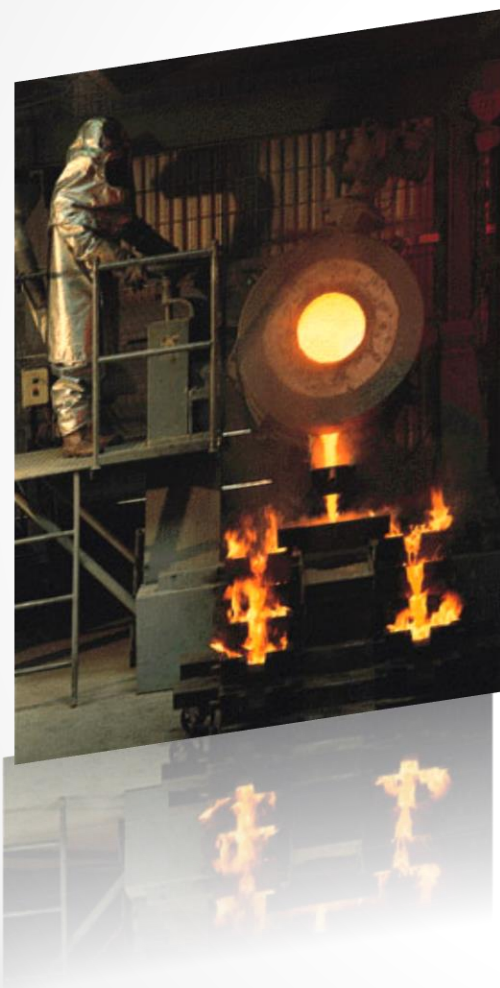




Precious Metals & Rhenium Consortium
Brussels, 18 June 2013



PM Refiners WG Meeting



1. Welcome & Introduction



Edwin BROECKAERT



- Reminder on Confidentiality and Competition Law
- Tour de table and apologies
- Approval of the Agenda
- Approval of minutes of last meeting (13 Dec 2012)
 - including status of action points





Agenda

1. Welcome and introduction
2. Classification
3. Status of PM Refinables ID and tonnage
4. Update on workplace exposure assessment of the Refinables
5. Update on environmental emissions assessment of the Refinables
6. Update on activities Eurométaux REACH intermediate task force
7. Template CSR for Refinables
8. Authorisation - substances on SVHC list of relevance to the PM sector
9. Next steps, AOB, next meetings/calls and closing remarks



Actions (1)

Action	Who?	Status
<i>Substance identification & SCC determination</i>		
Update ID Card of each Refinable to reflect main outcomes of survey and workshop assessing substance identity and SCC and update registration strategy accordingly	KA	Ongoing
Update factsheets with outcomes of survey and workshop	KA	Done
Update assessment document (non-)waste, intermediate and UVCB status of PM Refinables with outcomes of survey and workshop	KA	Done
Check all constituents have been reported in ID Cards and inform PMC sec on missing ones	PMC Members	Ongoing
Ensure that all Refinables registered as PM Refinables are truly from PM Refining (not other NFM)	PMC Members	Done?
Prepare a list of generic arguments applicable to all companies to demonstrate the (non-)waste status of the Refinables, with reference to the Raw Materials Initiative	KA	Ongoing
Document company-specific analysis and arguments to demonstrate the (non-)waste, by-product, intermediate and UVCB status of the Refinables	PMC Members	Done?
Prepare decision tree on how to comply with REACH regulation requirements (waste/by-product etc.)	KA	Ongoing
Split PM slags, slimes & sludges and flue dust in several sub-groups according to source (Ag, Au, PGM) and process	Designated task force	Ongoing
After splitting these three Refinables into sub-groups, send survey to check which company's Refinables fit into which sub-group	PMC secretariat	Aug-Sep
<i>Eurométaux REACH Intermediate Task Force</i>		
Prepare data-sharing agreement format outlining: background, purpose, access restriction and compensation mechanism to be formally approved by all data providers	Eurométaux (with PMC support)	Done
Finalise and publish the multi-metallic (E-)TRV database for use in risk assessment of UVCB under REACH, including disclaimer	Eurométaux	Done
Prepare input on substance identification of UVCB and metal-specific PROCs for 8 January 2013 Eurométaux/ECHA workshop	Eurométaux (with PMC support)	Done
Continue development of guidance to risk assess inorganic UVCB under REACH, including test cases to demonstrate applicability of the developed approaches	Eurométaux (with PMC support)	Ongoing



Actions (2)

Action	Who?	Status
Updates (only SCC compliant companies)		
Come up with a general statement on PROCs 22 and 26 to be added to Appendix 3 for the PM Refinables, in addition to company-specific justification as needed	EBRC to draft & check with EM	Done
Justify PROCs for each step of the intermediate's production or life-cycle (on the basis of Annex 4.1 and 4.2) in the Appendix 3 of each and every SCC intermediate	PMC Members	
Update individual IUCLID 5 file with Appendix 3 and justified PROCs	PMC Members	
Upgrades		
Send signed and dated template letter to M Rasenberg, providing ECHA with the names of the LEs and the dossier registration number(s) of the intermediates undergoing upgrades	PMC Members	Done
HH exposure assessment for upgrades		
Circulate EBRC approach towards preparation of sector-wide and site-specific Exposure Scenarios	KA	Done
Develop strategy to take into account speciation of the constituents during the risk assessment	EBRC	Ongoing
Test proposed approach	EBRC	
Once TRV are compiled in the Eurométaux multi-metallic (E-)TRV database, continue preparation of sector-wide Exposure Scenarios for all PM Refinables, starting with those that will not be further split into sub-groups (see AP9)	EBRC	
Develop site-specific Exposure Scenarios for all PM Refinables	EBRC	
Check how site-specific Exposure Scenarios could be communicated down the supply chain	EBRC	
Consider need for optional stand-alone tool and provide feedback to EBRC	PMC Members	
Environmental exposure assessment for upgrades		
Once ERV are compiled in the Eurométaux multi-metallic (E-)TRV database, prepare GES	WCA	Ongoing
Consider need for site-specific Exposure Scenarios	All	
Cease manufacture		
Inform ECHA by using the 'cease manufacture' functionality in REACH-IT (cf. waste factsheet in Annex 3.1)	PMC Members	Done
Inform PMC secretariat of intentions to cease manufacture	PMC Members	



2. Classification

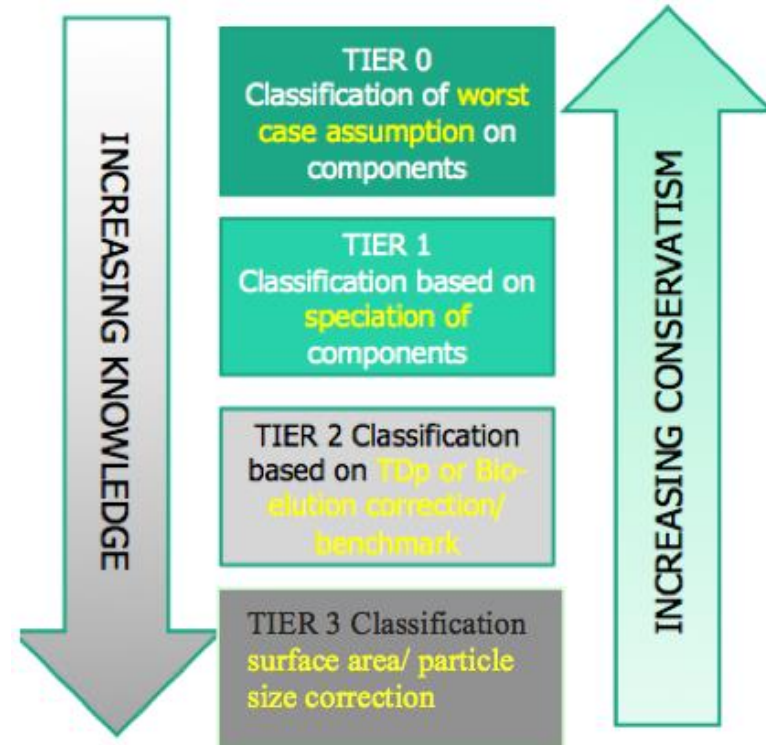


Katrien ARIJS



2.1. Demonstration MeClas

- Metals Classification Tool: web enabled classification tool always updated to the latest classification rules
- Tiered approach allowing progressive refinement
 - Elemental concentrations
 - Speciation data
 - Specific mineral content
 - Test data on the complex material
- Developed jointly by Eurométaux and ARCHE
- License needed to use MeClas



New Financial concept

- **REASON:** meeting the new challenges
 - *keep MECLAS continuous up to date on metal aspects and*
 - *promoting use by Downstream Users and Regulators*

- **HOW:**
 - Make MECLAS freely available while maintaining and updating it
 - Needed Funding/Year \pm 45.000 €
 - Funding by Eurometaux/ICMM* 15.000 €
 - “Remaining funding” by full license holders (\pm 10 consortia)



MeClas updates

1. Goodwill metal consortia to provide their new/updated data
2. Regular checks of the ECHA dissemination website (especially after REACH/CLP 'milestones') / mailings to consortia
3. Linked to updates of the MMD

2013 REACH registration deadline -> EM will send a request to the different metal consortia to provide new/updated data for the MMD over the next weeks/after the REACH forum.

Note: MeClas classifies and ranks ERV data according to quality and following a strict procedure. New higher quality information overrules older or lower quality info after assessment by the quality control committee

User benefits

	Free User	Funding User
Defining compositions and calculate classification of complex inorganic materials	Max 5 compositions	Unlimited
Adapt consortia reference samples	Unlimited	Unlimited
The right to a seat in the Steering team to define the priority and timing of the updates according to the budget possibilities		X
Helpdesk + training		X*

* Depending on the level of funding



MeClas

User management

Need to register on www.meclas.eu



MeClas
METALS CLASSIFICATION TOOL

LICENSE

You must [register](#) in order to access the MeClas tool and all supporting information. A short description of the [Terms of conditions](#) can be downloaded. The [manual](#) gives an idea on the basic functionalities of MeClas.

NEWS

Version 2.0 is released. Main new features are 2nd ATP updates of mixture ruling for environment and sensitization, updated background database, and more...

LOGIN

Username:

Password:

[register](#) / [forgot password?](#)

Welcome to the MeClas website

The smartest way of fulfilling your classification obligations

Most complex materials in the metals sector contain a spectrum of different metals (compounds) and minerals, which therefore requires extensive physico-chemical and ecotoxicity reference data sets. The MeClas tool offers a unique web-enabled classification tool that is always updated to the latest classification rules. The tool comprises several tiers, aimed at the progressive refinement of classification through recognition of speciation, specific mineral content and the availability of test data on the complex material in question.

A licence is needed in order to use the tool. You must register and obtain a Login account in order to access the MeClas tool and all supporting information.

The MeClas tool has been developed jointly by EURO-METALUX and ABOHE based on initial





Functionalities

- MECLAS enables:
 1. Companies to create and manage their own company-specific compositions
 2. Consortia (or Technical Lead Companies) to create and manage reference compositions
 3. Companies to edit and manage company-adapted versions of the Consortia reference compositions
 4. Consortia/companies to edit and manage ores/concentrates compositions
 5. Consortia/companies to calculate classifications and review intermediate calculations and assumptions

Functionalities

MECLAS: THE SMARTEST WAY TO FULFILL YOUR CLASSIFICATION OBLIGATIONS [Home](#) [Contact](#) [FAQ](#) [help](#)

HOME **TOOL** **ABOUT MECLAS** **CONTACT**

- OWN COMPOSITION
- IMPORT REFERENCE SAMPLE CODE
- USE OF REFERENCE
- ADAPT REFERENCE SAMPLE
- BACKGROUND DATA
- CALCULATE CLASSIFICATION

NEWS


Version 2.0 is released. Main new features are 2nd ATP updates of mixture ruling for environment and sensitization, updated background database, and more...

Logged in as [\(view profile / logout\)](#)

UPGRADE

Reached your maximum number of compositions?

Find out how to upgrade your account by contacting info@meclas.eu



MeClas
METALS CLASSIFICATION TOOL

Use of reference sample Import code from consortium



🔑 UPGRADE

Reached your maximum number of compositions?

Find out how to upgrade your account by contacting info@meclas.eu

☰ NEWS

Version 2.0 is released. Main new features are 2nd ATP updates of mixture ruling for environment and sensitization, updated background database, and more...

➔ LOGIN

Logged in as

([view profile](#) / [logout](#))

Import reference sample code

If you have received a composition code you can enter it in the field below to gain access to the input and output data of this composition.

Code (case-sensitive!):

submit code

Use of reference sample

Import code from PMC

Composition	Import code
PM: DORE Impure Doré *	5LINP4N0RX30060844
PM: DORE Pure Doré *	5QZ7B1HNXJ30060844
PM: Matte (2) *	45LE75ZDX8B18081154
PM: SLAGS boro-silicate (3a) *	4503MT0YXIM31081003
PM: SLAGS phosphate type (3b) *	5Q6PMB44CW30060844
PM: SLAGS silicate type (3c) *	5CKVZKJ67K30060844
PM: SLAGS borate type (3d) *	5W26TRM3DI30060844
PM: SLAGS carbonate type (3e) *	45CMA4C2JAN20091053
PM: Slimes and sludges (4) *	45L9144S8OB18081339
PM: Residues from copper-iron-lead-nickel matte leaching (5.1) *	45RNJTVKA4U18081339
PM: Residues from copper speiss leaching (5.2) *	45V1URVOGU518081332
PM: Spent electrolyte from silver electrolysis (6.1) *	452GUI3Q9WP18081340
PM: Spent electrolyte from gold electrolysis (6.2) *	459YCU710M118081340
PM: Flue dust (7) *	45HZZVH6NVX18081340
PM: Residues, precious metal refining cementation (8) *	45PJ95NRV4E18081340
PM: Materials for reclaim - PM with or without supports (9.1) *	45QXYVD34HW18081341
PM: Materials for reclaim - PM in bricks, crucibles, trays, etc. (9.2) *	45A68PYPTRL18081341
PM: Materials for reclaim - PM production by-products (9.3) *	45DAI9DUJ4T18081342
PM: Lead bullion precious metal rich (10) *	453BOM7P8HU18081342

Use of reference sample

Select reference sample



UPGRADE

Reached your maximum number of compositions?

Find out how to upgrade your account by contacting info@meclas.eu

- HOME
- TOOL
- ABOUT MECLAS
- CONTACT
- OWN COMPOSITION
- IMPORT REFERENCE SAMPLE CODE
- USE OF REFERENCE SAMPLE
- ADAPT REFERENCE SAMPLE
- BACKGROUND DATA
- CALCULATE CLASSIFICATION
- NEWS

Version 2.0 is released. Main new features are 2nd ATP updates of mixture ruling for environment and sensitization, updated background database, and more...

