIA in a successful manner	PMC members	Ongoing
RIVM EQS		
Try identifying industry representative for RIVM's expert discussions	PMC	Ongoing
Alert PMC in the event NL request specific monitoring data on the basis of proposed NL environmental risk limit values	PMC members	Ongoing

Feed-back on Ag IUCLID 5 file

- To facilitate dossier review process
- Read-only access for registrants since 2nd May 2013

- Any comments?
- (Overall timing/ deadlines for comments will be discussed at tomorrow's call)

2. Ongoing testing

2.1. Sample material for nano-Ag tests: JRC or commercially available?

- Powder-form of commercially available nanomaterial obtained for OECD 209 testing is significant aggregated (clumped)
  - Technically difficult to prepare test solutions
  - May adversely affect the performance of the test
  - Other candidates not yet sufficiently characterised
- NM 300 K standard material (OECD sponsorship programme)
  - Available from EU Joint Research Centre (JRC)
- Pros and Cons analysis conducted (range of criteria)
- Recommendation to use NM 300 K for the comparative assessment of nano silver and ionic silver in OECD 209
  - Primarily based on test solution preparation issues
  - Well characterised material (by the JRC)
  - Results readily comparable to other OECD sponsorship tests
  - Good representative material for registration purposes

2.2. Oyster repeat study (1)

- Initial contact made with Ringwood et al (2010) authors
- No response to request for additional information on the study (request in April)
- Now proposed to classify study as Klimisch 3 (unreliable)
  - Information presented is “insufficient for assessment”
  - Address residual uncertainty by undertaking a comparative study of sensitivity of nano and ionic silver under GLP conditions
- Two laboratories approached in April to develop proposals for undertaking the research
  - Brixham Environmental Laboratory (Astra Zeneca), UK
  - Cefas, UK
- Third laboratory approached in June after Cefas withdrew from proposal (difficulties in undertaking characterisation)
  - Nautilus Environmental, US

2.2. Oyster repeat study (2)

- Brixham Environmental Laboratory (Astra Zeneca)
  - Characterisation sub-contracted to the University of Exeter
  - Analytical chemistry sub-contracted to the University of Plymouth
  - 2 exposure scenarios for nano-silver
    1. No stirring or sonication (particles likely to aggregate and settle)
    2. Optimal dispersion (particles less likely to aggregate and settle)
  - Use of particle control proposed – 12 nm silicon dioxide (sand)
  - **£ 47,205 – 52,805**
- Nautillus Environmental
  - Quote expected 12th July 2013

2.3. Activated sludge testing

- LAUS received NM 300 K 03/07
- Advice on sample handling (as per OECD programme) provided
- Study progress
  - Preliminary testing starting mid July
  - Definitive testing timetable available after this completed
  - Study reporting complete by October 2013

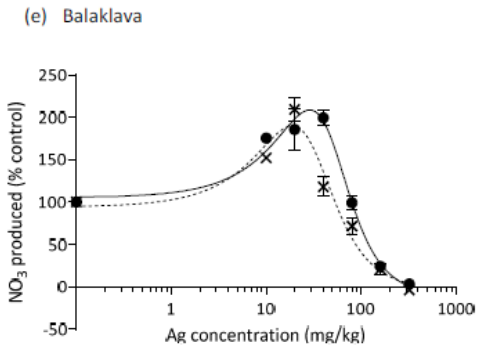
2.4. Soil tests CSIRO (1)

- Status
  - Programme proceeding as planned
  - Interim report May 2013 (circulated 27 May 2013)
  - Most toxicity tests and leaching work completed
  - Presentation K. Langdon at SETAC Glasgow
  - Ageing work ongoing
- Next steps
  - Final report Nov. 2013 (timing re-confirmed in June)
  - Will include results in IUCLID as soon as available (raw data)

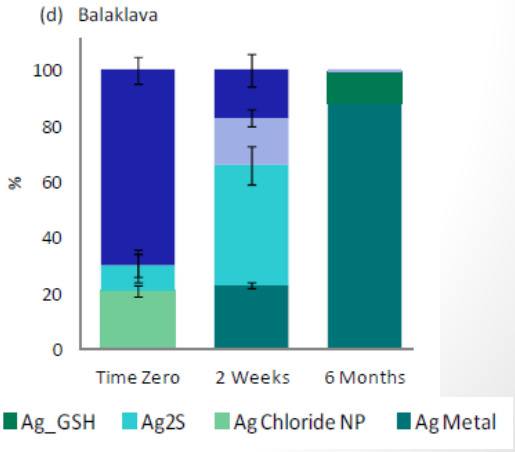
2.4. Soil tests CSIRO (2)

