Precious Metals Consortium

Precious Metals & Rhenium Consortium

Occupational Monitoring Campaign: Kick-off meeting

18 February 2016 | MCC, Brussels

Precious Metals Consortium

1. Welcome and tour-de-table

Agenda

- **Welcome + Tour-de-Table** (JM) (10.30-10.35)
- **Approval draft agenda** (JM) (10.35-10.40)
- **Introduction** (DV) (10.40-11.10)
  - Background to PM monitoring campaign
  - Summary of available information
  - Occupational monitoring data under REACH
  - Use and presentation of monitoring data under REACH
- **Scoping and proposed workflow** (DV): (11.10-12.45)
  - Scope of the occupational monitoring campaign (REACH vs OHS)
  - Metals in scope of this campaign
  - Type of monitoring to be conducted
  - Proposed workflow of a monitoring campaign
  - Identification of sites/volunteers for site visits
  - Identification of sampling institute
- **Conclusions & Anticipated timing** (JM) (12.45-13.00)

Precious Metals Consortium

2. Introduction

Occupational Monitoring Campaign Kick-off meeting

Brussels

18 February 2016

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Outline

- Introduction
  - Background to PM monitoring campaign
  - Summary of available information
  - Occupational monitoring data under REACH
  - Use and presentation of monitoring data under REACH
- Discussion / Way forward
  - Scope of the monitoring campaign (REACH vs. OHS)?
  - Metals in scope of this campaign
  - Type of monitoring to be conducted
  - Proposed workflow of the monitoring campaign
  - Identification of sites/volunteers for site visits and of sampling institutes

Background to PM monitoring campaign

- Large number of substances due for registration in 2018
- DNELs expected on a (relatively) low level
- Limited exposure monitoring data available
- Consideration to conduct monitoring of different PMs in parallel (Rh, Ru, Pd, TCA, PM Cyanides, Pt, others?)
- PMC contacted EBRC for:
  - Initiation and monitoring of an exposure monitoring campaign
  - Compilation of a monitoring database for PMs

Summary of available information I/II

- Palladium and Pd compounds
  - Occ. exp. questionnaire from manufacturers
  - Information on identified uses
  - Subset of process flow charts
  - Dustiness tests for a subset of substances
  - Inhalation monitoring data from manufacturers (2006-2012: about 30 data points (personal, inhalable))
- Platinum and Pt compounds
  - Occ. exp. questionnaire from manufacturers
  - Information on identified uses
  - Dustiness tests for a subset of substances
  - IPA publication and IPA monitoring data

Summary of available information II/II

- Precious Metals Cyanides
  - Occ. exp. questionnaire from manufacturers (2 responses)
  - Information on identified uses
  - Dustiness tests
  - Monitoring data not available
- Tetrachloroauric acid
  - Occ. exp. questionnaire from manufacturers
  - Information on identified uses
  - Monitoring data not available at manufacturing sites
- Rhodium / Ruthenium
  - Information not available at EBRC (except for 4 dustiness tests)

Summary - Dustiness testing

Substance Group	Substance	Moisture content [%]	Total dustiness [mg/g]	Assigned dustiness
Palladium	Palladium	0.01	284.26	high
Palladium	Diamminedichloropalladium	<0.01	220.18	high
Palladium	Diamminedichloropalladium	13.57	4.75	low
Palladium	Diamminedichloropalladium	20.1	6.56	low
Palladium	Diamminedichloropalladium	55.44	not evaluable	not evaluable
Palladium	Palladium (II) di(4-oxopent-2-en-2-oate)	0.02	232.05	high
Palladium	Palladium monoxide	0.02	566.83	high
Palladium	Tetraamminepalladium(2+) dichloride	3.46	99.93	medium-high
Palladium	Palladium dihydroxide	15.01	138.92	high
Palladium	Diammonium hexachloropalladate	0.06	434.98	high
Palladium	Dipotassium hexachloropalladate	<0.01	558.08	high
Palladium	Palladium black	<0.01	457.02	high
Platinum	Platinum black	0.34	205.45	high
Platinum	Platinum sponge	1.55	72.65	medium
Platinum	Dihydrogen hexahydroxyplatinate	1.55	261.47	high
PM Cyanides	Potassium dicyanoargentate	0.01	90.92	medium
PM Cyanides	Silver cyanide	0.05	46.67	medium
PM Cyanides	Potassium dicyanoaurate	<0.01	358.82	high
Rhodium	Rhodium black	0.05	514.78	high
Rhodium	Rhodium sponge	0.19	262.66	high
Rhodium	Diammonium sodium hexakis(nitrito-N)rhodate	0.57	237.16	high
Ruthenium	Ruthenium	<0.01	48.48	medium