Logged in as
([view profile](#) / [logout](#))

Adapt reference sample

The objective of the input sheet is to adapt the elemental and/or the speciation composition of a reference sample. For this, input specific values will overwrite reference values where needed.

Enter a concentration in %. For example, 5% should be entered as "5" and not as "5%" or "0.05". Note that for speciation analysis, the percentage should be expressed per metal and per total complex metal mixture.

More guidance can be found in the [MeClas Technical Manual](#).

Complex metal mixture selection

Select a metal mixture

Use of reference sample

Complete elemental composition

Surface area (m2/g) from reference material tested in TDP test: /

Surface area (m2/g) of other than tested sample: (ref: /)

[Calculate >](#)

Element	Concentration% (user input)	Concentration% (ref sample)	Distribution (ref sample)	Species / Classification entry	Source	TDP % 7 days	TDP % 28 days test	Bio-elution % (at 200 mg/L)
Ag	<input type="text"/>	20.50000		Ag massive	not classified	100.00000		
				Ag (other not classified compounds/species)	not classified			
			100.00000	Ag compounds	self classification EPMF			
				Ag powder	self classification EPMF			
				Ag2O	self classification (ECHA dissemination website)			
Al	<input type="text"/>			Al massive/Al compounds	not classified			
				Al powder (pyrophoric)	Annex VI			
				Al powder (stabilised)	1st ATP			
				Al silicate	not classified			
As	<input type="text"/>	28.00000	4.13000	As	Annex VI	100.00000		
				Arsenic acid and its salts	Annex VI			

Use of reference sample

Calculate classification



UPGRADE

Reached your maximum number of compositions?

Find out how to upgrade your account by contacting info@meclas.eu

NEWS

Version 2.0 is released. Main new features are 2nd ATP updates of mixture ruling for environment and sensitization, updated background database, and more...

LOGIN

Logged in as
([view profile](#) / [logout](#))

Calculate classification

Metal mixture:

Cu B06 Slimes

Version:

Cu B06 Slimes (default adapt r)

Output:

Tier 0

Tier 1

Tier 2

[< Edit composition](#)

Calculate Classification

Please choose a **composition** and **tier** in the menu on the left.

Tier 0 results are based on worst-case assumptions on components. Refining can be carried out by determining the appropriate speciation of the components (Tier 1) or bio-availability correction (Tier 2). Tier 3 foresees refinement based on particle size.

Please note that bio-elution and Tier 3 are scientifically sound methods under development, and are not formally accepted yet.

In case of classification, [further refinement \(f.e. TDP data\)](#) can be obtained from the consortia for the major drivers.

More guidance can be found in the [MeClas Technical Manual](#).

MECLAS is designed to classify inorganic mixtures. Please note that for the classification of a 100% substance you need to go to the MeClas background database, which you can find in the "TOOL" tab.

Use of reference sample

Calculate classification

Calculate classification

Metal mixture:

Version:

Output:

[< Edit composition](#)

Output Tier 1



Please note that for the element **Ba** the **distribution % > 100%**. This could result in an overestimation of the classification.

CLP



Signal word: **Danger**

Endpoint	Classification	Major driver
Acute toxicity-oral	Cat. 2; H300	CoSO ₄ , ZnSO ₄ , Sb compounds, with the exception of the tetroxide (Sb ₂ O ₄), pentoxide (Sb ₂ O ₅), trisulphide (Sb ₂ S ₃), pentasulphide (Sb ₂ S ₅) and those specified elsewhere in Annex VI, Se, NiSO ₄ , lead compounds with the exception of those specified elsewhere in Annex VI, CuSO ₄ , barium salts, with the exception of barium sulphate, salts of 1-azo-2-hydroxynaphthalenyl aryl sulphonic acid, and of salts specified elsewhere in Annex VI, As ₂ O ₃ / AsO ₃ , Arsenic compounds, with the exception of those specified elsewhere in Annex VI, As, Te compounds (self classification)
Acute toxicity-dermal	Not classified	/
Acute toxicity-inhalation	Cat. 4; H332	Sb compounds, with the exception of the tetroxide (Sb ₂ O ₄), pentoxide (Sb ₂ O ₅), trisulphide (Sb ₂ S ₃), pentasulphide (Sb ₂ S ₅) and those specified elsewhere in Annex VI, Se, NiSO ₄ , lead compounds with the exception of those specified elsewhere in Annex VI, barium salts, with the exception of barium sulphate, salts of 1-azo-2-hydroxynaphthalenyl aryl sulphonic acid, and of salts specified elsewhere in Annex VI, Arsenic compounds, with the exception of those specified elsewhere in Annex VI, As
Skin corrosion/irritation	Cat. 1B; H314	As ₂ O ₃ / AsO ₃
Serious eye damage/eye irritation	Cat. 1; H318	ZnSO ₄ , As ₂ O ₃ / AsO ₃
Respiratory or skin sensitisation	Skin Sens. Cat. 1; H317	NiSO ₄
Germ cell mutagenicity	Not classified	/



MeClas

Use of reference sample

Check calculations for better understanding

Cu B06 Slimes (default adapt re)

Output:

Tier 0

Tier 1

Tier 2

[< Edit composition](#)

Classification Entry	Concentration (%)	Acute Toxicity - oral	Acute toxicity oral: Conc/ATEi	Acute Toxicity - dermal	toxicity dermal: Conc/ATEi	Acute Toxicity - inhalation
CoSO4	0.789001069011	Cat. 4; H302	0.00157800213802			
ZnSO4	0.963016059957	Cat. 4; H302	0.00192603211991			
Sb compounds, with the exception of the tetroxide (Sb2O4), pentoxide (Sb2O5), trisulphide (Sb2S3), pentasulphide (Sb2S5) and those specified elsewhere in Annex VI	9.8	Cat. 4; H302	0.0196			Cat. 4; H302
Se	10.4	Cat. 3; H301	0.104			Cat. 3; H301
NiSO4	0.975567444159	Cat. 4; H302	0.00195113488832			Cat. 4; H302
lead compounds with the exception of those specified elsewhere in Annex VI	11.6	Cat. 4; H302	0.0232			Cat. 4; H302
inorganic compounds of mercury with the exception of mercuric sulphide and those specified elsewhere in Annex VI	1E-004		2E-005		2E-005	
CuSO4	163.258977748	Cat. 4; H302	0.326517955497			
barium salts, with the exception of barium sulphate, salts of 1-azo-2-hydroxynaphthalenyl aryl sulphonic acid, and of salts specified elsewhere in Annex VI	15.3	Cat. 4; H302	0.0306			Cat. 4; H302
As2O3 / AsO3	31.6785368864	Cat. 2; H300	6.33570737727			
Arsenic compounds, with the exception of those specified elsewhere in Annex VI	2.8504	Cat. 3; H301	0.028504			Cat. 3; H301

Use of reference sample

Print/export classification

Calculate classification

Metal mixture:

Version:

Output:
 Tier 0
 Tier 1
 Tier 2

[< Edit composition](#)

Output Tier 1



Please note that for the element **Ba** the **distribution % > 100%**. This could result in an overestimation of the classification.

CLP



Signal word: **Danger**

Endpoint	Classification	Major driver
		CoSO ₄ , ZnSO ₄ , Sb compounds, with the exception of the tetroxide (Sb ₂ O ₄), pentoxide (Sb ₂ O ₅), trisulphide (Sb ₂ S ₃), pentasulphide (Sb ₂ S ₅) and those specified elsewhere in

- Always refer to MECLAS version number when using results



2.2. Refinement of skin corrosion 1A - Background

- Concern that several PM compounds in acidic solution are **skin corrosive 1A** (implying packaging group I) whereas pure acids themselves are transported under packaging group II
 - > Testing programme launched for skin corrosive 1A substances (solids + liquids) to confirm/refine classification
- **Status PM Refinables?**
- **Refinable 6.2. Au electrolyte**
 - Transported SCC isolated intermediate
 - Specific testing needed to refine classification?





Other considerations related to packaging group I

- Certain combinations of classes in mixtures may also lead to packaging group I (toxic and corrosive substances)
- Currently investigating relevance to Refinables (checking ADR regulation)



3. Status of PM Refinables ID and tonnage

• • •

Katrien ARIJS
Caroline BRAIBANT



3.1. Update/upgrade scope

- Updated substance & tonnage band declarations

Total companies	17
Companies ceasing manufacture for all Refinables	3
Companies with upgrades	9
Companies with updates	4
No response	1



Status per Refinable

Refinable	Nr of companies	Nr of updates	Nr of upgrades	Highest status	Highest tonnage band
1. Doré	8	4	4	Non-SCC intermediate	≥ 1000
2. Matte, PM Refining	4	0	4	Non-SCC intermediate	≥ 1000
3. Slags, PM Refining	7	2	5	Non-SCC intermediate	≥ 1000
4. Slimes & sludges, PM Refining	9	3	6	Non-SCC intermediate	≥ 1000
5.1. Matte leaching residues	3	0	3	Non-SCC intermediate	≥ 1000
5.2. Speiss leaching residues	0	-	-	REACH exempt	-
6.1. Ag electrolyte	3	2	1	Non-SCC intermediate	≥ 1000
6.2. Au electrolyte	1	1	0	SCC intermediate	10-100
7. Flue dust, PM Refining	6	1	5	Non-SCC intermediate	100-1000
8. Residues, PM cementation and reduction	5	2	6	Non-SCC intermediate	100-1000
9.1. Materials for reclaim - PM w/o support	5	0	5	Non-SCC intermediate	100-1000
9.2. Materials for reclaim - PM in bricks, crucibles, trays, etc.	5	0	5	Non-SCC intermediate	100-1000
9.3. Materials for reclaim - PM production by-products	3	0	3	Non-SCC intermediate	100-1000
10. Pb bullion PM Rich	1	0	1	Non-SCC intermediate	10-100
		24%	76%		

12 dossier upgrades



Cost-sharing - background

➤ 13 Dec 2012:

- PM Ref WG meeting minutes: “For the cost-sharing, it is proposed to have **equal sharing**, meaning all PMC Members going for updates/upgrades contribute to the dossier upgrade preparation.” (= in line with other consortia)
- Need to minute approval of proposal

➤ Jan 2013:

- Updated substance and tonnage band declarations received by most PMC Members
- Those ceasing manufacture (as indicated in declaration) will not contribute to the cost-sharing.



Cost-sharing - Companies not requiring upgrades

- KGHM has declared four PM Refinables all under SCC
 - SCC status **confirmed by enforcing authorities** through several exchanges with REACH Helpdesks and local inspectors
- KGHM will unlikely need upgrades in near future and finds it unreasonable to having to pay for upgrade costs after 2013 (i.e. in 2014)
- Proposal is to agree on a minimum amount to be paid by KGHM to allow legitimate access to other work under PM Refinables project (e.g. classification updates) instead of full amount
 - 1500 €/PM Refinable proposed (calculated on the basis of budget excluding upgrade related items)
- If KGHM is required to upgrade its registration dossiers in future, the corresponding amount would be paid by KGHM
- If PM Ref WG agrees to above proposal, it will be put to vote by the Assembly in Dec 2013 before the 2014 invoices are confirmed and issued



3.2. Splitting of PM slags, slimes & sludges and flue dust

- 13 Dec 2012: PM Ref WG agreed that identification, sameness check, and grouping of streams in the following UVCBs could reasonably be challenged by ECHA:
 - Slags
 - Slimes & sludges
 - Flue dust

- **Task force** set up to explore possible criteria and approaches which could be considered to split the above entries in an objective manner.
 - Members task force: D Cholakova, E Broeckaert, M Shepherd, H Stubberud



Proposal to split PM slags (1)

Proposed criteria:

- a) **Process** they originate from (e.g. pyro-metallurgical processes / melting processes)
 - Note: all slags originate from hot processes, and there are no slags resulting from hydro-metallurgical operations

- b) **Process and flux** they originate from (pyro-metallurgical processes using borax /melting processes using carbonates, etc.), depending on the influence of the flux on the assessment
 - Note: classification cluster analysis revealed that flux did not systematically influence classification clusters. From all fluxes, boron ones are more likely to influence the assessment

Source (Ag/Au/PGM refining): not applicable since pyro-metallurgical processes are applied on materials containing more than one PM

- Consider options a) and b) above and refine splitting approach based on composition of slags per process (initial smelting step/large composition versus further refining step/narrower composition)



Proposal to split PM slags (2)

- Based on the data submitted by PM Refiners in Summer 2009 (after grouping of PM Refinables as per registration), an overview of production processes for slags was produced
- Slags that were identified by PM Refiners as REACH exempt were removed
- Processes were grouped in 2 sub-groups:
 - 1) Slags produced as by-products in the production (smelting, reduction, converting, and refining processes) of doré in TBRC, Kaldo or cuppellation furnaces
 - 2) Slags produced as a by-product in the smelting of PM bearing feeds (IN WHICH FURNACES?) to produce a PM containing alloy subject to further refining



Proposal to split PM slimes & sludges (1)

Proposed criterion:

- Combination of the **process** they originate from (e.g. hydro-metallurgical processes / wet treatment of by-products produced during melting processes) and the **PM refining** (Ag/Au/PGM refining) they result from

Note: Need to distinguish between:

- 1) Slimes and sludges from non-PM refining used as input in PM refining and covered in another registration;
 - 2) True PM refining slimes and sludges;
 - 3) Slimes and sludges obtained from hydro-metallurgical processes in order to concentrate the PM and used as input in PM refining.
- Consider one group per process and PM family (Ag, Au, and PGM) and possibly an additional group to cover borderline slimes and sludges



Proposal to split PM slimes & sludges (2)

- Based on the data submitted by PM Refiners in Summer 2009 (after grouping of PM Refinables as per registration), an overview of production processes and sources for slimes & sludges was produced
- Grouped in 6 sub-groups:
 - 1) Slimes obtained as reaction by-product during pyro- or hydro-metallurgical concentration/upgrading of PM containing materials
 - 2) Slimes obtained during the electrolytic refining of Ag
 - 3) Slimes obtained during the electrolytic refining of Au
 - 4) Slimes obtained during hydro-metallurgical/leaching processes of PM containing materials
 - 5) Slimes obtained during treatment of production effluents of PM production processes
 - 6) Other slimes and sludges generated as by-products during PM production processes



Proposal to split PM flue dust (1)

Proposed criterion:

Process they originate from

- 1) pyro-metallurgical (smelting) processes;
- 2) melting processes;
- 3) calcination, incineration and drying processes.

