International Cadmium Association

168 Avenue de Tervueren/Box 4 • B-1150 Brussels, Belgium
Tel. : + 32(0)2-776 00 77 • Fax : + 32(0)2-777 05 65
Email : mgilles@cadmium.org

Minutes of the 15th ICdA H&S Committee

June 13th, 2017
10h00 – 16h00 at
DIAMANT - CONFERENCE & BUSINESS CENTER
Boulevard A. Reyers 80
B-1030 BRUSSELS

1- Introduction

Welcome by Mik Gilles to the participants (cfr. Annex 1 Attendance list).
The provisional agenda proposed by ICdA is adopted (cfr. Annex 2, slide 2).
Each participant is asked to accept and comply with the statement of compliance as shown on the screen (cf. Annex 2, slide 3).

2- Approval of the minutes of the 14th H&S committee (June 29th, 2016)

The minutes of the fourteenth H&S committee (June 29th, 2016) are approved unanimously and the final minutes will be posted on the website.

3- REACH developments (cfr.Annex II, slides 4-7)

Authorisation procedure: Cd, CdO and CdS (Noömi Lombaert– ICdA)

Each year, ECHA makes Recommendations of Priority Substances to be included in Annex XIV of the REACH Regulation (List of Substances Subject to Authorisation):

- **7th** draft recommendation (Nov 2015):

  11 substances listed

  Cd, CdO, CdS, CdCl2 not included because of lower scores

- **8th** draft recommendation (published 2nd March 2017):

  - 7 substances listed
  - Cd, CdO, CdS, CdCl2 not included because of lower score
  - A potential consideration of Cd, CdO and possibly other Cd-compounds by grouping is thus delayed by minimum one year

- Public consultation ended June 2nd; there was also a parallel call for information by the European Commission on the possible socio-economic consequences of the inclusion of the substances in the Authorisation List

- 9th draft recommendation (April 2018):
  - Considered: all substances not recommended reassessed for priority at beginning of 2018, taking into account any registration updates done by end of 2017.
  - Cd is now in 9th position of the highest ranked and CdO is at position 13.
  - Inclusion in 9th recommendation is likely unless less substances are selected (typically 12) or when new substances with higher score would be added. (Sweden is actively screening SVHC's).

- Next steps:
  - Discussion on draft 9th recommendation at MSC-60 (June 2018)
  - Public consultation: September 2018
  - Submission to the Commission: Summer 2019

ICdA recommends to from working groups of downstream users per application of Cd and CdO. In each group, a company should take the lead for collecting information of SEA-nature for appropriate comments. (SEA = socio economic analysis). Help from an expert-consultant should be considered.

For assessing the socioeconomic effects, companies should also consult their customers/downstream users about impact on their business.

Authorisation process starting from Annex XIV inclusion (Noömi Lombaert ICdA)

ECHA distinguishes 2 ways of submitting a dossier

1) **Adequate control route**: the risk is adequately controlled during the substance's lifecycle
   → Threshold route

1) **Socio-economic assessment (SEA) route**: demonstrating that the social and economic advantages outweigh the risks to human health or the environment, which arise from the use of the substance and that there are no suitable alternative substances or technologies. Note that anyhow, the Commission will analyse socio-economic aspects. So we should prepare this SEA anyhow to be able to file our comments to the commission.

4. Academic support (Noömi Lombaert– ICdA) (cfr. Annex II, slides 8-9)

Threshold/non-threshold carcinogen:

Noömi Lombaert explains the threshold status of cadmium as stated in the recommendation of the SCOEL (Scientific committee on occupational exposure limits) on cadmium and its inorganic compounds (2010) 'SCOEL carcinogen group C (*genotoxic carcinogen for which a practical threshold is supported* ' is not widely accepted. If we have new recent data to prove threshold dose

for the genotoxic effects of Cd this will support in future application for authorisation via the adequate control route.