Summary - DNELs

Substance / Substance Group	Inhalation DNEL(s)	Dermal DNEL(s)
Potassium dicyanoaurate	0.071 mg/m³	0.1 mg/kg bw/d (7.0 mg/day)
Silver cyanide	0.352 mg/m³	0.5 mg/kg bw/d (35.0 mg/day)
Tetraamminepalladium(2+) dichloride	0.19 mg/m³	0.27 mg/kg bw/d
Tetraamminepalladium(2+) diacetate	0.26 mg/m³	0.36 mg/kg bw/d
Remaining Pd substances	4.7 – 77 mg/m³	1.3 - 67 mg/kg bw/d
Pt compounds - insoluble		
Pt compounds - soluble		
Hexachloroplatinates		
Potassium dicyanoargentate		
Tetrachloroauric acid		
Rhodium compounds		
Ruthenium compounds		

Occ. monitoring data under REACH I/II

- High quality data
  - Personal monitoring data representative for the (contributing) ES
  - Raw data supported by contextual information
- Medium quality data
  - Analogous data from comparable activities with the substance
  - Analogous data for other substances having similar exposure characteristics
  - Consolidated data with only basic statistics available
  - Data obtained from static sampling which can be shown to reasonably (conservatively) represent personal exposures
- Medium to low quality data
  - Predicted exposure derived from suitable models