➤ However, because flue dusts are usually collected in a centralised system, and their manufacture and use stage take place under the same conditions (always pyro-), the assessment of individual subgroups could be difficult.



Proposal to split PM flue dust (2)

- Based on the data submitted by PM Refiners in Summer 2009 (after grouping of PM Refinables as per registration), an overview of production processes and sources for flue dust was produced
- Grouped in 1 sub-group:
 - 1) Product resulting from the smelting, refining and/or use of Ag and its alloys obtained from primary and secondary sources and including recycled plant intermediates. Recovered from exhaust air by filtration via cloth bags, arising from hygiene extraction systems on processes in the Ag recovery flowsheet.



Splitting of PM slags, slimes & sludges and flue dust - way forward

ID & sameness

- Deadline for comments by PM Refiners on proposed sub-groups: **22 July**
- Following comments, list to be revised by task force and approved by PM Refiners
- Ask PM Refiners to assign sub-group to their Refinable(s)

Define boundaries

- Determine composition and classification boundaries of sub-groups

Registration strategy

- Split registrations or register as sub-groups of 1 registration (or combination of both)?
- Determine availability of other EC numbers applicable to PM refining slags + slimes & sludges if separate registrations considered



3.3. New PM Refinable ‘slimes & sludges, rhenium containing’

- New UVCB declared
- Transported non-SCC intermediate
- Waiting for further clarification/description before proposing to include this additional intermediate to PM Refinables project scope



3.4. Inorganic status PM Refinables

- Hydrolysis and bio-degradation endpoints under REACH can be waived for inorganic UVCB
- Four PM Refinables contain C -> assumed to be inorganic, also for classification purposes
 - **Slags:** origins of carbon: 1) coal added upon the molten metal to de-oxidize and to protect from oxidation, 2) crucibles, casting ladles and other casting tools which are used along the melting process and that contain, or are made of, graphite. All the slags originate from pyro-metallurgy processes (minimum t° 1100 $^{\circ}$ C) -> fully inorganic.
 - **Flue dust:** dust produced from the high t° processes during PM refining -> C expected to be present as relatively pure combustion-derived C (i.e. soot) -> fully inorganic.
 - **Materials for reclaim - PM in bricks, crucibles, trays, etc.:** may be silicate or refractory (i.e. resistant to high t°) based -> you would not expect the carbon to be present as organic compounds but instead as carbon -> fully inorganic.
 - **Materials for reclaim - PM with or without supports:** varying amounts of organic components (e.g. paper) may be present -> inorganic UVCB for the purposes of registration?
 - > Components driving any hazard or risk would be inorganic and do not have any organic component chemically linked or directly associated with them.



Inorganic status PM Refinables

- **Assumptions on inorganic status correct?**
- In waiving the hydrolysis and biodegradation studies on the basis that it is inorganic we are saying these are not processes that would result in removal of the Refinable from the environment - which is a conservative position.

Update on occupational exposure assessment of the Refinables

Refinables WG Meeting

Brussels

18 June 2013

Daniel Vetter, Jutta Schade & Torsten Grewe

EBRC Consulting

Hannover, Germany

Short summary of ongoing approach

- Hazard assessment is constituent-specific
 - Speciation is considered on a worst-case basis
 - Combined toxicity is addressed on a qualitative basis
 - Pb assessment is based on internal threshold levels (blood-lead)
- Exposure assessment is constituent-specific
 - Sources of exposure are not attributable to specific UVCB
 - Assessment is workplace-specific rather than substance-specific
 - Various activities may be relevant for specific workplaces
- Exposure assessment to cover each site and Refinable
 - Pooling monitoring data required to meet strict requirements of R.14
 - Pooled exposure data = pooled activities in ES

Exposure assessment approach

- General approach
 - Same activity + same OCs + same RMMs = same exposure level
- Requirements: same activity
 - Definition of activity classes (ACs)
 - Assignment of ACs to measured data and nominated workplaces
- Requirements: OCs
 - e.g. physical form, process temp. information from questionnaire
 - overall composition of all processed materials including e.g. waste
 - Survey required
- Requirements: RMMs
 - Localised controls such as LEV taken from questionnaire

Definition of activity classes I/II: rationale

- Refining of precious metals done in similar processes (with respect to occ. exp. assessment)
- Common workplaces renamed to activity classes (AC)
- ACs describing common tasks/operations require abstraction from specific activities but still provide adequate level of detail (expressed in the level of variability of measured data)
- List of ACs developed for all reported activities/processes during handling of Refinables
- Review by data-submitters

Definition of activity classes II/III: data used

- Information provided with monitoring data, i.e. on tasks that were conducted by the worker during sampling
 - Information on workplaces (OCs/RMMs) assigned to these measurements according to the occ. exp. questionnaire
 - Modifying parameters such as enclosure of processes and separation of workers were established
- Each exposure data point was assigned to an AC
- Assigning workplaces as given in occ. exp. questionnaire to ACs enables an exposure assessment on a task/operation basis

AC	Description	Involved tasks	Physical appearance	Modifier
1	Material handling / loading / unloading	transfer, loading of cold furnace, unloading of cold furnace, filling/packaging, mixing, charging of reactor/vessels with dry solids	high dusty	ambient temp., semi-automated/remote controlled
2	Material handling / loading / unloading		various	ambient temp., semi-automated/remote controlled
3	Material handling / loading / unloading	storage, transfer/handling of containers, charging of reactor/vessels with damp solids/wetted filter cake	very low dusty	ambient temp., automated or manual
4	Material handling / loading / unloading	transfer, loading of cold furnace, unloading of cold furnace, filling/packaging, mixing, charging of reactor/vessels with dry solids	high dusty, various	ambient temp., direct manual handling (e.g. only manually controlled equipment with direct worker interface)
5	Smelting (partly high MP/PT* ratios)	smelting, tapping, chlorination	molten	worker involved in manual interventions
6	Smelting (partly high MP/PT* ratios)		molten	no manual interventions, closed furnace and/or control room
7	Melting/pyrorefining (low MP/PT* ratios)	melting, casting, cooling, pyrorefining, granulation/atomisation	molten	open processes including casting
8	Calcination	calcining and roasting in furnaces, oxidising	solid (above degradation temp.)	closed furnaces (e.g. formation of SO ₂ , NH ₄ Cl, Cl ₂ , HCl, NO _x)
9	Drying	drying in ovens	solid (below melting/degradation temp.), slightly elevated temp.	closed oven, release of water, HCl to scrubber
10	Hydrometallurgical processes	reduction, precipitation, dissolution, filtration, cementation, separation, leaching, electrolysis, electrorefining, floatation, centrifugation, solvent extraction, ion exchange, operation of wet scrubbers, mixing	liquid or wetted filter cake	no manual interventions, fully automated, or only handling of liquids
11	Hydrometallurgical processes		wetted filter cake	worker involved in manual interventions or open process
12	Mechanical operations	crushing, milling, knock-out (booth), fettling, scraping	substantial formation of abrasive dust	high energy input
13	Mechanical operations	wet milling, sieving	low formation of abrasive dust	low energy input and/or low dusty forms and/or dust suppressed by wetting
14	Cleaning and maintenance	cleaning, maintenance, changing of filter cloths, cartridge filters, bag filters, recovery of bricks/crucibles from furnace linings, repair of reaction vessels, filters, pumps, etc.	various	most locally installed RMMs are not effective
15	Sampling / evaluation	sampling vessels, tanks, scrubbers, drums	various	automated and manual sampling

The above ACs are main ACs, some additional ACs are used for e.g. job rotation.

Further information on composition I/IV

- Rationale:
 - workplaces characterised by their combined exposure settings
 - inorganic UVCB substances consist of many constituents of which many have hazardous properties to human health
- Proposal:
 - constituent-based approach
 - recognising these settings by simultaneously conducting risk assessments for all classified constituents on a workplace-by-workplace basis

Further information on composition II/IV

- Example:
 - processing of several substances containing “arsenic” at a workplace
 - conduct risk assessment for “arsenic” instead of three substance-specific assessments for individual substances
- Requirements:
 - constituent-based approach is “data-hungry” by nature: the guidance requires minimum number of data points for assessments of individual exposure settings
- Solution:
 - pooling of monitoring data for multiple companies

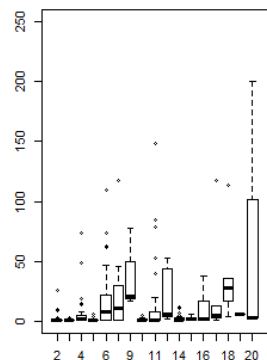
Further info. on composition III/IV: **example!**

- Company A and Company B are operating using similar processes and RMMs
- Pooling “arsenic” data for a specific workplace from multiple companies is justified if all processed materials for all data submitters contain similar amounts of arsenic
- Pooling is not justified if companies use materials with completely different overall arsenic amount
 - result of an exposure assessment on a pooled data set (A + B) would be meaningless for both companies!

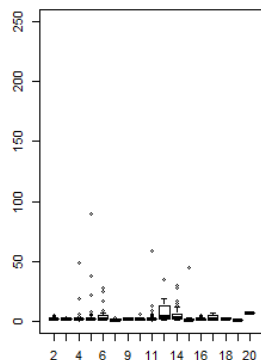
Further information on composition IV/IV

- EBRC request:
 - approximate(!) estimate of the overall amount of specific constituents present in all the processed materials at individual workplaces
 - “processed materials” include non-REACH substances such as waste and by-products as well as already registered substances
- To enable read-across: the same information is required for non-data submitters