- Decided last year at GA Reach Cd consortium, in preparation of further discussions with Authorities around the threshold/non-threshold status of the CMR-classified Cd-compounds, to allocate a REACH Cd budget (55000 €) for launching genotoxicity study of Cd to look after genotoxic effects in workers (analysed on human blood lymphocytes) exposed to low levels of Cadmium

- « blind study », i.e. (1) where confidentiality of the individual data (kept anonymous) is assured and (2) where only "group results » will be reported and discussed and (3) where the study-protocol will first have to be reviewed and approved by an ethical academic council

- Aim of the study:

  - ✓ to analyse the shape of the dose-effect relationship for the genotoxic effects of Cd at low doses in occupational settings
  - ✓ to test the hypothesis of a threshold dose for the genotoxic effects of Cd
  - ✓ a secondary hypothesis is that the Cd-U threshold for genotoxic effects is >10 µg/g creatinine, i.e. higher than the current occupational exposure limit (2 µg/g creatinine)

- A limited number of sites usually participating to the biomonitoring programme of ICdA would be involved (cohort of ~60p.) ~8p. per concentration range of CdU / CdB (ranges: 0-2, 2-3, 3-5, 5-7, 7-8, 8-10, >10µg, to be adjusted according to the actual results of biomarker measurements)

- Scientific criteria defined by university:

  - ✓ Workers selected ideally from similar industrial settings with no confounding exposure, and preferably from more than one plant to avoid site-specific observations.
  - ✓ The selected individuals should also be reasonably balanced over the Cd-U range in terms of gender, age and smoking habits (ideally all non-smoking). Individuals will be selected on the basis of their Cd-U results collected in 2015.
  - ✓ The study aims at determining a dose-effect relationship and does, therefore, not strictly need a control group (assessing the dose-effect relationship is epidemiologically stronger and economical than comparing exposed vs non-exposed groups). Individuals with the lowest exposure levels (Cd-U<1 µg/g creatinine) will not be different in terms of Cd exposure from the general population not occupationally exposed to Cd.

- Current status:

  - ✓ Agreement for volunteering participants in the cadmium industry is finalised (2 sites: similar industrial settings with no confounding exposure; cohort of ~60p)
  - ✓ a dossier for the university ethical committee is submitted by UCL and approved last February 2017
  - ✓ In the finalisation of obtaining similar approvals by the two local ethical Committees– 1 local Committee approval received recently, other expected for June 2017.(confirmed now)

The goal is to start the blood/urine sampling by September 2017.

5- OCdBIO-9: results, analysis, way forward (Mik Gilles, ICdA) (cfr. Annex II, slides 11-29)

Mik Gilles gives a short introduction with reminding the aim of the OCdBio. The OCdBio, in which biomonitoring data is collected in the Cd industry, started up in 2008 in order to convince ourselves and authorities on the efficiency of our risk management program and the compliance of the current exposure levels with recommended BLVs. The selection of the 2 biomarkers of exposure for workplace bio-monitoring is explained. Cd-B (µg/l) is an indicator of recent (and older) exposure and Cd-U (µg/g creatinine) as biomarker of the amount of Cd stored in the kidney cortex where the first signs of Cd toxicity develop. A reference is made to the graph (cfr. 2013 ICdA guidance) on the use of "exposure biomarkers" to conduct adequate advanced medical surveillance.
The number of plants participating was the highest ever recorded since OCdBIO was launched in 2018.

- 30 EU sites participating
- 28 sites reporting CdU (3155 workers)
- 26 sites reporting CdB (2907 workers)

ICdA- 2017/2020 initiative

This ICdA initiative is not an individual but a collective commitment to achieve challenging targets in terms of bio-monitoring results of the workers exposed to Cd. It is therefore nice to see that many plants participate and continue to participate. With the revision and further implementation of the ICdA guidance, it is the aim to show the path followed in the past so far and having the goal of further reducing occupational exposure of the employees.