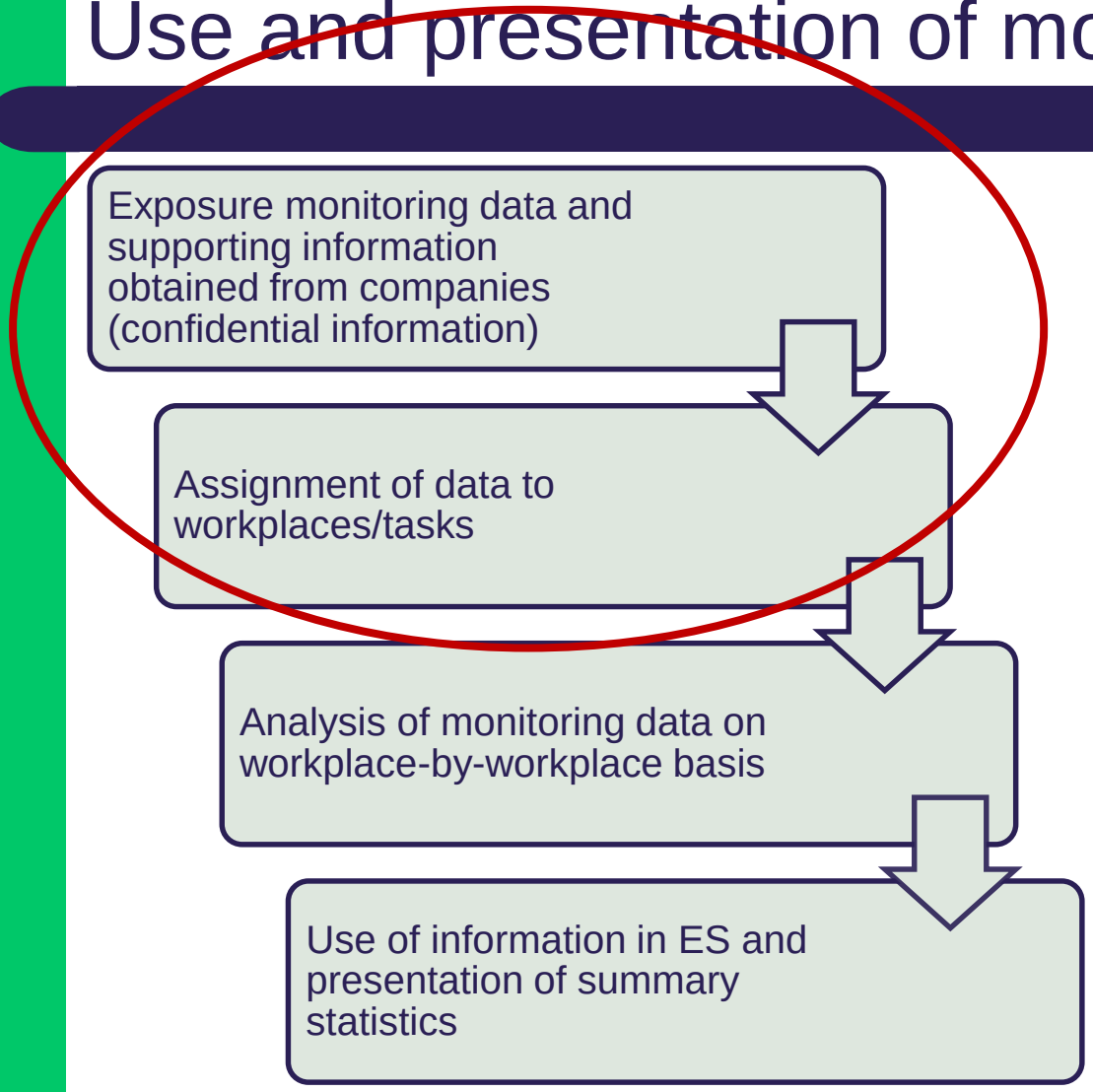
Source: ECHA Guidance R.14, version 2.1

Occ. monitoring data under REACH II/II

- Core information requirements
  - Physical state/appearance of the substance
  - Physical state/appearance of the product handled
  - Different levels of “dustiness” (for solids)
  - Concentration of the substance in the preparation
  - Level of containment
  - Presence/Efficacy of LEV or other technical control measures
  - Duration of activity/exposure
  - What is done with the substance?