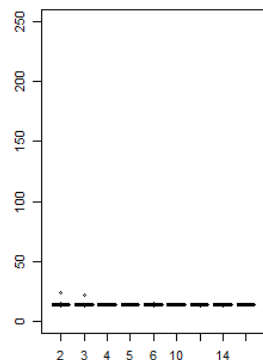
Ag n=400



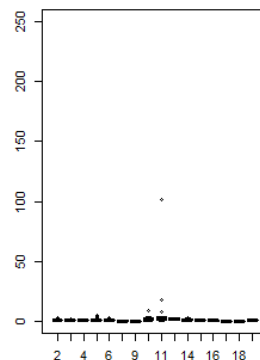
As n=388



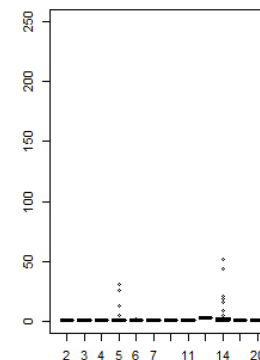
Au n=246



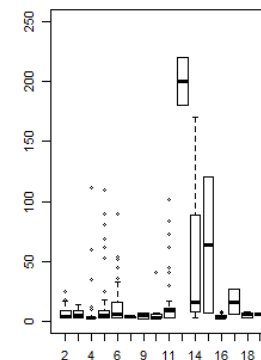
Cd n=289



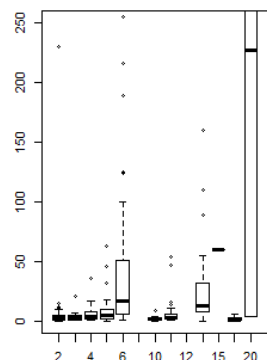
Co n=275



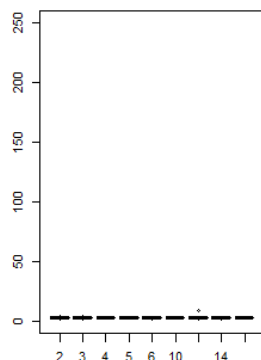
Cu n=334



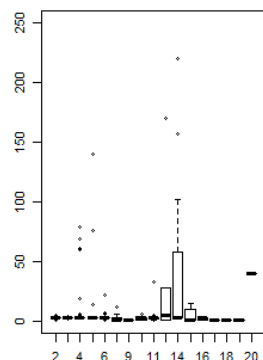
Fe n=298



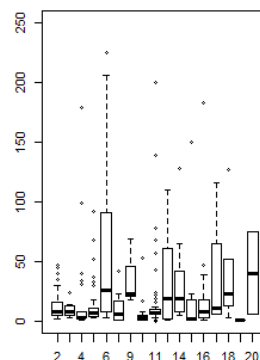
Hg n=258



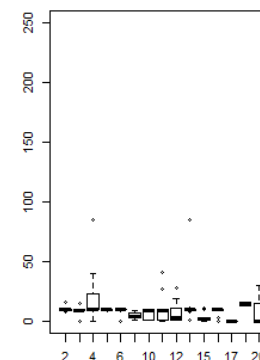
Ni n=370



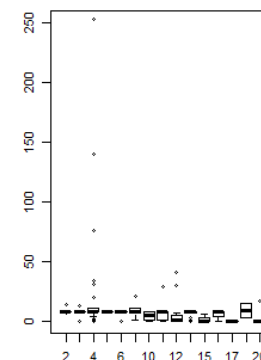
Pb n=387



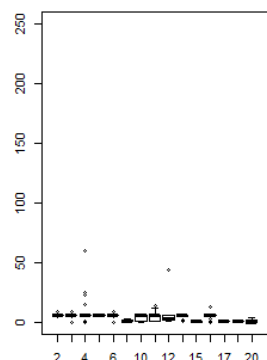
Pd n=327



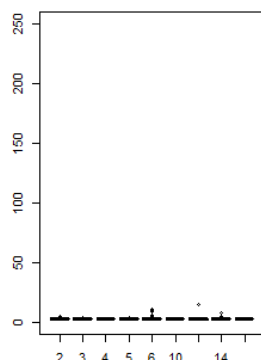
Pt n=355



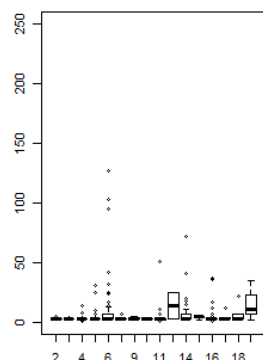
Rh n=327



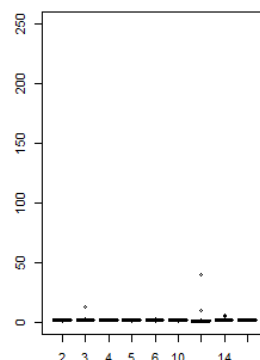
Sb n=288



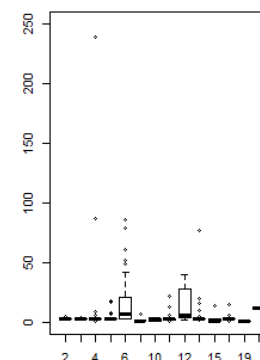
Se n=359



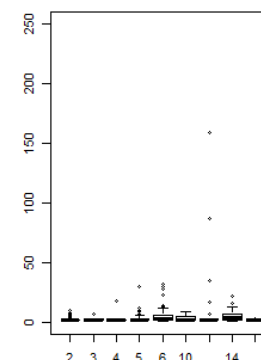
Sn n=287



Te n=338

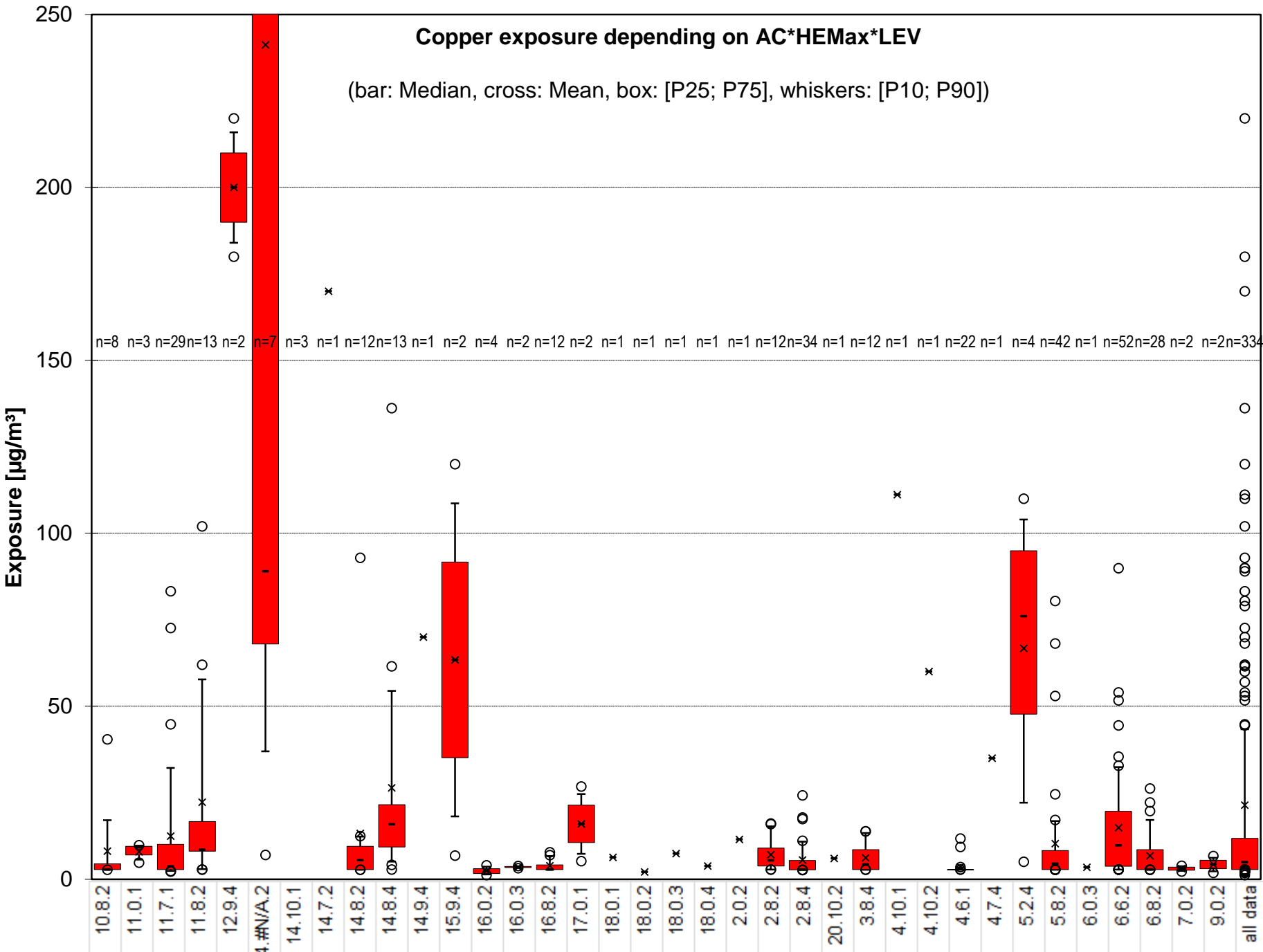


Zn n=289



Copper exposure depending on AC*HEMax*LEV

(bar: Median, cross: Mean, box: [P25; P75], whiskers: [P10; P90])



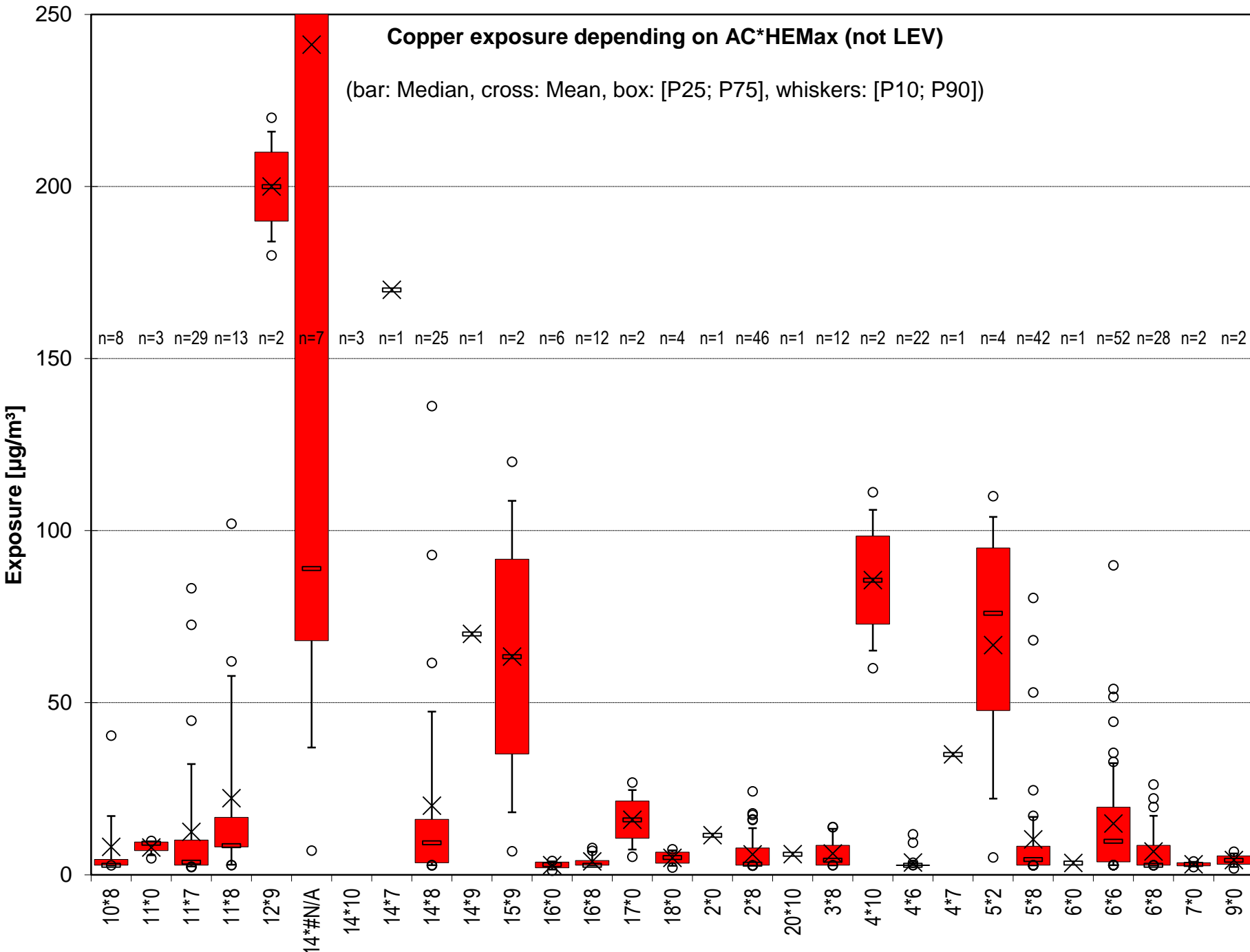
ANOVA (interim results)

Model: Exposure ~ AC * HEMax * LEV

Element vs. exposure modifiers	Ag	As	Au	Bi	Cd	Co	Cr	Cu	Fe	Hg	Ni	Pb	Pd	Pt	Rh	Ru	Sb	Se	Sn	Te	Zn
AC	***	*	ns	-	**	***	ns	***	***	.	***	***	.	**	***	*	ns	ns	ns	***	ns
HEMax	***	***	ns	-	ns	***	ns	***	***	ns	***	***	ns	ns	***	ns	***	ns	**	***	ns
LEV	***	**	ns	-	ns	**	-	ns	***	ns	ns	ns	ns	ns	*	*	.	.	***	***	ns
AC*HEMax	***	***	-	-	ns	-	-	***	***	-	ns	**	ns	ns	***	ns	-	ns	-	**	-
AC*LEV	***	***	ns	-	ns	ns	-	ns	.	ns	ns	*	ns	.	***	-	ns	ns	ns	***	ns
HEMax*LEV	ns	-	-	-	-	-	-	-	-	-	-	-	.	*	***	-	-	ns	-	-	-

Copper exposure depending on AC*HEMax (not LEV)

(bar: Median, cross: Mean, box: [P25; P75], whiskers: [P10; P90])



Results of constituent-based exp. assessment

Closing of data gaps: interim correlation analysis (not controlled for modifiers)

	Ag	As	Au	Be	Bi	Cd	Co	Cr	Cu	Fe	Hg	Ni	Pb	Pd	Pt	Rh	Ru	Sb	Se	Sn	Te	V	Zn
Ag		0.019	0.356	0.333	0.073	0.102	0.090	0.283	0.386	0.545	0.063	0.120	0.282	0.020	-0.080	-0.001	0.365	0.128	0.545	0.393	0.276	-0.285	0.478
As	0.019		0.104	0.038	0.868	0.295	0.441	0.235	0.374	0.437	0.370	0.415	0.474	0.390	0.491	0.532	0.632	0.513	0.470	0.395	0.615	0.135	0.422
Au	0.356	0.104		NA	NA	0.301	0.907	NA	0.202	0.122	0.945	0.838	0.091	0.930	0.924	0.944	NA	0.849	0.572	0.833	0.631	NA	0.303
Be	0.333	0.038	NA		NA	0.667	0.000	0.116	0.000	NA	0.333	0.226	0.126	NA	0.333	NA	NA	-0.183	NA	NA	NA	0.333	NA
Bi	0.073	0.868	NA	NA		NA	NA	NA	-0.053	-0.335	NA	0.538	0.453	NA	NA	NA	NA	0.989	1.000	1.000	1.000	NA	0.188
Cd	0.102	0.295	0.301	0.667	NA		0.292	0.443	0.449	0.316	0.262	0.480	0.295	0.259	0.197	0.269	NA	0.287	0.228	0.422	0.245	-0.175	0.517
Co	0.090	0.441	0.907	0.000	NA	0.292		0.432	0.156	0.173	0.953	0.558	0.154	0.648	0.647	0.478	NA	0.880	0.472	0.794	0.531	0.129	0.298
Cr	0.283	0.235	NA	0.116	NA	0.443	0.432		0.491	1.000	0.535	0.340	0.314	-0.143	0.445	0.143	NA	0.380	-0.143	NA	-0.200	0.086	NA
Cu	0.386	0.374	0.202	0.000	-0.053	0.449	0.156	0.491		0.542	0.070	0.470	0.450	0.172	0.108	0.230	NA	0.137	0.313	0.307	0.333	-0.002	0.559
Fe	0.545	0.437	0.122	NA	-0.335	0.316	0.173	1.000	0.542		0.124	0.256	0.506	0.137	0.051	0.068	NA	0.205	0.414	0.232	0.371	NA	0.484
Hg	0.063	0.370	0.945	0.333	NA	0.262	0.953	0.535	0.070	0.124		0.577	0.121	0.958	0.958	0.972	NA	0.910	0.597	0.808	0.668	-0.102	0.293
Ni	0.120	0.415	0.838	0.226	0.538	0.480	0.558	0.340	0.470	0.256	0.577		0.344	0.563	0.456	0.659	0.465	0.563	0.341	0.749	0.591	0.138	0.271
Pb	0.282	0.474	0.091	0.126	0.453	0.295	0.154	0.314	0.450	0.506	0.121	0.344		0.253	0.199	0.353	0.437	0.196	0.420	0.224	0.513	0.313	0.513
Pd	0.020	0.390	0.930	NA	NA	0.259	0.648	-0.143	0.172	0.137	0.958	0.563	0.253		0.699	0.681	0.224	0.861	0.452	0.776	0.546	NA	0.263
Pt	-0.080	0.491	0.924	0.333	NA	0.197	0.647	0.445	0.108	0.051	0.958	0.456	0.199	0.699		0.720	0.306	0.877	0.447	0.770	0.495	0.250	0.251
Rh	-0.001	0.532	0.944	NA	NA	0.269	0.478	0.143	0.230	0.068	0.972	0.659	0.353	0.681	0.720		0.417	0.864	0.458	0.789	0.612	NA	0.261
Ru	0.365	0.632	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.465	0.437	0.224	0.306	0.417		NA	NA	NA	0.438	NA	NA
Sb	0.128	0.513	0.849	-0.183	0.989	0.287	0.880	0.380	0.137	0.205	0.910	0.563	0.196	0.861	0.877	0.864	NA		0.720	0.839	0.775	-0.193	0.318
Se	0.545	0.470	0.572	NA	1.000	0.228	0.472	-0.143	0.313	0.414	0.597	0.341	0.420	0.452	0.447	0.458	NA	0.720		0.704	0.748	NA	0.464
Sn	0.393	0.395	0.833	NA	1.000	0.422	0.794	NA	0.307	0.232	0.808	0.749	0.224	0.776	0.770	0.789	NA	0.839	0.704		0.680	NA	0.365
Te	0.276	0.615	0.631	NA	1.000	0.245	0.531	-0.200	0.333	0.371	0.668	0.591	0.513	0.546	0.495	0.612	0.438	0.775	0.748	0.680		NA	0.394
V	-0.285	0.135	NA	0.333	NA	-0.175	0.129	0.086	-0.002	NA	-0.102	0.138	0.313	NA	0.250	NA	NA	-0.193	NA	NA	NA		NA
Zn	0.478	0.422	0.303	NA	0.188	0.517	0.298	NA	0.559	0.484	0.293	0.271	0.513	0.263	0.251	0.261	NA	0.318	0.464	0.365	0.394	NA	

Reporting of assessment in ES

- Companies reported on workplace basis → localised controls (some uncertainty/bias)
- Assessment done on AC basis → PPE
- Three options:
 - Link ACs to workplaces and report worst case RMMs
 - Link ACs to workplaces and report all RMMs
 - Report ACs and skip workplaces
- Decision not for now but to be made on a practical example

Use of bio-monitoring data

- Bio-monitoring data (blood lead) are additionally required in the assessments...
- Not yet collected → to be collected over summer?
- Submission form includes (to be filled-in by companies):
 - anonymised Worker ID is mandatory
 - sampling year to be provided
 - assignment of workers to workplaces/tasks or “job rotation”
- Analysis of blood lead data (by EBRC)
 - Medianisation of individual blood lead values
 - RWC estimate of medianised values to be used

Short summary of last ECHA meeting

- Informal meeting on formatting issues (CSR, IUCLID, use of Chesar) of UVCB dossiers
- ECHA's computational and evaluation unit participated
- ECHA introduced "chemical entity approach"
- ECHA is aiming at a better reflection of monitoring data

- Next meeting: September 2013
- Proposal to submit upgrades after ECHA has reviewed the case study

Thank you for your attention!