The goal in this initiative is to reach:

- **95% of European employees** subject to medical surveillance and bio-monitoring as required by their occupational medical doctor, below the urinary cadmium level of: **2 µg Cd/g creatinine by the end of 2017,**

- **98% of European employees** subject to medical surveillance and bio-monitoring as required by their occupational medical doctor, below the urinary cadmium level of: **2 µg Cd/g creatinine by the end of 2020**

Summary of the discussions (Trends analysis, comments)

The distribution of Cd-U and Cd-B in EU-sites has been established using the data of all EU reporting sites for the years 2008 up to 2016. The OCdBio data over the several years include neither the same individuals nor the same companies. New companies entered, other closed or did not report each year.

For CdB, the following observations were made:

- The trend of decreasing CdB values reported in OCdBio, which encountered an unexplained one time increase in 2015, is back on a decreasing trend,
- With still 2.6% of the workers having CdB levels above 5 µg Cd/L, continued attention and action is required to further reduce exposure of workers!
- Workers hired after 2000 have ~~much~~ lower CdB values than the total OCdBIO population but this subgroup shows less favorable performance than the sub-group of 15 (reporting since

the start of the program), which shows that newly hired workers can and should be 'managed' better

- It is also interesting to look at the sub-group of 15 plants reporting since the start of the OCdBio program. Since there is no inflow of new plants, the trends are not affected by new entrants in the program. In this sub-group there is since the start a continuous decreasing trend.
- We are not yet there: still too many workers have too high level of exposure to reach the ambitious 2020 target!!!
  - The increasing trend in the group of post 2000 hires has now reversed, but are the current levels of CdB low enough to reach the CdU target of 98% of workers <2µg Cd/g creatinine?
  - We should strive to further reduce the number of post 2000 workers >5 µg Cd/L in blood
- Continued attention is required

  CdB levels are clear indicators that exposure to Cd at the workplace is reduced year by year. However, it can be questioned if the current levels of CdB are low enough to reach the CdU target of 98% <2µg Cd/g creatinine. We will come back to this item when discussing the CdU values.

For CdU, the following observations were made:

- After some years of stagnation, the CdU values decreased again. When anticipating near future retirements, good workplace exposure and good personal hygiene, the most optimistic scenario indicates that in 2020, there will be 4.1% of all workers above the cut off value of 2µg Cd/g creatinine.
- Looking at the group of workers hired after 2000, the very pronounced trend of increasing CdU was finally reversed. If efforts arer continued, the target of less than 2% of workers above 2µg Cd/g creatinine can be met for this sub-group.

Conclusion CdU

- 2017 CdU target 95% workers < 2µg Cd/g creat.
  - We are very close to achieve this target
- 2020 CdU target 98% workers < 2µg Cd/g creat.
  - will not be achieved for the total population (The optimistic forecast indicates we could reach a value of 95,9%, remember: we come from 79,7% in 2008)
  - Is within reach for the subgroup of workers hired after 2000
- Positive elements:
  - Effect of reduced exposure as reflected by lower CdB values translates in a reduction of CdU values
  - The group with high cadmium burden (>5µg) is slowly disappearing (now 1.4%) from the workplace (retirement, removed from exposure, lower exposure).
- Negative elements:
  - Some plants should remind the medical doctor that removal from the workplace is highly recommended for workers with CdU > 5µg/g creat.
  - Historic Cadmium burden of some workers is still too high to bring them below 2µg Cd/g creat. by 2020.

General conclusion Biomonitoring

CdB

- exposure to Cd is back under control.
- Over the past 9 years, our industry has consistently improved the workplace exposure of its workers.
- Plants should aim to have all workers with CdB < 3µg/L in order to achieve the CdU target of 98% < 2µg/g in 2020.
- The following question is raised: should we lower the second action level for CdB (from 5 µg/L to 4 µg/L) of the 2013 ICdA Guidance?

CdU:

- Situation improved in 2016
- The 2017 target is within reach if efforts are continued
- For the subgroup of new hired worker, the 2020 target is within reach.
- For the total group, the ambitious 2020 target will be missed
- Coming from 79,7% of all workers above 2µg Cd/g creatinine in 2008, our sector has shown already excellent progress.