Initial results

- Hormesis



- Stability of Ag^+ in soils: significant portion of silver ions bound to sulphides/ reduced to Ag(0) over time



2.4. Soil tests CSIRO (3)

- PNEC soil derivation
  - Currently not enough data points for SSD
  - Deterministic approach used – attracts larger Assessment factors
  - EU NanoFate project: willing to share recently derived data for ionic silver prior to publication at no cost
  - These data, combined with recently published data in the literature, and CSIRO data will provide sufficient data to derive an SSD
    - More robust PNEC with a lower AF
  - Chronic data now received for springtails and woodlice
  - Springtail data reported in sufficient detail for a K1/K2 quality assessment
  - Only raw data for woodlice provided so far, additional information required

2.5. TD test results of massive silver

- Status
  - Experiments completed in Q1 2013
  - Final reports circulated for comments; DL: 16th July 2013
  - Any comments?

3. Update on external research

3.1. OECD WPMN (Nano)Ag data (1)

JRC « NM 300 K » studies

- Background: OECD WPMN Sponsorship Programme on the Safety Testing of Manufactured Nanomaterials
  - OECD Database on Research into the Safety of Manufactured Nanomaterials will be screened for information on silver
- Comprehensive testing on-going at European Commission Joint Research Centre (JRC)/Institute for Health and Consumer Protection (IHCP)
- Supported by Nanotechnology Industries Association (NIA) and its member companies
- Uses representative manufactured nanomaterials
- Silver sample called "NM-300 Silver"
- Comprehensive characterisation available
  - Purity, stability, imaging (SEM/TEM), size, silver ion release
  - http://publications.jrc.ec.europa.eu/repository/handle/111111111/16076

3.1. OECD WPMN (Nano)Ag data (2)

JRC « NM 300 K » studies

- via NIA member RAS Chemicals, PMRC has received a list of on-going or already concluded studies relating to toxicology, ecotoxicology, exposure assessment etc… on this nanoAg
- list reviewed by consultants EBRC and WCA

- **Human Health:**
- some of the studies directly address formal REACH data-requirements, such as skin/eye irritation and skin sensitisation

  → EBRC recommends to obtain these studies asap
- others are e.g. on cytotoxicity, oxidative stress / inflammation / immune response, cell culture morphology …

  → Necessity of access to these can only be decided over the next couple of month during the hazard assessment (some may not be available before end 2013)

3.1. OECD WPMN (Nano)Ag data (3)

TEST METHOD(S)	DATE AVAILABLE	RELEVANT TO DOSSIER ENDPOINT	"GAP" IN DOSSIER
OECD 301 - Ready Biodegradability	End 2013	No	
OECD 302B - Inherent Biodegradability	End 2013	No	
Batch test	End 2013	Yes	No
OECD 221 - Lemna minor - Growth inhibition	End 2013	Yes	No
72h Daphnia magna	finished	Yes	No
6 month Daphnia study (reproduction and behaviour)	finished	Yes	No
Daphnia magna (NM 300 K versus AgNO3 comparision of lethal toxicity)	finished	Yes	No
OECD 202 (acute daphnia)	End 2013	Yes	No
OECD 211 (chronic daphnia)	End 2013	Yes	No
OECD 202 (acute daphnia)	End 2013	Yes	No
Vibrio fisheri	End 2013	Yes	No
OECD 202 Daphnia magna	End 2013	Yes	No
Danio rerio (zebra fish)	End 2013	Yes	No
OECD 201 Anabaena flos-aquae (cyanobacteria)	End 2013	Yes	No
OECD 219 - Sediment-Water Chironomid toxicity using spiked water	September 2012	Yes	No
OECD 222 - Earthworm reproduction	September 2012	Yes	No
ISO 11267 - Folsomia candida	End 2013	Yes	No
OECD 222 (Earthworm reproduction) - Exposure by contaminated sewage sludge	End 2013	Yes	No
ISO/DOS 17512-1 (Earthworm avoidance) - Exposure by contaminated sewage sludge	End 2013	Yes	No
OECD 232 - Folsomia candida, Reproduction test in soil	End 2013	Yes	No
OECD 226 - Predatory mite reproduction test in soil	End 2013	Yes	No
luminescent bacteria inhibition test (NM 300 K vs AgNO3)	finished	No	
DIN 38412 L 48 - Toxicity test with Arthrobacter globiformis for contaminated solids	not reported	Yes	Yes
DIN ISO 17155 - Determination of abundance and activity of soil microflora using respiration curves - Exposure by contaminated sewage sludge	not reported	Yes	Yes
DIN ISO 15685 - Determination of potential nitrification and inhibition of nitrification -- Rapid test by ammonium oxidation - Exposure by contaminated sewage sludge	not reported	Yes	Yes
Vibrio fisheri	not reported	No	No
OECD 201/ISO 8692	not reported	No	No
DIN ISO 15685 - Soil quality -- Determination of potential nitrification and inhibition of nitrification -- Rapid test by ammonium oxidation	End 2013	Yes	Yes
OECD 217 - Soil microorganisms: carbon transformation	End 2013	Yes	Yes
OECD 303 - Simulation Test - Aerobic Sewage Treatment	End 2013	Yes	Yes
OECD 209 - Activated Sludge, Respiration Inhibition Test	End 2013	Yes	Yes
Microcosm test using Hypoaspis aculeifer and Arabidopsis thaliana	End 2013	Yes	No
Fish embryo toxicity test (OECD draft guidance)	End 2013	Yes	No