5. Assessment of environmental exposure of refinables: Recap & update

Ed Stutt, Adam Peters & Rhiannon Smith



Overview

- Recap of approach to environmental assessment
- Refinables environmental exposure database and development of GES
- Incorporation of modelling parameter values from multi-metallic database
- Tiered risk assessment
- Emission factors for GES and metal SpERCs
- Preliminary results
- Next steps

Environmental exposure and risk characterisation

- Focussing on refinables components that have an environmental classification
 - » Ag, As, B, Cd, Cr, Cu, Ni, Pb, Zn
- Model each component separately
- Local environmental concentrations estimated according to R16 guidance (metal EUSES)
 - » Same approach for GES and SSRA

Environmental exposure and risk characterisation

- Calculating local environmental concentrations
 - » Generic Exposure Scenario (GES)and site-specific
 - » Air, freshwater (with and without further treatment at a municipal STP) and marine waters as receiving environment
 - » Regional background not considered previously but now incorporated (taken from GEMAS, FOREGs etc rather than CSRs/MMD)& may be ignored in consideration of mixtures

Refinables exposure database

- Survey questionnaires in 2011 captured information on:
 - » Refinable composition
 - » Tonnage (range and average)
 - » Potential emissions
 - » Risk Management Measures (RMMs – type & efficiency)
 - » Monitoring data
 - » Local receiving environment (may need more....)
- Have there been any significant changes since 2011?

Refinables exposure database

- Data available for 12 sites processing refinables (9 contained good amount of useful information).....these data are the basis of the GES
- Good level of information on waste-water output and receiving environment (n=45)
- Slightly less information on stack emissions but just enough to work with (n=31)

Refinables exposure database

- Previous proposal to exclude data on boron
 - metalloid additive
 - very limited data available (no data for emissions to air and only 2 values for emissions to water)
 - both aquatic EFs are statistical outliers (15-20,000 g/tonne) but they may agree with approach of Kd-adjusted SpERCs
- Speciation of chromium
 - Cr(VI) or Cr(III)or in what proportions?
 - If Cr(VI) need to assess this form for MvE but it is likely to be converted to Cr(III) in STP and sediment

Generic Exposure Scenario(s)

- 3 scenarios required for discharge to aquatic environment
 - » Freshwater with emission via STP
 - » Freshwater without STP
 - » Direct to marine waters

Generic Exposure Scenario(s)

- GES developed based on 9 sites providing most complete datasets
 - *Maximum or 90th percentile (90P) tonnage value for each constituent*
 - *Description of RMMs and range of efficiencies*
 - *Maximum , 90P & 50P emission factors (EFs) to air and water (after RMMs) calculated across all constituents and for individual constituents*
 - *10P (or 50P) emission days*
 - *10P (or 50P) effluent flow rate and dilution factor (under review)*

Exposure modelling input parameters

- Exposure modelling and risk characterisation requires parameter values as input for:
 - » Partition coefficients (K_d spm for freshwater and marine etc)
 - » Predicted no effect concentrations (PNECs) & derived no effect levels (DNELs)
 - » Removal rate in STP
 - » Regional background concentrations
- Model input parameters provided by Eurometaux (thanks!) in multi-metallic database (taken from metal and metal compound CSRs)
 - » Partition coefficients , PNECs and some DNELs for:
 - » Ag, B, Cd, Cr, Cu, Ni, Pb, Zn (not As)

Exposure modelling input parameters

- Missing:
 - » Data for As
 - » Partition coefficients for Cr
 - » STP removal rates
 - » Regional background concentrations (?)

- Consistency with CSRs desirable

- >> Calculated RCRs are therefore ‘provisional’

Tiered Risk Assessment Approach

■ Tier 1

- » Generic Exposure Scenario(s) for “Manufacture and use as an intermediate in the recovery of precious metals”
- » ‘Reasonable worst case scenario’ using maximum or 90th percentile tonnage (from all sites), typical RMMs, emission characteristics and 90P emission factors (EFs) for air & water
- » One GES for each component (based on tonnage - other exposure parameter values remain constant, including EF)
- » These conservative GES used for all refinables
 - *practical and reduces the resource and time*
 - *reduce issues of commercial confidentiality (as specific component and refinable combinations will not be identified)*

Modelling and risk characterisation

- If aquatic RCR > 1 move to Tier 2
 - » Same GES emissions data and exposure characteristics
 - » Basis of GES remains constant but use latest metal SpERCs as emission factors for discharges to aquatic environment (check for applicability with measured emission data for refinables)
 - » SpERCs detail K_d-adjusted emission factors (E_fs) for emissions to water so EF for each metal depends on selected K_d (taken from MMD)
 - » Option to refine other emissions characteristics from reasonable worst case (90P) to average/median

Modelling and risk characterisation

- If RCR are above 1 for any component move to Tier 3
 - » 50P EFs and emission characteristics and site specific assessments
 - » Use site specific data to undertake individual risk assessment for each constituent (maximum of 9 but only considering those discharged at the site)
 - *These assessments will be confidential and only shared with the respective companies*
 - » Will identify those sites which can demonstrate safe use, and those sites which need additional refinement to demonstrate safe use (i.e. more information or monitoring)

GES parameters – Emission Factor (EF)

- EF is a very important parameter for GES
- EFs (air and water) calculated on annual basis as % or g/T from

$$\frac{\text{amount discharged}}{\text{tonnage used/produced}}$$

- SpERCs have been produced detailing EFs for various sectors of the metals industry

Refinables EFs vs Metals SpERCs

	Emission Factor (AIR)	Emission Factor (WATER)
SpERC for 'Manufacture of metal compounds'	0.03% (90P of 145 sites)	0.001-0.2% (90P of 201 sites)
EFs from refinables database	0.0003-0.076% (Values for 8 metals from 6 sites)	0.0001-0.1% (Values for 8 metals from 9 sites)
	Overall 90P = 0.043% (30 values from 6 sites) <i>[after excluding a statistical outlier based on LoD]</i>	Overall 90P = 0.039% (30 values from 9 sites)

- 90P EFs from refinables database used in Tier 1 risk assessment

Provisional RCRs from Tier 1 Assessment

	Provisional RCR							
	Air	STP	Freshwater aq	Freshwater sed	Freshwater aq	Freshwater sed	Marine	Marine sed
			With STP		Without STP		With STP	
Ag	0.018	6.2	5.7	2.4	522	220	0.46	1.5
Ni	13	0.49	0.16	-	6.1	-	0.14	-
Pb*	-	6.5	0.19	543	2.1	50	0.08	27
Zn*	2.0 x10 ⁻⁴	5.5	0.03	254	0.58	11	0.43	62
Cr (VI)*	35	0.61	0.19	433	4.2	20	0.38	15
As*	Missing exposure modelling parameter values							
Bo*	-	-	-	-	-	-	-	-
Cd*	-	1.9	0.0094	2.9	0.21	64	0.27	17
Cu	2.0 x10 ⁻⁴	0.49	0.067	0.17	1.5	3.9	0.17	0.048

*No value for STP removal rate

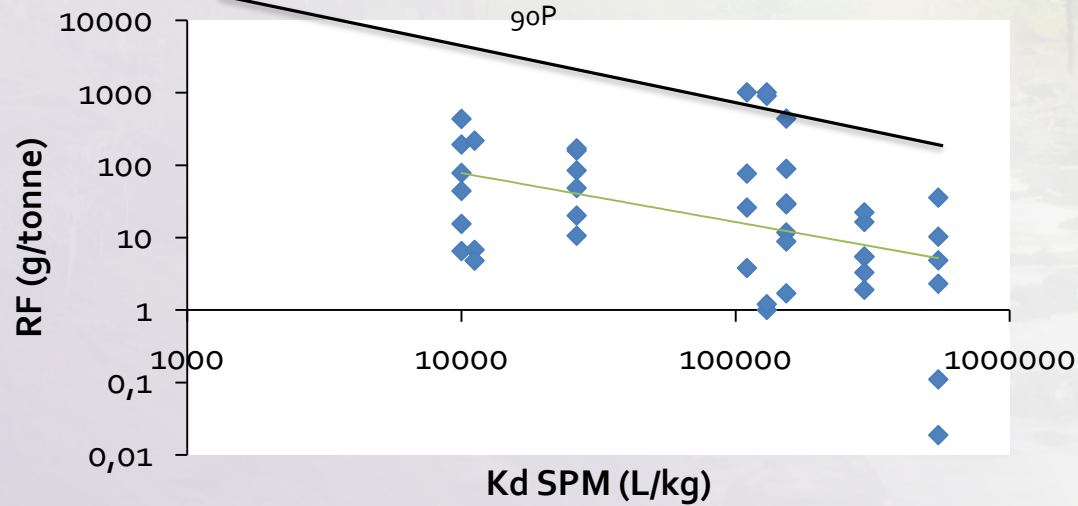
Tier 2 risk assessment using SpERCs for aquatic emissions

- Latest (metal specific) SpERCs for emissions to aquatic environment are modified by partition coefficient, K_d
- Taken from ARCHE approach developed for Eurometaux metal SpERCS

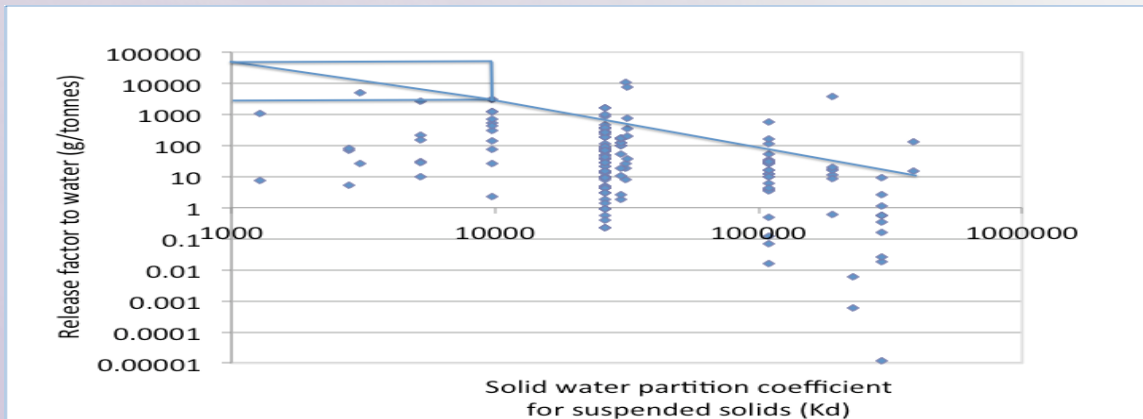
“A relationship between solid-water partitioning coefficient for suspended matter K_d and the release factor to water can be justified because the K_d expresses the distribution between aqueous phase and suspended matter. K_d is an important parameter impacting the removal efficiency especially in sedimentation and precipitation RMMs but also in on-site runoff, cleaning operations, wet processes, etc....”

- Higher tier modelling of emissions to air (Ni !)

Relationship between EF and Kd



Refinables



**Metal
SpERCs**

Tier 2 risk assessment using SpERCs

	Kd (susp)	EF (SpERC)	
Ag	190 546	0.002%	Similar to 50P refinable EF
Ni	26 303	0.04%	Same as 90P refinable EF
Pb	295 121	0.001%	Similar to 50P refinable EF
Zn	110 000	0.005%	3x 50P refinable EF
Cr(VI)	200	6%	Refinable EFs indicate Cr(III) may be dominant species
Cr(III)	300 000	0.001%	
As	-		
B	1.94	6%	V.high EF observed at refinable sites (2-3%; treat separately)
Cd	130 000	0.005%	3x 50P refinable EF
Cu	30 246	0.04%	Same as 90P refinable EF

- All other parameter values in Tier 2 currently identical to Tier 1 assessment (i.e. reasonable worst case)

Provisional RCRs from Tier 2 Assessment

	Provisional RCR							
	Air	STP	Freshwater aq	Freshwater sed	Freshwater aq	Freshwater sed	Marine	Marine sed
			With STP		Without STP		With STP	
Ag	0.013	0.31	0.43	0.30	28	0.30	0.026	0.094
Ni	9.1	0.50	0.17	-	6.2	-	0.14	-
Pb*	-	0.17	0.096	28	0.15	40	0.015	5.4
Zn*	1 x10 ⁻⁴	0.70	0.0033	1.5	0.073	32	0.055	0.35
Cr (VI)*	Cr speciation to be confirmed							
As*	Missing exposure modelling parameters							
Bo*								
Cd*		0.25	0.0012	8.2	0.03	0.39	0.035	2.2
Cu	4 x10 ⁻⁴	0.50	0.069	0.18	1.6	4.0	0.18	0.049

*No value for STP removal rate

Next steps

- Obtain STP removal rates (and regional background concentrations)
- Modify basis of parameter values (i.e. use 50P instead of 10P or 90P for flow rates, dilution etc)
- Modified Tier 2 or Tier 3 risk assessment (option of 50P RF for aquatic emissions)
 - » Supported by confidential site-specific risk assessments
- Risk assessment of waste

Site specific risk assessment

- Additional data requirements for some sites
 - » Flow rates (to calculate dilution factors) are required for both STP and ultimate receiving water body
 - » If not already provided..... additional data on stack emission (e.g. Temperature, stack height/diameter)
 - » Further information on waste treatment

 - » May also need further information on local aquatic environment (e.g. pH, DOC , hardness conditions of the receiving water body)