Together with the minutes, we will send a copy of the ICdA guidance document as a reminder to implement appropriate measure to minimize workers' exposure and to follow-up on the effectiveness. Continuous attention is required!

6- OCdAIR: results, analysis, discussion (Mik Gilles, ICdA) (cfr.Annex II, slides 30-37)

Objective:

Once we enter in the authorisation phase, which is expected to occur somewhere between 2018 and 2020, all plants will have to show compliance with the DNEL of 4µg Cd/m^3 (respirable) air. Therefore, it is of highest importance that plants already focus on this upcoming limit, which is for most countries lower than what is asked today. Attention should be given on how to demonstrate compliance to this low value as well as the sampling procedure and statistical processing of the sampling results.

Results of OCdAir-4

For 2016, the degree of participation was 20% lower as in 2015 and even 30% lower as in 2014. It is not clear if this is a result of the complexity of the monitoring set-up, the cost of the monitoring or just lack of awareness of the importance of this monitoring.

A number of plants still measure the total inhalable fraction while the standard requires the respirable fraction. It is recommended that for the next sampling, contracts are negotiated for sampling of respirable fraction. Typically, this fraction can be 4x lower which will make it easier to comply. Today, the inhalable fraction is imposed by some member states which means plants need to organise a second monitoring for the respirable fraction.

According to the standard, sampling of the workplace should be done. Some member states allow correction for PPE (personal protection equipment/masks), others don't. This split view reflects also in the reported monitoring data from our members.

Air quality should be under control to assure < 4µg Cd/m^3 **respirable** air, always and for all workers. At the moment, we believe the 90 percentile will be more likely looked at. This is somewhere in between the geometric mean ICdA initially applied, and the 95%percentile with a 70% confidence interval described in EN689.

As compared to 2015, the % of workers in a non-compliant SEG decreased from 17% to13%.

Recommended actions for OCdAIR-5

Measure respirable (only if required by your national authority: measure inhalable also)

Apply PPE efficiency factor, which is accepted by ECHA (however, PPE is accepted only in the very specific situations whereby no other general protection measures can ensure compliance)

Create a SEG for maintenance (**to prepare your Authorization dossier**)

Create a SEG within the non-Cd exposed worker population to demonstrate that these people are indeed NOT exposed (**to prepare for the Cd OEL impact assessment**)

Report average number hours/ year and maximum numbers of hours / year that people in each SEG are exposed to the reported Cd level (this will allow, **for the OEL impact assessment**, a reduction of cancer occurrence in the 'baseline scenario')

OEL reference value

The EU Commission has initiated the work to set an OEL for Cd (and Cd compounds). Without consulting, the SCOEL made a new opinion early this year which was further discussed at the WPC. At this time, the proposal of the WPC consists of

1. approach ONE: an OEL of 1 µg Cd/m³ inhalable in parallel to
2. approach TWO: the original SCOEL recommendation of 4 µg Cd/m³ respirable in combination with a BLV of 2µg Cd/g creatinine.

Although approach TWO is the original SCOEL recommendation, it will be though to defend: there is much opposition against the use of biological values (more invasive, privacy), especially from the German BAUA. Additionally, there could be legal hurdles:

- Setting both an OEL and a BLV could be impossible in today's legal framework.
- Having a dual approach (OEL of 1µg/m³ inhalable OR OEL of 4µg/m³ respirable + BLV of 2µg Cd/g creatinine) may not be feasible

Applying an OEL of 4 µg Cd/m³ respirable results in 13.1% non-compliant exposures. With the new OEL of 1 µg Cd/m³ inhalable, 89.3% of all workplaces are non-compliant.

Conclusion:

With only 16 plants reporting in 2016, and a short history of reported data, we need to take a higher gear. We urge members to participate in the next monitoring exercise for which we ask all to report by early October 2017.
The Commission has recently launched a tender to make a SEA on the implementation of a new OEL. The consultant is expected to be selected soon with a report due by end of December or early January.
Making an accurate SEA with few data is difficult and involves a lot of guessing. From experienced shared with us by the Beryllium Association that already went through such process, we now know that data gaps are filled in with extremely pessimistic information, leading to a large overestimation of today's societal cost of supposed health effects.