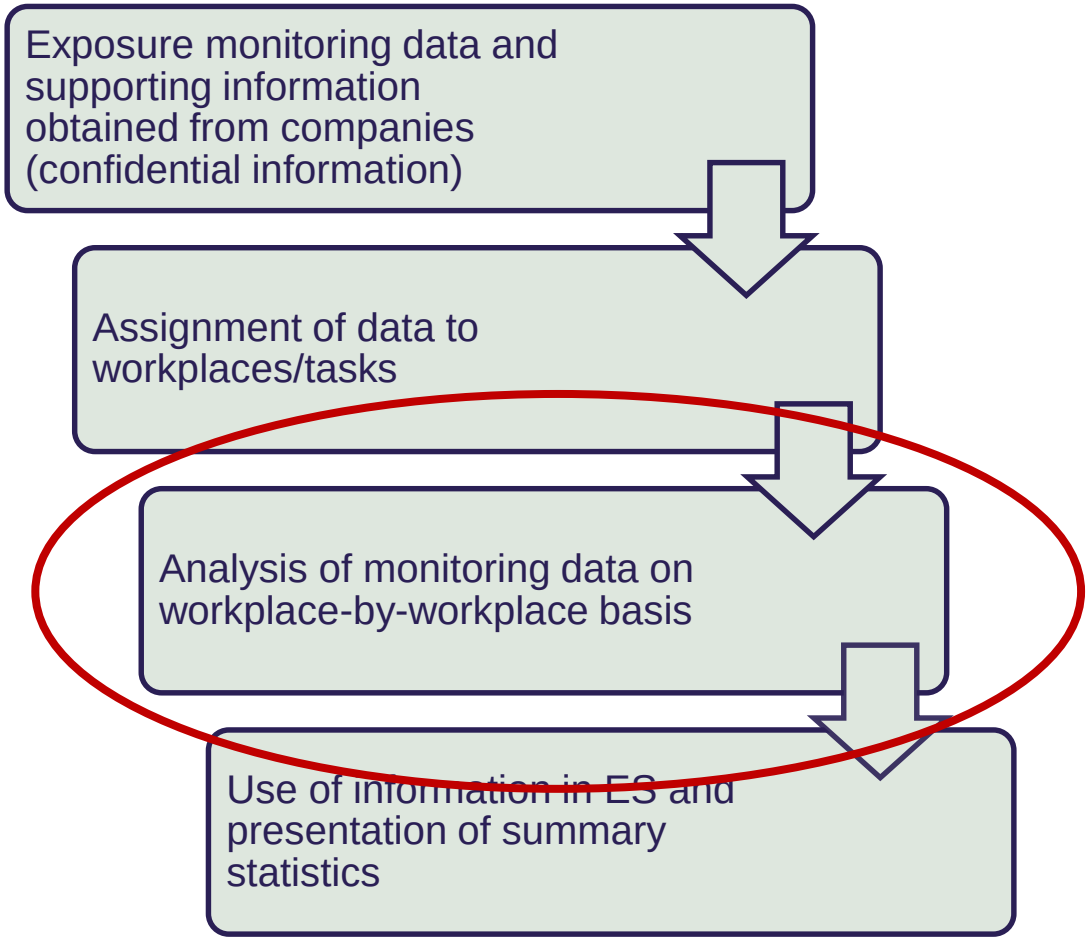
Source: ECHA Guidance R.14, version 2.1

Use and presentation of monitoring data



#	Comp. ID	personal/ static	measured fraction	sampling dur. [min]	Substance X [µg/m³]	Workplace/ Task	Handled phys. form	RMMs
1	1	personal	inhalable	221	250	mixing/weighing	high dusty powder	LEV present
2	1	personal	inhalable	180	320	mixing/weighing	high dusty powder	LEV present
3	1	personal	inhalable	120	32	packaging	low dusty powder	-
4	1	personal	inhalable	240	16	packaging	low dusty powder	-
5	2	personal	inhalable	240	18	packaging	low dusty powder	-
6	2	personal	inhalable	360	28	packaging	low dusty powder	-
7	2	personal	inhalable	480	30	packaging	low dusty powder	-
8	3	personal	inhalable	241	360	mixing/weighing	high dusty powder	LEV present
9	3	personal	inhalable	223	195	mixing/weighing	high dusty powder	LEV present
10	3	personal	inhalable	125	45	packaging	low dusty powder	-
11	3	personal	inhalable	125	50	packaging	low dusty powder	-
12	3	personal	inhalable	123	37	packaging	low dusty powder	-
13	3	personal	inhalable	124	42	packaging	low dusty powder	-
14	4	personal	inhalable	265	1200	mixing/weighing	medium dusty powder	-
15	4	personal	inhalable	268	34	packaging	low dusty powder	-
16	4	personal	inhalable	234	29	packaging	low dusty powder	-
17	4	personal	inhalable	128	27	packaging	low dusty powder	-
18	5	static	inhalable	480	2	closed reaction process	aqueous solution	closed reaction vessel
19	6	personal	inhalable	321	5	supervision of closed reaction process	aqueous solution	closed reaction vessel
20	6	personal	inhalable	365	3	supervision of closed reaction process	aqueous solution	closed reaction vessel
21	6	static	inhalable	480	1	closed reaction process	aqueous solution	closed reaction vessel
22	6	static	inhalable	480	6	closed reaction process	aqueous solution	closed reaction vessel