Assessment of mixture effects

SCHER Report: Toxicity and Assessment of Chemical Mixtures

- “...it does not address metals for environmental combination assessment because these assessments require the use of specific approaches, e.g. essentiality, background concentrations, bioavailability.”
- Ideally, RCRs need to be $\ll 1$ (so refine as much as possible)
 - Simple unit risk approach likely to be problematic
 - Align with Eurometaux initiatives



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6. Update on activities Eurométaux REACH intermediate task force



Katrien ARIJS
Caroline BRAIBANT



6.1. Data-sharing

- Data-sharing agreement 11 June

	Jul 2012 principles	Jun 2013 agreement
One unique template	✓	✓ One template
List all relevant constituents	✓	✓ To be added on a case-by-case basis to Annex 1
List all references to RSS	✓	✓ Level of information shared specified in Annex 1
List cost	✓	✓ Art. 4: Free of charge
Specific and restricted scope	✓	✓ Recitals and Art. 1: REACH Art 10 UVCB Registration Dossiers
RSS	✓	✓ Level of information shared specified in Annex 1
UVCB Article 10	✓	✓ Recitals and Art. 1: REACH Art 10 UVCB Registration Dossiers
Between consortia	✓	✓ Consortia or commodity association 'Metal A' and 'Metal B'
Signed by consortium representative	✓	✓ Consortia or commodity association 'Metal A' and 'Metal B'
Include copy of LtU	✓	✓ Art. 2.3: Parties may agree on a dedicated LtU document



Data-sharing

- Meeting ECHA June 3 on the formatting issues (CSR, IUCLID, use of Chesar) of UVCB dossiers and level of detail to be included on UVCB constituents
- Feedback to be presented at 28 June EM REACH Intermediates task force meeting
- Overview ECHA meetings:
 - 8 Jan 2013: meeting on UVCB substance identification and characterisation
 - 3 June 2013: meeting on formatting issues of UVCB dossiers
 - September 2013 (tbc): meeting on UVCB classification and risk assessment



6.2. Multi-metallic (E-)TRV database

- Complete database on effects assessment outcomes
- Database online since Feb 2013 on Eurométaux Reach Metals Gateway - members only section
- Accessible to consultants and consortia secretariats
- Regular updates are made following regular reminders to data providers

The screenshot shows the REACH Metals Gateway website. At the top, there is a navigation bar with links: REACH, GHS & CLP, Consortium Information, Calendars, ECHA & National Helpdesks, and Glossary. Below the navigation bar is the main header with the logo 'EM REACH Metals Gateway'. A search bar is located on the right side of the header. Below the search bar, there are links for 'Advanced Search', 'Glossary', 'Reach Newsletter', and 'Home'. The main content area is divided into two columns. The left column contains a list of 'REACH specific processes' with links: Late pre-registration, Registration, Inquiries, Evaluation, Dossier evaluation, Testing proposals, Substance evaluation, Restrictions, Authorisation, and Harmonised classifications. Below this list is a section for 'EM Guidance Documents & Tools' with links: Training module and Training ECHA evaluators on metal specific aspects. The right column features a 'Toxicity reference value database' section with a 'Disclaimer' and a checkbox for 'I accept the disclaimer'. Below the disclaimer is a 'Terms and Conditions' section with a link to 'Terms & conditions.pdf' and a checkbox for 'I have read and accept the Terms & Conditions'. At the bottom of the right column is a 'CONTINUE' button.



6.3. Substance identification (SID) and characterisation

- Helsinki, 8 Jan 2013: Workshop with ECHA
 - Experts participation
 - Industry experts: V. Verougstraete, H. Waeterschoot, F. Iaccino (Eurométaux), K. Lacasse (European Copper Institute) D. Vetter (EBRC), F. Verdonck (Arche)
 - ECHA participants: 3 experts from SID unit, Scientific Advisor Derek Knight, Mike Rasenberg (Head of Computational Unit), 1 expert from Evaluation Unit - one expert
 - Present examples of SID for inorganic UVCB - Transparency!
 - Identity & sameness check ensured via naming and descriptions (knowledge on production process, market considerations, NFM BREF terminologies)
 - Examples of merged EC#, new EC descriptions, new EC numbers (ECHA cannot change the EC inventory/entries - internal discussions ongoing on what can be done on the dissemination website)
 - Illustrate spatial and temporal heterogeneity and variability in compositions and physical forms



Substance identification (SID) and characterisation

- Outline how complex inorganic UVCBs are analysed: for sameness checks, and for classification purposes
 - Demonstrate how reference samples are selected
 - Illustrate reporting of SID in IUCLID
 - Explain processes and raw materials in NFM sector, clarify that OCs & RMMs are well known and that different processes can take place in the same workplace - **ECHA recommendation** to provide sufficient level of detail on processes in dossier to allow better understanding
 - SID assessment should rely on LEs - **ECHA recommendation** to report clearly in IUCLID Section 1.2 first LE composition, then generic composition linked to classification and RA
- Set the scene for next workshop - Demonstrate Classification and Risk assessment purposes are well addressed
 - Introduce principles of the risk assessment approach (i.e. on a constituent basis) -> ECHA did not object to these but would like to see the developed approach during the next planned meeting, including real-case examples
 - **No blessing to be expected from ECHA!**



6.4. Classification

- Classification meeting with ECHA planned in September (tbc):
 - Examples
 - Underlying principles
 - MeClas

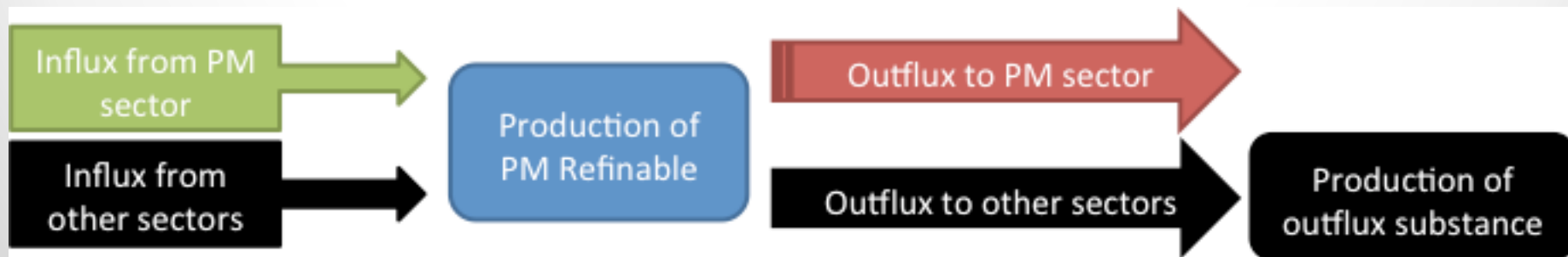
6.5. Risk assessment

- Risk assessment meeting with ECHA planned in September (tbc):
 - Examples (incl. PM example for workplace)
 - Underlying principles
 - Guidance under development

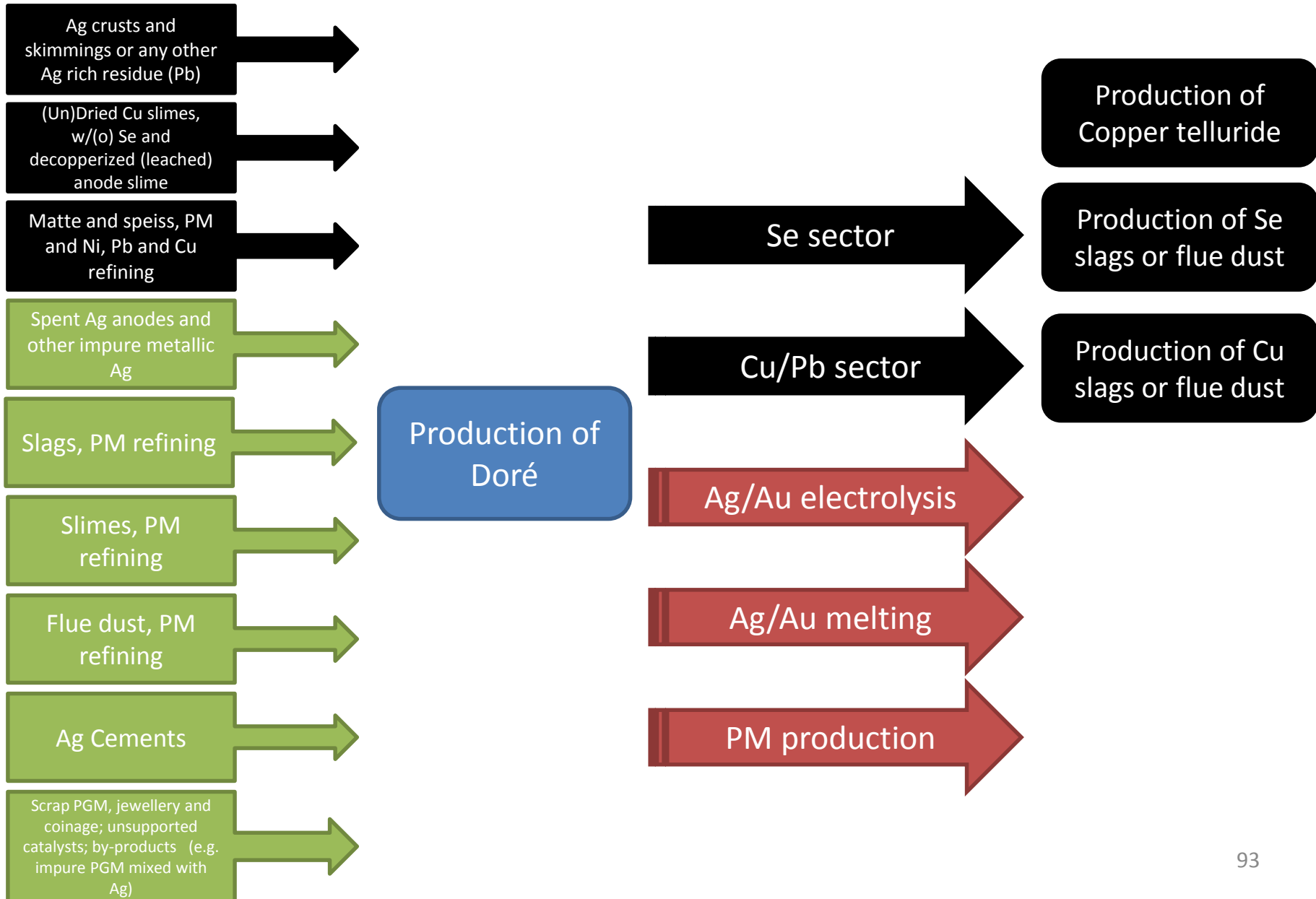


6.6. Mapping exercise influx/outflux UVCBs in different NFM sectors

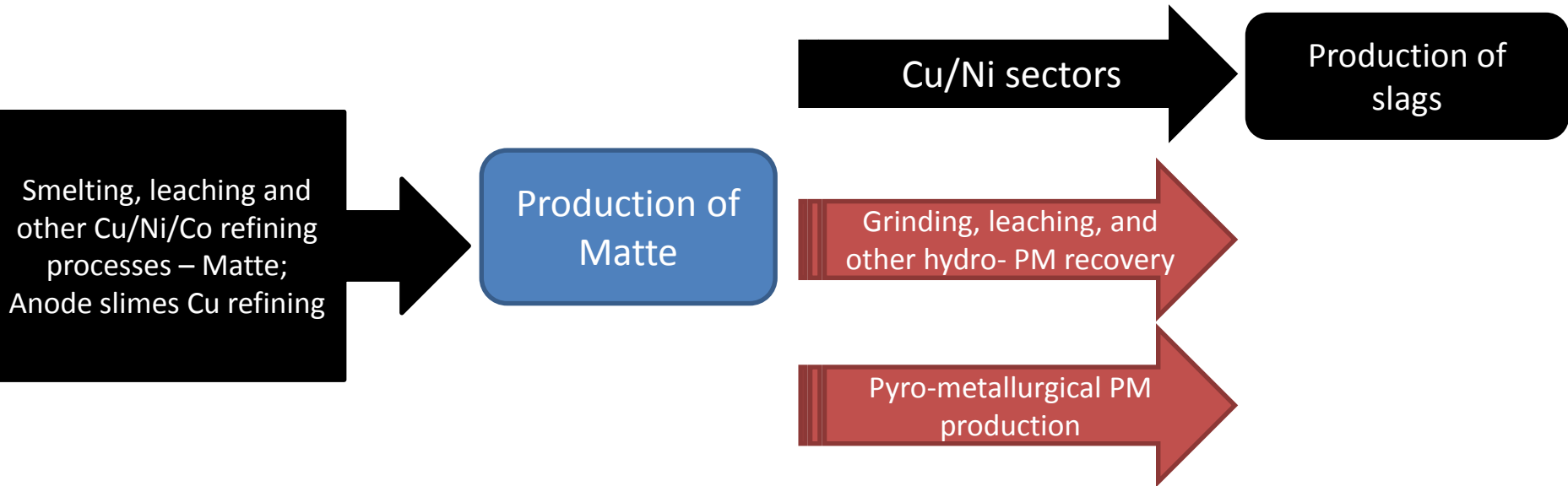
- First mapping exercise: map out situations where PM Refinables are not exclusively related to the PM sector in order to identify sectors with whom we will have to share data
- Follow-up: “what is transformed into what” - identify influx/outflux substance in order to link the various relevant (UVCB and other) dossiers
 - Name should be linked to EC number
 - Other useful info: what type of treatment or processing the material is subject to once in the other sector