This is why we absolutely need to significantly increase the number of plants reporting to OCdAIR.

7. Status of recently started revision of the OEL for cadmium by the EU Commission (Patrick de Metz, SAFT) (cfr.Annex II, slides 39-45)

Situation as of end 2016

SCOEL recommendation of February 2010: Cd is a carcinogen group C, a genotoxic carcinogen for which a practical threshold is supported and a health-based OEL is proposed:

- OEL (8h TWA): 0.004mg Cd/m³ (respirable fraction)
- BLV: 2 µg Cd/g creatinine

These values were supported by literature

- **2µg/g creat (CdU):** protective against systemic effect of Cd exposure (kidney, bone)
- **4µg/m3 (respirable) :** protective against local respiratory effects of Cd exposure

ICdA has taken these values in the ICdA guidance 2013.

DG Employ program as of 10/01/2017

Develop amendment of the Carcinogens and mutagens Directive concerning cadmium (a.o.).

Timing: presentation of a new Commission proposal by early 2018

First step: update of SCOEL recommendation

SCOEL released a new opinion on 8/2/2017 adding the following to its previous recommendation:

> *"However, an isolated OEL of 4µg/m³ (not linked bit a BLV) would not appear being equally protective against systemic nephrotoxicity of Cd……..Accordingly, an OEL(not connected with biological monitoring) for Cd and its inorganic compounds should be 1µg/m³."*

According to the SCOEL opinion, this value of 1µg/m³ is derived to protect from systemic (kidney) effects, as an alternative to the BLV of 2µg/g creat. Although not explicitly mentioned in the document, we understand that this is an inhalable fraction OEL. This would mean that we are facing the equivalent OEL of approximately 0.25µg/m³ respirable (depends on particle size distribution of Cd in air which can differ from plant to plant). Being lower that the local (lung) protection level from SCOEL 2010, it would therefore be the one and only air target to be met by industry.

Second step: Working Party on Chemicals (WPC)

Although there as a strong push within the WPC for supporting the new "OEL only" approach, we managed through our industry representative at the WPC (Patrick Levy) to also add the still valid "old" SCOEL recommendation with a dual approach (OEL with a BLV) to the proposal. In the end, the WPC proposed to retain both approaches: the new one with only an OEL (as suggested in the 2017 SCOEL opinion) as well as the original one with a combined BLV and OEL (from the 2010 recommendation).

Third step: Advisory Committee on Safety and Health at Work (ACHS)

The ACHS agreed on this dual approach (a 4µg/m³ respirable OEL + BLV OR a 1µg/m³ inhalable OEL).

For the OEL only approach, a transition period of 7 years at 4µg/m³ inhalable is proposed, after which compliance with a 1µg/m³ inhalable fraction will become mandatory. Proposed OEL values are 8h TWA.

For the OEL + BLV approach, the OEL and BLV values of the 2010 SCOEL recommendation, confirmed in the 2017 SCOEL opinion are proposed.

The ACHS requests the Commission to investigate whether the combined biomonitoring and TWA OEL approach could be included in the CMD as a directly related provision with CMD Article 16.

Fourth step: Socio-Economic Assessment (SEA)

The Commission has send out a tender for doing a SEA on the effect of setting a binding BLV. It is expected amongst the received quotation; a consultant will be selected early July to complete the SEA by December (exact timing to be confirmed)

Discussion and Conclusion:

Looking back at the received reporting on workplace-air monitoring from our members, with the new OEL of 1 µg Cd/m³ inhalable, **89.3% of all workplaces are non-compliant**.