3.3. Feed-back on SETAC meeting May 2013

- Silver and Silver NP
  - Still big interest in nano Ag
  - New data consistent with our read-across approach
  - P. Simpson presentation on nano Ag literature
  - K. Langdon presentation initial results CSIRO programme
  - Canadian mesocosm study on Ag NP/ artificial lake project (paused)
- Other
  - Interesting models on env. fate/behaviour of NPs (e.g., M. Scheringer, Hydroqual, Ed Tipping)
  - ECHA repeatedly emphasizing need for robust substance identification in Reach dossiers

3.3. Feed-back on SETAC (2)

- SETAC Europe Special Science Symposium on Nanomaterials
  - 2-3 October 2013 in Brussels
  - Focus on fate and ecotox of NP in soil/sediment
  - http://sesss07.setac.eu/home/?contentid=625&pr_id=624
  - Generic metals presentation by Arche
  - No potential for platform presentation specifically on silver
  - Poster sessions at these events are well attended
    - Deadline for abstract submission – 15th August, 2013
    - Proposed abstract title "Risk Assessment of nanosilver under REACH"

4. Planned testing

4.1. Marine SSD (1)

- Existing $PNEC_{marine}$ is based on a deterministic approach
  - Based on most sensitive reliable data
  - Require relatively large Assessment Factors (AF)
  - Vulnerable to new data – PNEC can only go down
- SSD based PNEC attract lower AF (1-5) and are less vulnerable to new data as whole dataset is used during derivation
- Gap analysis
  - Freshwater and marine datasets cannot legitimately be combined because of differences in toxicity (result of speciation)
  - Additional **five NOEC/EC10 from three marine taxa** are required
- Costs estimated at € 40 – 55 k
- Refined through seeking proposals from contract research organisations in Europe, US and Australasia

4.1 Marine SSD (2)

Lot	Taxa	Description
1	Marine microalgae	Standard 72 hour marine algal growth inhibition test with Skeletonema costatum (ISO 10253:2006).
2		Standard 72 hour marine algal growth inhibition test with Phaeodactylum tricornutum (ISO 10253:2006).
3	Macrophyte or marine macroalgae	Chronic toxicity test with marine macroalgae – US-EPA Test Method 1009.0 - Red Macroalga, Champia parvula, Reproduction.
4		Other chronic toxicity test with marine macroalgae i.e. germination or reproduction assay. Please suggest any method that you have available and provide details of the assay.
5	Family in any class of crustacea or phylum not represented	Chronic ecotoxicity test with Brachionus plicatilis (marine rotifer) – please provide details of assay.
6		Chronic ecotoxicity test with Artemia franciscana (formerly Artemia salina) – please provide details of assay.
7		Chronic ecotoxicity test (reproduction assay) with copepod crustaceans (Tisbe battagliai, Nitocra spinipes, Amphiascus tenuiremis or Acartia tonsa) e.g. according to either ASTM E2317 - 04(2012), or according to draft OECD methodology (see ENV/JM/MONO(2011)38).
8		Other chronic ecotoxicity test with a crustacean species outside of class Malacostraca - please provide details of assay.