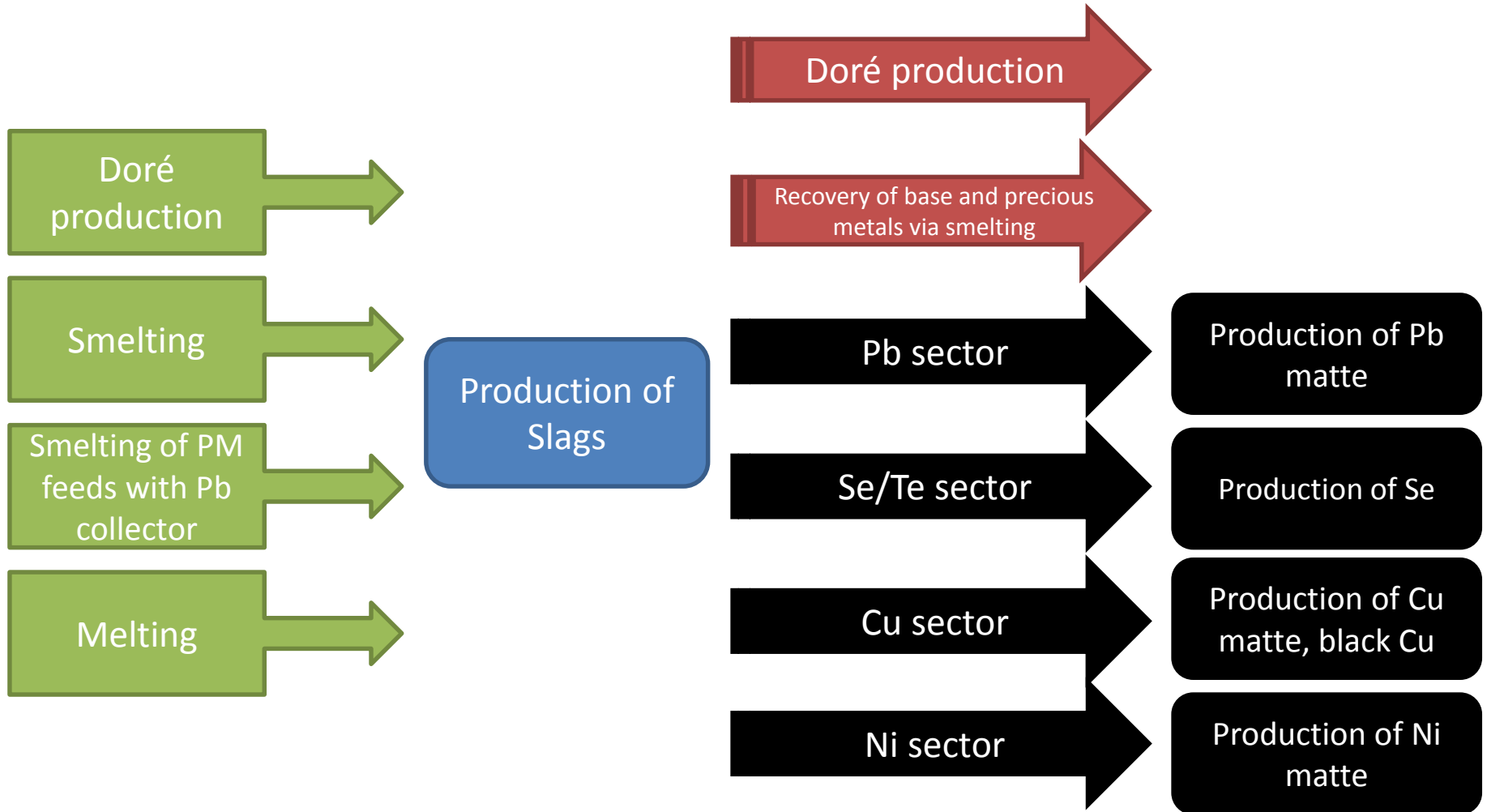
1. Doré



2. Matte, PM refining



3. Slags, PM refining



4. Slimes and sludges, PM refining

Leaching and other Pb, Cu or Ni refining processes (extraction)
- Residue leaching Cu blister; Anode slime Cu refining?

Ag electrolysis

Au electrolysis

Leaching (of PM feeds)

Precipitation (PM solutions)

Production of Slimes

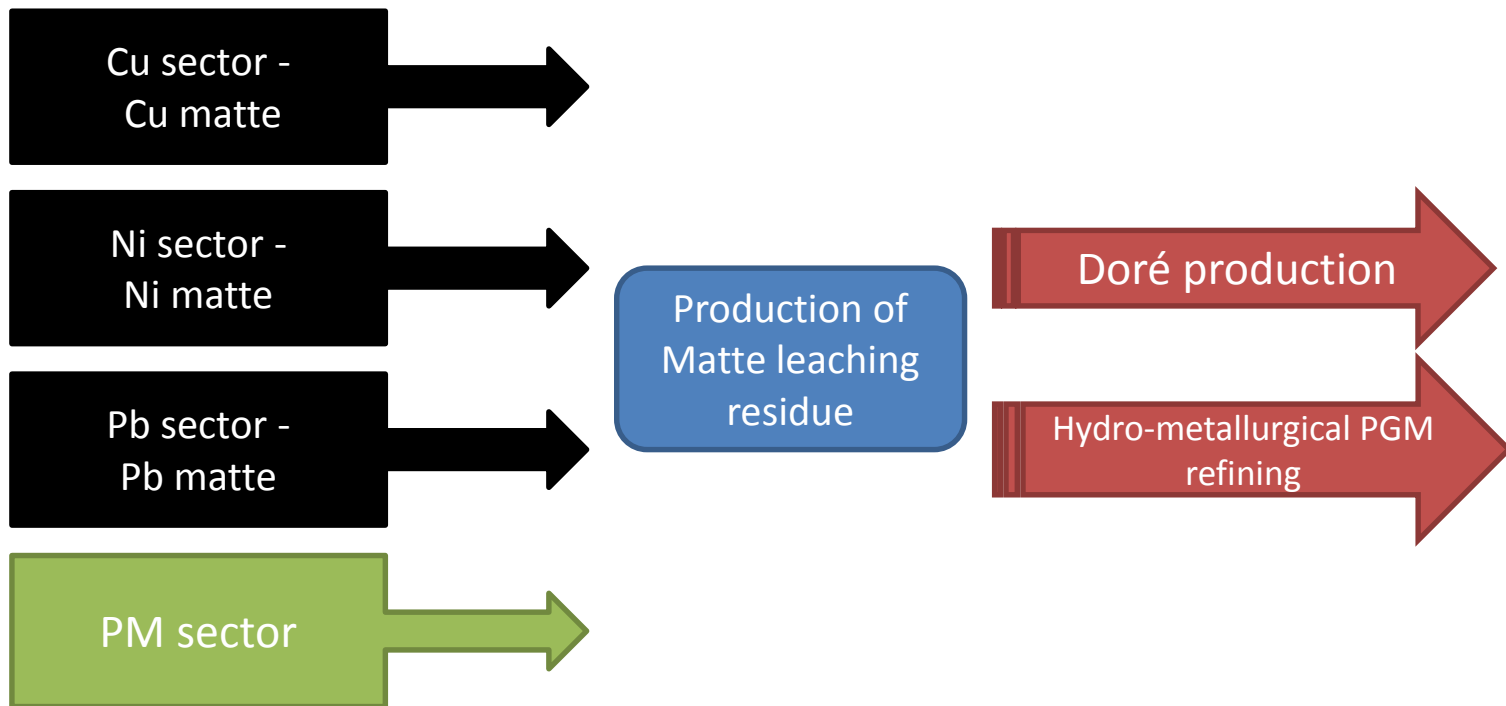
Washing, filtration, drying, leaching, precipitation, incineration