Use and presentation of monitoring data



Workplace/Task	Handled phys. form	personal/static	#	GSD	Min	Med	GM	P75	P90	P95	Max
closed reaction process	aqueous solution	static	3	2.47	1	2	2	4	5	6	6
closed reaction process	aqueous solution	all personal/static	3	2.47	1	2	2	4	5	6	6
closed reaction process	all Handled phys. form	all personal/static	3	2.47	1	2	2	4	5	6	6
mixing/weighing	high dusty powder	personal	4	1.31	195	285	274	330	348	354	360
mixing/weighing	medium dusty powder	personal	1	n.a.	1200	1200	1200	n.a.	n.a.	n.a.	1200
mixing/weighing	high dusty powder	all personal/static	4	1.31	195	285	274	330	348	354	360
mixing/weighing	medium dusty powder	all personal/static	1	n.a.	1200	1200	1200	n.a.	n.a.	n.a.	1200
mixing/weighing	all Handled phys. form	all personal/static	5	2.02	195	320	368	360	864	1032	1200
packaging	low dusty powder	personal	12	1.40	16	31	31	38	45	47	50
packaging	low dusty powder	all personal/static	12	1.40	16	31	31	38	45	47	50
packaging	all Handled phys. form	all personal/static	12	1.40	16	31	31	38	45	47	50
supervision of closed reaction process	aqueous solution	personal	2	1.44	3	4	4	5	5	5	5
supervision of closed reaction process	aqueous solution	all personal/static	2	1.44	3	4	4	5	5	5	5
supervision of closed reaction process	all Handled phys. form	all personal/static	2	1.44	3	4	4	5	5	5	5
all Workplace/Task	all Handled phys. form	all personal/static	22	5.78	1	31	31	49	313	358	1200