- Laboratories invited to provide costs on eight “lots”
  - Allow final programme to be selected to optimise taxonomic coverage and minimise costs

4.2. Biotic Ligand Model (BLM) development (1)

- Zn, Ni, Mn, Cu (Pb) have developed relationships between water physico-chemistry (e.g pH, DOC, Ca) and chronic ecotoxicity - BLMs
  - Bioavailable EQS for Ni and Pb recently adopted under WFD
  - Zn and Cu relationships used under REACH and ESR
- No comparable relationship currently available for silver
  - (free) ionic silver in laboratory studies is very toxic
  - The speciation and partitioning behaviour of silver in the environment is predicted to reduce free ionic silver
  - Sulfide binding is relatively more important for silver
  - There is uncertainty surrounding predictions of free silver activity using speciation modelling tools – primarily because of sulfide
  - Reliable evidence to link speciation and partitioning behaviour to chronic aquatic silver toxicity is not yet available

4.2. Biotic Ligand Model (BLM) development (2)

1. The speciation behaviour of silver predicted by existing models (i.e. WHAM) should be refined though an improved understanding of the complexation chemistry of silver with reduced sulfide ligands
   - Could be conducted by various partners, including CEH (Steve Lofts / Ed Tipping), UK Environment Agency (CRS field programme) and Jim Kramer (McMaster University)
   - € 80 – 100 K (estimated cost)
2. Empirically demonstrate the influence of water physico-chemistry on chronic silver ecotoxicity
   - Chronic ecotoxicity test (fish, daphnia, algae) using reference natural waters (extensively characterised)
   - Assess extent of intra and inter-species variability in toxicity - feed into BLM development
   - Phased campaign: Phase 1 € 175 – 230 K (estimated cost)

5. Exposure scenarios

5.1. Updated ENV ES including NanoAg (1)

- SpERCs used for Exposure Assessment in 2010 dossier have been refined (v2.1)
- Release factors to air have changed, but insignificantly
  - no or little difference to the PECs and RCRs
- Release factors for water have decreased significantly (5-10x) as silver has a high partition co-efficient (Kd = 190,546)
  - Aquatic PECs and RCRs will improve significantly
- Release factors to soil removed (previous SpERCs estimated direct releases to soils, which would be illegal)
  - Soil assessment should now be based on deposition from air and sewage application only
- Recommendation that implications of revised exposure assessment based on v2.1 SpERCs are investigated
- Dependence on higher tier modelling likely to be reduced

5.2. Updated HH ES including NanoAg, identified gaps & proposed next steps (2)

Worker exposure scenarios – update to reflect nanoAg

- Are existing worker exposure scenarios of Ag metal capable to demonstrate safe production/use of nanoAg and which modifications are required ?

- The following ES have been identified as likely relevant
  - 1.Manufacture, refining and recycling of silver metal (9.1)
  - 2.Use of silver metal in re-melting and alloying (9.2)
  - 3.Use of silver metal in the production of batteries (9.3)
  - 4.Use of silver metal in electronics, contact materials and electroplating (9.4)
  - 5.Use of silver in the production, preparation and use of chemicals, preparations or catalysts (9.5)
  - 6.Professional uses of silver containing preparations (excluding alloys) (9.8)

- Consortium to approve this list, please! Or nominate additional uses/scenarios !

5.2. Updated HH ES including NanoAg, identified gaps & proposed next steps (3)

Worker exposure scenarios – update to reflect nanoAg

Three aspects:

1) inhalation/dermal DNELs applicable to nanoAg ? (not covered here!)

2) exposure assessment / quantification of exposure levels applicable to nanoAg?

3) is prescribed RPE applicable to nanoAg to conclude “no risk” ?

2) exposure assessment / quantification of exposure levels applicable to nanoAg?

- Exposure estimates based on measured data (sufficient number of personal exposure measurements reported for 2010 ES), or analogous data (Ag_2O handling), or MEASE.