Doré production

Au production

PGM production

5.1 Matte leaching residue

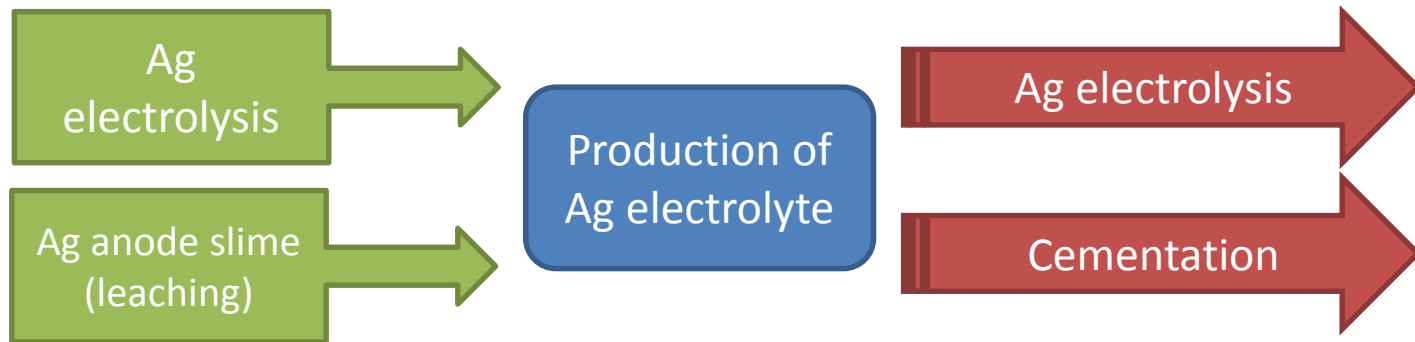


5.2 Speiss leaching residue

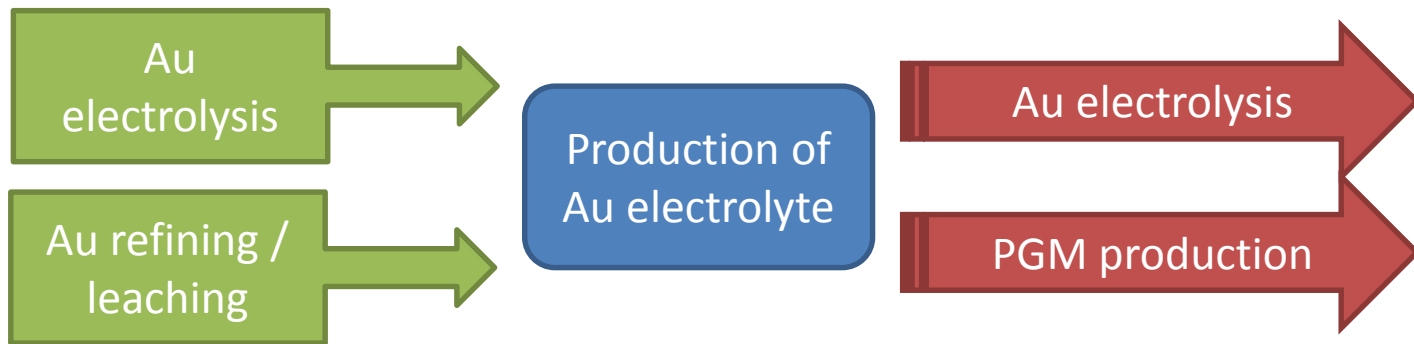
No longer in scope

Production of
Speiss leaching
residue

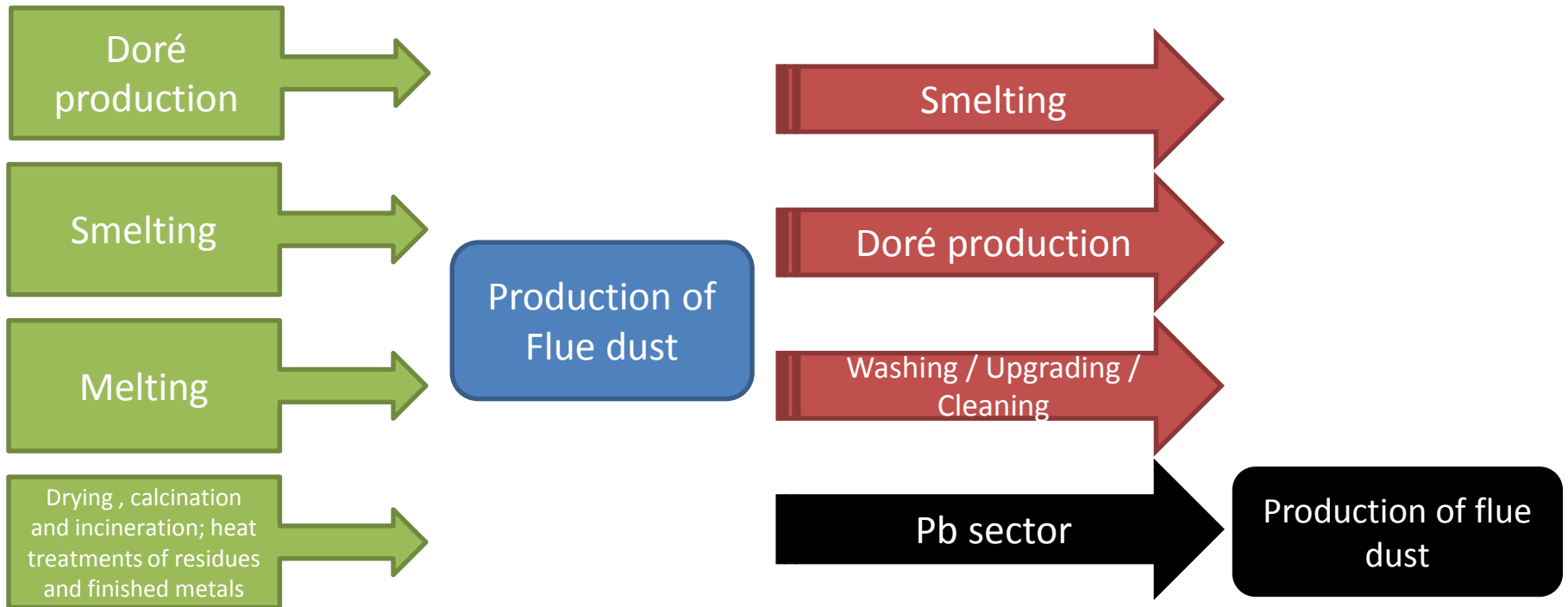
6.1 Ag electrolyte



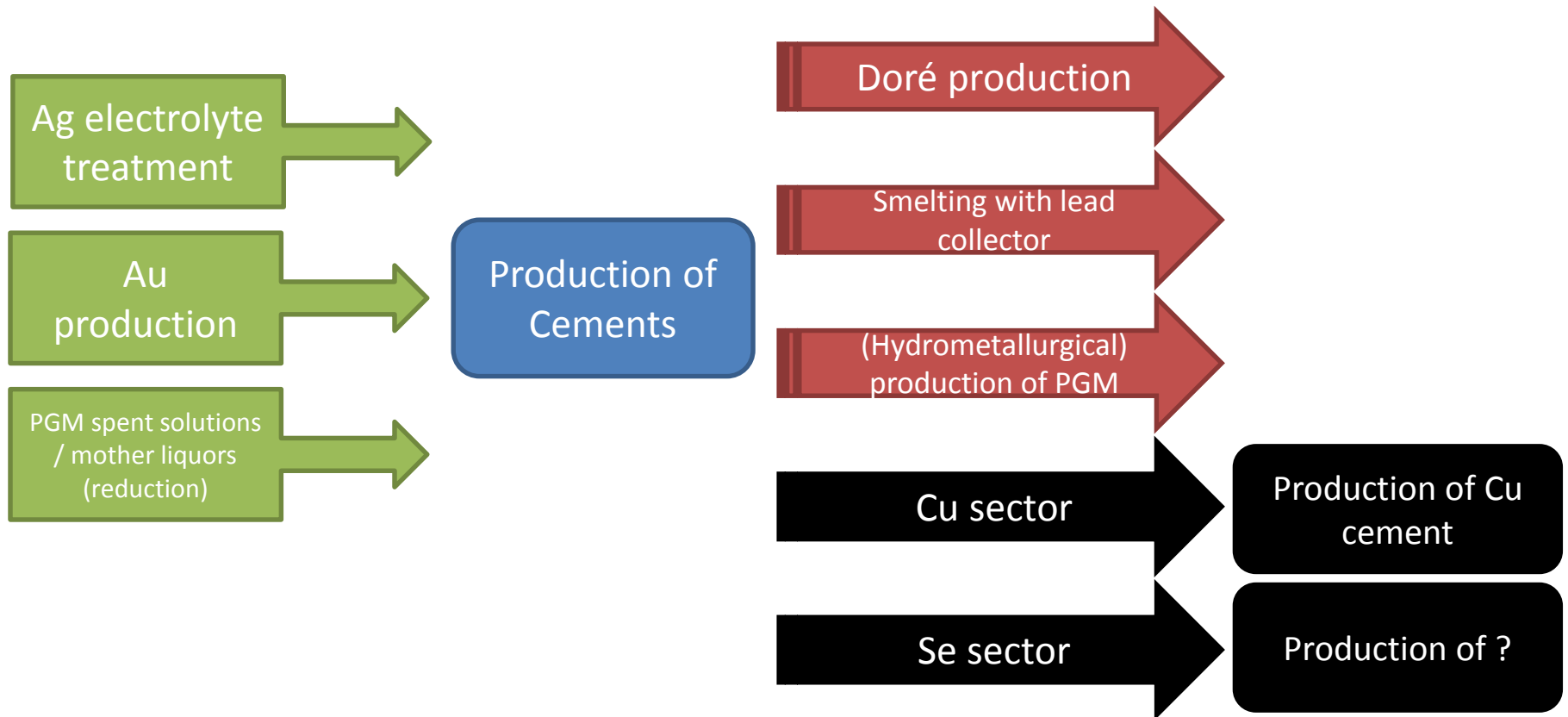
6.2 Au electrolyte



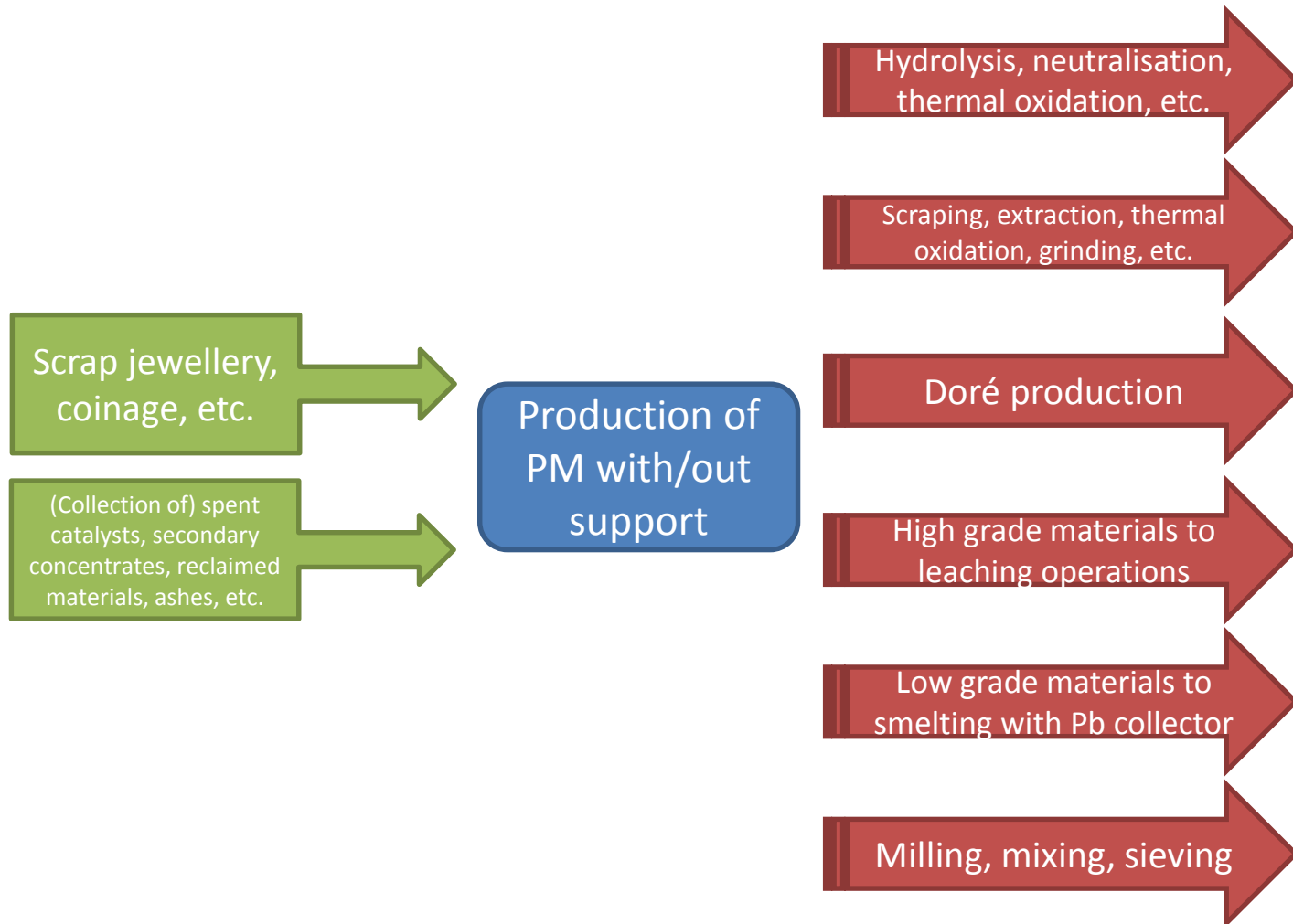
7. Flue dust, PM refining



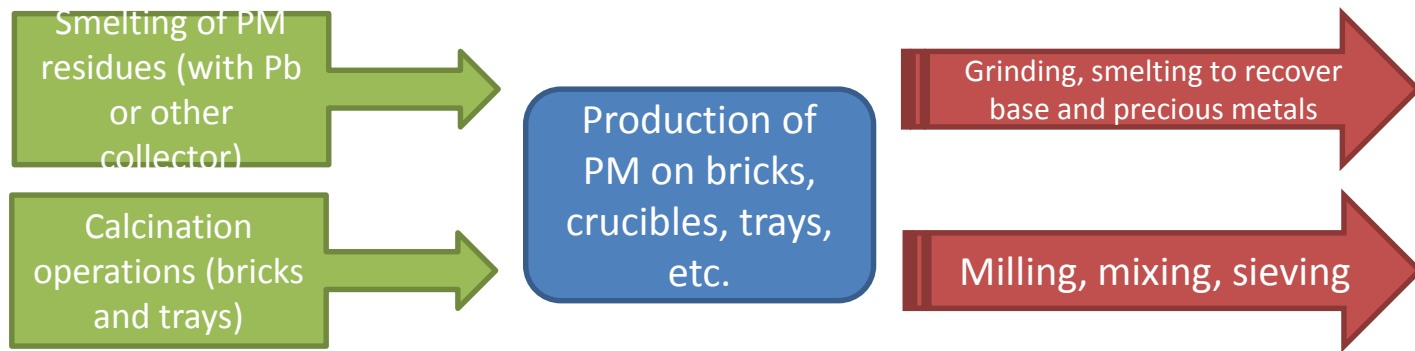
8. Residues cementation and reduction, PM refining



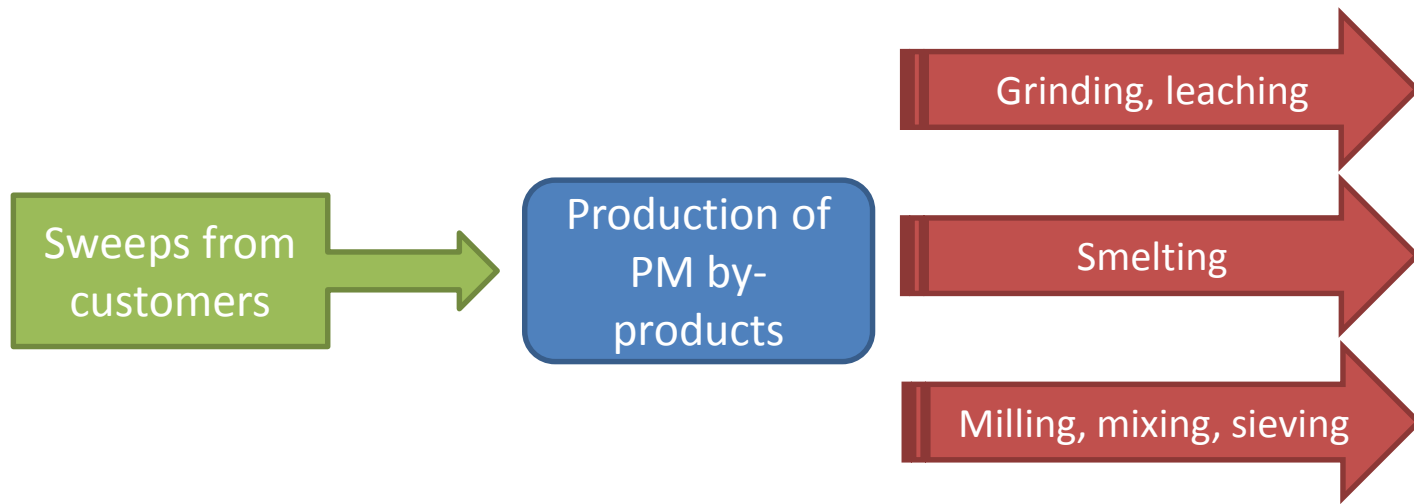
9.1 Materials for reclaim, PM with or without support



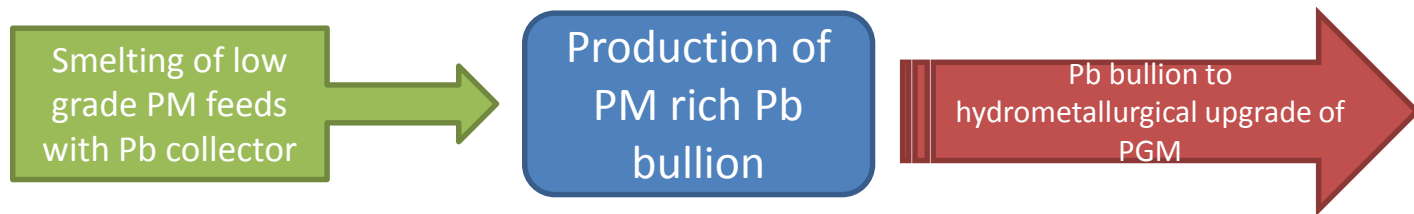
9.2 Materials for reclaim, PM on bricks, crucibles, trays, etc.



9.3 Materials for reclaim, PM production by-products



10. Lead bullion, precious metal rich





7. Template CSR for PM Refinables

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Katrien ARIJS
Caroline BRAIBANT



Template CSR for Refinables

Draft 1 CSR for each Refinable, so EBRC/WCA just need to input the exposure assessment dataset and interpretation/calculation in template

- Colour-code sections to be generated by PMC Members / PMC Consultants
- Extract process descriptions from NFM BREF document Precious Metals chapter (probably generic, not mentioning each individual Refinable) to be added to all CSR as relevant
- Each LR to draft a comprehensive proposal of a description of:
 - ✓ How the manufacture of the Refinable occurs (Cf. CSR Cu slimes and sludges Chapter 2.1)
 - ✓ How the Refinable and its production process by-products are further processed/transformed
- Ref WG to review the draft CSR (description) per Refinable and agree on a wording/scope of content

Exercise to be done by September



8. Authorisation - substances on SVHC list of relevance to the PM sector

• • •

Katrien ARIJS
Caroline BRAIBANT



Status of 'Surveillance list' and next steps

Name	EC Number	# Companies interested
Borates	?	1 Association
Borax	?	1
Boric acid	233-139-2	2 + 1 Association
Boric acid, crude natural	234-343-4	1
Cadmium	231-152-8	2
Cadmium oxide	215-146-2	1
Chromium trioxide	215-607-8	1
Cobalt	231-158-0	1
CrVI compounds	?	1 Association
Diarsenic trioxide	215-481-4	1
Diboron trioxide	215-125-8	1
Disodium tetraborate (anhydrous)	215-540-4	3
Disodium tetraborate decahydrate	215-540-4	1
Disodium tetraborate pentahydrate	215-540-4	1
Formaldehyde & 2,2'-dichloro-4,4'-methylenedianiline	?	1
Hydrazine	206-114-9	1*
Lead dinitrate	233-245-9	2
Lead metal	231-100-4	1
Lead monoxide	215-267-0	3
Nitric acid (HNO3)	231-714-2	1
Orthoboric acid	237-560-2	1
Silicon dioxide	?	1
Sodium hexametaphosphate	?	1
Tetraboron disodium heptaoxide (hydrate)	235-541-3	2
Trilead-bis-carbonate-dihydroxide	215-290-6	1

- Aim:
 - Monitor developments around substances of interest to (P)M sector
 - Set-up mailing lists in the event task forces or other ad hoc groups need to be formed to address common challenge collectively (names of companies not revealed upfront)
- Number of respondents by 11 Jun:
 - 1 Association
 - 11 PM Companies
- Though of importance to sector, RFC not formally reported by anyone
- Still insufficient feed-back to really satisfy goal of exercise



* In PM sector 8 companies are active on Hydrazine Task Force



9. Next steps, AOB, next Meetings/Calls & Closing Remarks

• • •

Edwin BROECKAERT



Next steps & provisional timeline

	2013							2014		
	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Splitting of PM Refinables Slags, Slimes & sludges, Flue dust										
Upgrades										
• Draft template CSR										
• Develop example(s) to be presented to 1) PM Ref WG for approval and 2) ECHA			Ref cc	EM/ECHA workshop						
• Preparation of sector-wide/generic Exposure Scenarios										
• Development of site-specific Exposure Scenarios					Ref mtg?					
• Submission of dossiers						?	?	?	?	?



Options to demonstrate due diligence on dossier upgrades

1. Inform ECHA by letter that work is still in progress, and upgrades will not be made before date X
 2. Submit upgrades in a phased manner, i.e. initial partially complete upgrades in 2013 followed by a complete upgrade in 2014
 3. Submit one upgraded dossier, request ECHA to evaluate it and revert with comments/opinion, before remaining upgrades are submitted
- > Options to be discussed at Eurométaux level in order to ensure **consistent approach by all sectors**



Thank you!

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