Use and presentation of monitoring data

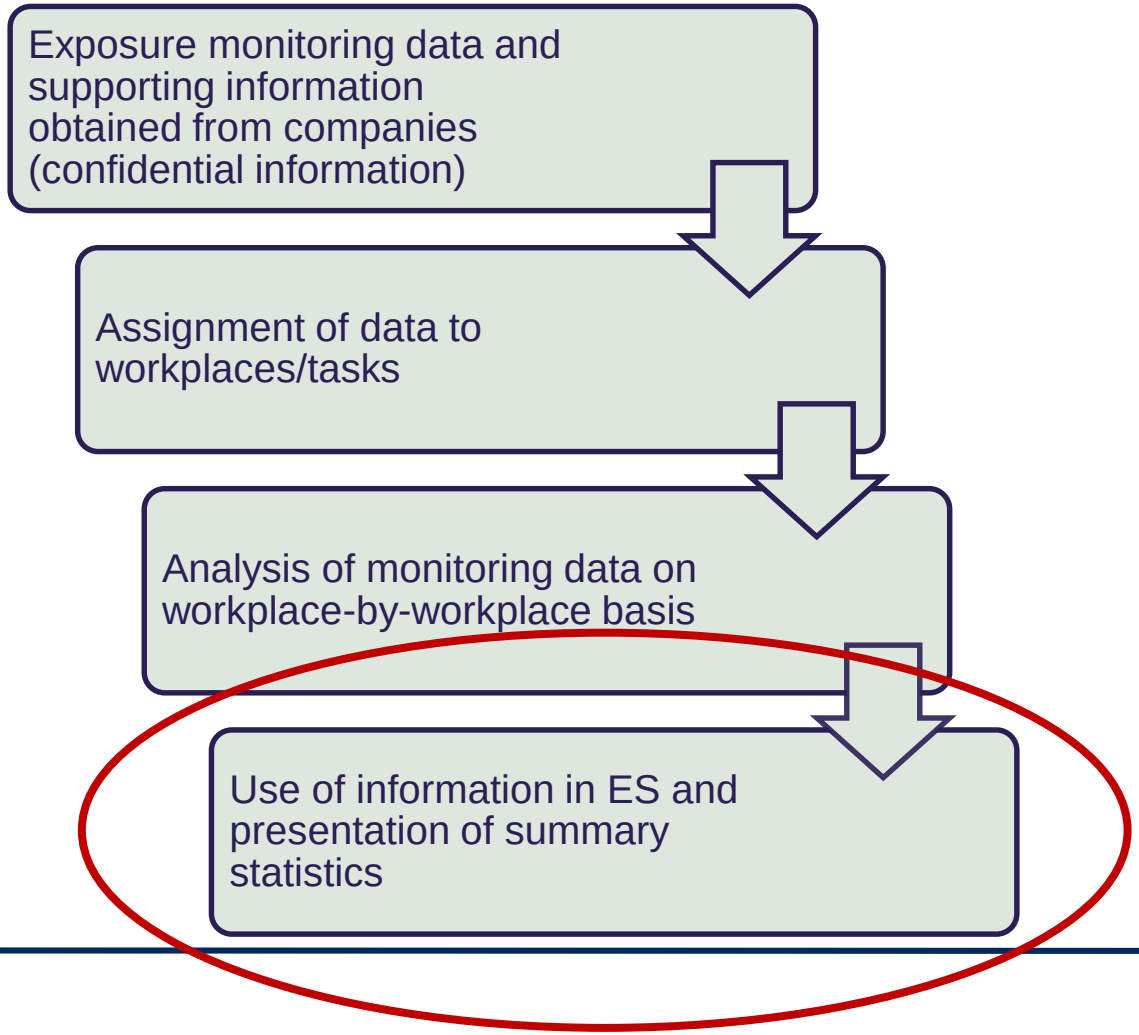


Table 1: Analysis of personal air monitoring data [µg Substance X/m³] used for exposure estimation

Workplace	Counts	GSD	Minimum	Median	75th percentile	90th percentile	95th percentile	Maximum
Mixing/weighing of high dusty powders (with LEV)	4	1.31	195	285	330	348	354	360
Mixing/weighing of medium dusty powders (without LEV)	1	n.a.	1200	1200	n.a.	n.a.	n.a.	1200
Packaging of low dusty powders	12	1.40	16	31	38	45	47	50
Closed reaction process	2	1.44	3	4	5	5	5	5

Shaded cells indicate the selected percentile.