5.2. Updated HH ES including NanoAg, identified gaps & proposed next steps (4)

Worker exposure scenarios – update to reflect nanoAg

2a) Process intrinsic emission potential

- existing ES cover various process steps / workplaces, such as hot processes, wet processes, powder handling incl. sifting…
- the intrinsic emission potential is reflected and not considered to be significantly different between Ag and nanoAg
- Industry to confirm!
- Spraying relevant for nanoAg suspensions or powders?

2b) Substance intrinsic emission potential:

- low for suspensions
- higher by factor of ca. 3 for nanoAg compared to "normal" Ag powder, based on dustiness
- only one dustiness result available from one batch of nanoAg
- coatings not considered → conduct further dustiness tests

5.2. Updated HH ES including NanoAg, identified gaps & proposed next steps (5)

Worker exposure scenarios – update to reflect nanoAg

2c) Efficiency of LEV

- literature shows that LEV appears to be more efficient for smaller particles, incl. nanoAg
- current (MEASE) scenarios considered (default) LEV efficiency of 78%
- considered to be equal or better for nanoAg

  → nanoAg covered (conservative approach)

3) Applicability of PPE /RPE

- literature is inconclusive (depending on study design, a 5% penetration threshold of masks may or may not be exceeded by nano particles)
- scenarios (type of masks/breathing rates) in literature showing excess penetration for nanos not fully applicable to our ES
- together with be better LEV efficiency for nanos, it is concluded that the type of RPE describe in the current ES is *in principle* sufficient for nanoAg

5.2. Updated HH ES including NanoAg, identified gaps & proposed next steps (6)

Worker exposure scenarios – update to reflect nanoAg

- Conclusions
  - key difference between nanoAg and non-nanoAg is the substance intrinsic emission potential (dustiness, by factor of ca. 3)
- Immediate action by/at September 4th meeting at the latest
  - → PMRC to confirm that the exposure scenarios and tasks/processes selected are those that will be adapted to cover nanoAg (see EBRC report, page 3/4)
  - → PMRC to confirm if spraying is applied to nanoAg or not
  - → PMRC to nominate additional uses/task/processes asap
  - → PMRC to state number of companies/sites/workplaces involved in nano-Ag production and use and to make a list of what happens at which site
  - EBRC by 10 October 2013:
  - Inclusion of more restrictive RPE for powder handling for nano-Ag
  - Inclusion of more restrictive RPE for spraying for nano-Ag
  - send revised draft ES to PMRC secretariat

5.2. Updated HH ES including NanoAg, identified gaps & proposed next steps (7)

Worker exposure scenarios – update to reflect nanoAg

- To be started now, but not absolutely necessary by end of this year:
  - different nano-Ag coatings / dustiness
  - should be possible to include in 2013 work
    - → Action EBRC (K.Klipsch, by end July) to screen available data on coatings and propose samples for dustiness tests (modified Heubach method as usual, to ensure comparability with earlier results)
  - EBRC to suggest sampling/monitoring campaign based on the information above (number of sites / locations / what is done where…)

    (no realistic chance to get this done in 2013!)

5.2. Updated HH ES including NanoAg, identified gaps & proposed next steps (8)

Worker exposure scenarios – update to reflect nanoAg

Dermal exposure (workers) - current text in silver metal ES:

"Due to the negligible dermal absorption of metallic silver, the dermal route is not a relevant exposure path for metallic silver and a DNEL for dermal effects has not been derived. Thus, dermal exposure is not assessed in this exposure scenario."

As it stands now, it is anticipated that this can remain the same for nanoAg. In the dossier, this will be substantiate by the following data (potentially more, if found in new literature):

- low dermal absorption of nanoAg (Larese, 2009)
- low infiltration but not penetration of inert (polystryrene) NPs (Campbell, 2012)
- absence of any relevant effects in acute dermal toxicity, skin irritation and skin sensitisation studies with nanoAg (Kim, 2012)
- studies by EC Commission JRC (results not yet known to EBRC, partly on-going):
  - epicutaneous test for the analysis of the irritating effects to human skin
  - 48h Penetration of human skin donor with 0,1% NM 300 K
  - 3D Skin model

5.2. Updated HH ES including NanoAg, identified gaps & proposed next steps (9)

For discussion: Consumer Exposure, particularly for nanoAg

- scope of work to be possibly requested from EBRC not yet defined
- consumer/Service-Life Scenarios for Ag currently include e.g. silver in jewellery, cutlery or tableware and in batteries
- potentially wide dispersive use and possible consumer contact with nanoAg in preparation and articles is not yet considered
- where to draw the line between obligation of REACH Registrants to assess this ("coverage of whole life-cycle"), as compared to products under cosmetics directive, medical use…. ?
- open discussion needed and PMRC/members to specify scope of work

5.2. Updated HH ES including NanoAg, identified gaps & proposed next steps (10)

EBRC proposal for 2013 dossier updates

- Health hazard assessment:
  - update literature search, gather new data, specifically on nanoAg (started)
  - updated IUCLID dataset with new data
  - consider new data (specifically NTP studies, nanoAg studies) to update hazard conclusions and DNELs IF APPLICABLE
  - update documentation of read-across/grouping between different silver substances (ECHA suggest read-across table matrix, which we do not yet have for silver substances)
  - substantiate – where applicable – differentiation between different forms: massive Ag / powder Ag / nano Ag / poorly soluble / soluble substances …
  - update endpoint summaries in IUCLID (incl. substantially extended DNEL section)
  - update CSRs

5.2. Updated HH ES including NanoAg, identified gaps & proposed next steps (11)

EBRC proposal for 2013 dossier updates

- Worker exposure assessment:
  - update IUCLID section 3.5 (life cycle description) – some changes from IUCLID 5.3 to 5.4/5.5.
  - editorial changes to exposure scenarios to reflect updated guidance and experience gained of the last three years, e.g. on PPE, cleaning/maintenance …
  - **inclusion of nanoAg consideration in current Ag ESs (other dustiness, efficacy of PPE, LEV etc…) → see strategy paper**
  - update of one Ag_2O scenario to reflect reduced dustiness (damp powder)
  - add a new identified use for $AgNO_3$ solutions
- OPTIONAL/FUTURE
  - Use of CHESAR / fill new IUCLID section 3.7
    - → Simplifies future updates of CSR, IUCLID, eSDS…
  - Use of standard phrases to facilitate supply chain communication (standard phrases not yet available specifically for metal/inorganics)

5.2. Updated HH ES including NanoAg, identified gaps & proposed next steps (12)

EBRC proposal for 2013 dossier updates

- For discussion: Consumer Exposure, particularly for nanoAg
  - scope of work to be possibly requested from EBRC not yet defined
  - consumer/Service-Life Scenarios for Ag currently include e.g. silver in jewellery, cutlery or tableware and in batteries
  - potentially wide dispersive use and possible consumer contact with nanoAg in preparation and articles is not yet considered
  - where to draw the line between obligation of REACH Registrants to assess this ("coverage of whole life-cycle"), as compared to products under cosmetics directive, medical use…. ?
  - open discussion needed and PMRC/members to specify scope of work

5.3. Waste ES

- Status
  - Draft report received from Arche
  - PMC meeting with Arche 6th June 2013
  - Initial conclusion: safe use demonstrated for all scenarios
- Next steps
  - Arche to finalise report by end August
  - PMC to then circulate report to Ag WG

5.4. New uses to be reported

- Dossier update 2013 will also update uses, if necessary
  - e.g., additional uses for AgNO3
- Any additional uses to report in dossiers?
- Timing: asap

6. AOB, next meetings and closing remarks

Rob Garrett

6.1. Contribution from DuPont on WCA report

- Comments provided by Du Pont on review of the environmental fate and ecotoxicity of nanosilver
- Conference call held to discuss and agree actions (circulated to the WG)
- Agreement not yet reached on comment relating to reliability assessment of non-standard acute fish data
- Currently consulting with TPA to resolve issue

6.2. Investigation of widely used nanomaterials

- Study by German UBA, 2013
  - *"Investigation of widely used nanomaterials (TiO2, Ag) and gold nanoparticles in standardised ecotoxicological tests"*
  - *http://www.umweltdaten.de/publikationen/fpdf-l/4462.pdf*
  - Currently under review (460-page report)
  - By end July 2013

6.3. Date of next meeting

- Proposed meeting dates
  - 4 September (10:30 – 16:00) in Brussels
    - Progress of on-going tests, actions, and various documents
    - Status of and comments on IUCLID 5 file
    - Status of ES and next steps
    - Preparation of meeting with RIVM on 20 Sep
  - 23 October (10:30 – 16:00) in Brussels
    - Detailed review of IUCLID 5 file
  - 3 December (10:30 – 16:00) in Brussels
    - Finalisation of dossier update