Use of information in ES and presentation of summary statistics

Scoping and proposed workflow

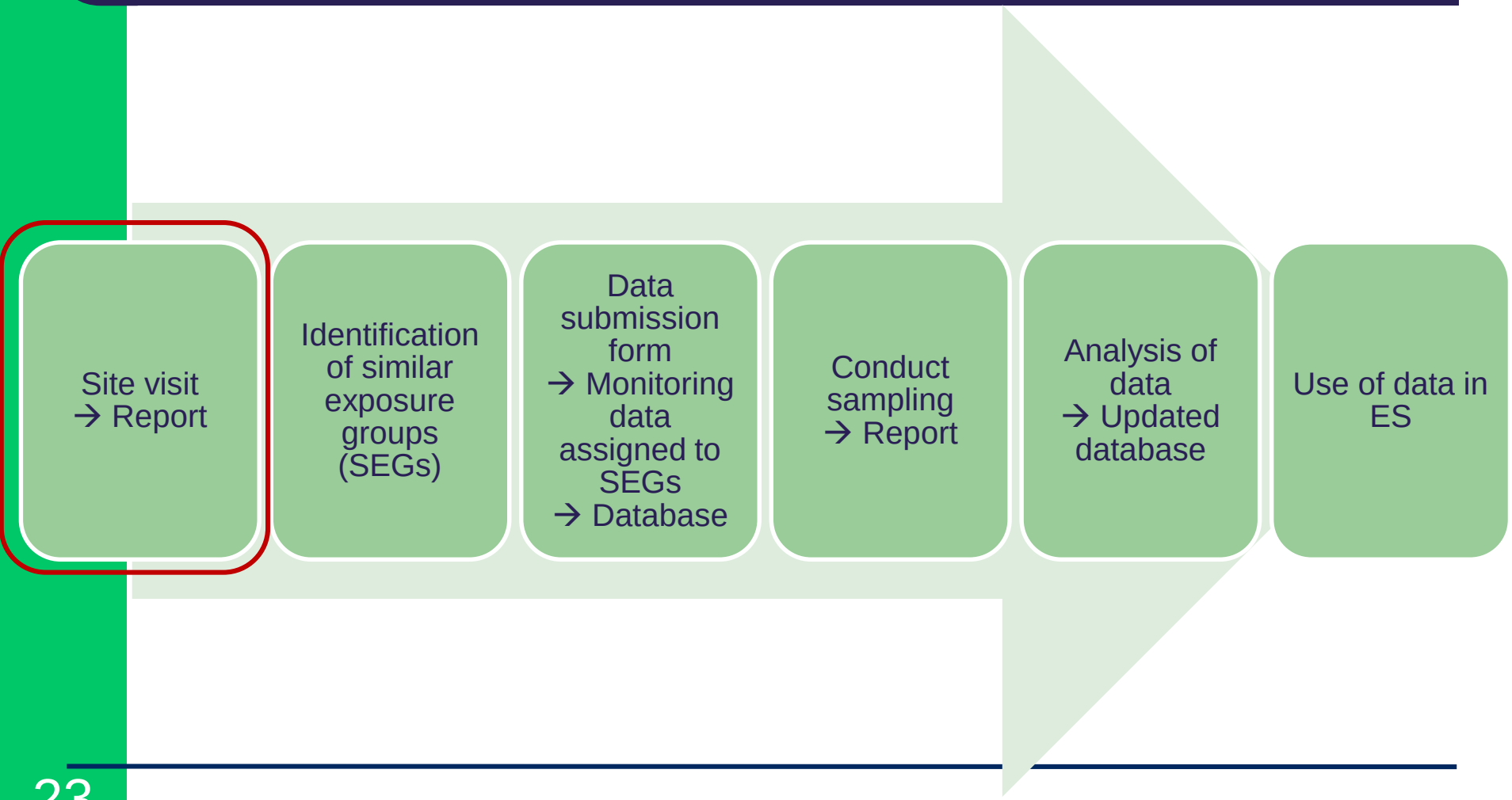
Scope of the monitoring campaign

- Monitoring data for REACH purposes:
  - Ideally: task-specific monitoring for task-specific exposure estimates
- Monitoring data for Occupational Health and Safety (OHS) Regulations:
  - Often: full-shift exposure monitoring covering multiple tasks of a worker during a shift

Scope of campaign / Type of monitoring

- Metals in the scope of this campaign:
  - Currently considered metals in the contract: Pd, Rh, Ru
  - Additionally handled PMs: Pt, PM Cyanides, TCA, …
  - Other substances handled in parallel: As, Hg, …
- Type of monitoring to be conducted:
  - Personal monitoring vs. static monitoring
- Monitoring of
  - Inhalation exposure
  - Dermal exposure?

Proposed workflow of the campaign I/II



Proposed workflow of the campaign II/II

Site visit:
- Site walk with industry expert
- Visiting processes (substance of interest should be handled)

→ **Report:**
- Description of conditions of use
- Identification of workplaces, sampling locations

- **Draft** report (incl. questions and potentially confidential information)
- **Revision** of report (clarification, removal of confidential information
- **Approval** of report (clean report for circulation)

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Identification of sites and sampling institute

- Identification of sites/volunteers for site visits
  - 2-3 site visits to be planned
  - Multiple substances to be handled at the sites…?

- Identification of sampling institute, e.g.
  - IOM (Institute of Occupational Medicine, located in the UK)
  - Müller-BBM (located in Germany)

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3. Scoping and proposed workflow

- Scope of the occupational monitoring campaign (REACH vs OHS)
- Metals in scope of this campaign
- Type of monitoring to be conducted
- Proposed workflow of a monitoring campaign
- Identification of sites/volunteers for site visits
- Identification of sampling institute

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4. Conclusions and anticipated timing

Action	By whom	Duration	Time
Agree on date for site visit	Companies / EBRC	1 month	Mid March 2016
Easter break	*All*		
Perform site visit	Companies / EBRC (/EPMF)	2 weeks	Mid April 2016
Draft site visit report	EBRC	2 weeks	End April 2016
Revise / approve site visit report	Companies	1 month	End May 2016
Develop data submission form	EBRC	1 month	End June 2016
Summer break	*All*		
Submit monitoring data	Companies	1 month	Mid Aug 2016
Generate database	EBRC	2 weeks	End Aug 2016
Conduct sampling	Sampling institute / Companies	2 weeks	Mid Sep 2016
Sample analysis & drafting report	Sampling institute / EBRC	1.5 month	End Oct 2016
Finalisation of database	EBRC	2 weeks	Mid Nov 2016

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THANK YOU

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