The way SCOEL derived the OEL was done incorrectly as background level of elevated proteinuria was omitted. Additionally, in the process of formulating its opinion, there was no consultation at all of industry where such error could have been addressed. SCOEL based its conclusions entirely on the BAUA document, including the error that BAUA made in its assessment. Patrick De Metz and Patrick Levy have visited the SCOEL secretariat and representatives of DG EMPLOY to address this issue. Apparently, there is no way to get the SCOEL opinion corrected/revised. Our best options would be to enter comments in the next steps of the process (address Commission and individual Member-state representatives participating in the Trialogues). With BAUA at the origin of the error, we should certainly consider a meeting with BAUA with support of German ICdA members and WVM.

8. What can ICdA and its members do to avoid the setting of an unrealistic OEL?

(Patrick de Metz, SAFT) (cfr.Annex II, slides 46-56)

For detailed view on this topic, see attached presentation.

Recommended actions to prepare for the impact assessment

- Gather OELs/BLVs in place in main competing countries:
  - USA, Japan, South Korea, China, Others …?
- **Generate (third party?) costs estimates to place your plant in compliance with:**
  - **4.0 µg/m3 respirable which is the ICdA Guidance level and the mandatory REACH DNEL**
  - **1.6 µg/m3 respirable required if the German approach is retained for cancer occurrence assessment modelling (quite likely to be raised)**
  - **Your view regarding the feasibility of reaching 1.0 inhalable (broadly eq. to 0.25 µg/m3 respirable)**
  - **We need to cover the following sectors: Cd production - Specialty compounds manuf - PV panels - Batteries manufacturing - Connectors manufacturing - Pigments manufacturing - Cd waste recycling**
  - **If we do not provide an estimate, the consultant will make his estimate with far less info.**
- Enhance coverage of OCdAIR-5 and deliver data for October 8th, 2017 (data of 2017!)
  - 2016: only 16 plants and 1300 workers (vs 28 plants and 3200 workers for CdU)
  - Compliance with 4µg/m3 is not great: 63% (+24%) with 90th percentile methodology!
  - More evidence of our intentions to improve workplace conditions is needed by demonstrating a high degree of participation on a voluntary basis
  - See detailed recommendations on page 7 above
- Generate OCdBIO-10 by October 8th, 2017 (data of 2017)
  - Purpose is to show continuous progress is made when following the recommendation of the ICdA guidance => reduction of workforce with CdU>2

9. Review of the ICdA Guidance document (Patrick de Metz, SAFT) (cfr.Annex II, slides 57-65)

Situation presented in OCdBIO-9 above shows likelihood of missing the 2020 target is high which is already bad news, but worse news is CdU of "2000 and after" workers is already too high (more than 2% are above CdU = 2..

Possible ways forward

- Introduce an enhanced program
  - Focused on the main “action biomarker”: CdB
  - Do not change action levels of CdU, this is more of a “result biomarker”
- Differentiate between ‘old timer’ and ‘recently hired’
  - Suggestion to reduce action levels in a differentiated manner for CdB:
  - If recently hired (on or after 2000), reduced action levels for CdB:
    - First action level: from 3 to 2
    - Second action level: from 5 to 4
    - Expected benefit: better control over CdU increase
  - If hired before 2000
    - Reduced second action level for CdB: from 5 to 4
    - Expected benefit: better control over CdU decrease
- Introduce a special section in Guidance 2013 describing how to insert new people into exposed area with the following provisions:
  - Make assignment temporary and conditional on following good hygiene practice (typically 18 months)
  - Have CdB tested upon entry and after 6, 12 and 18 months
  - Have the workers under mentoring by a hygiene leader,
  - Confirm position in Cd-exposed area if hygiene and CdB shows ownership of good habits is demonstrated,
- Keep program as is but enhance implementation (see section9) by reaffirming members’ commitment

Discussion and conclusion

The correlations between CdB and CdU make it more difficult to interpret the origin of elevated CdB levels without good knowledge of the history of the worker. For a same exposure situation, workers with historic high Cd burden will show higher CdB values as recently hired workers. The suggestions of Patrick are considering this effect but more data analysis is required before implementing these proposed changes. H&S managers are encouraged to look in plant data of individual workers (when available) to assess the appropriateness of the suggested changes. We will come back to this topic in a next meeting and hope that new information from members will become available to take further steps in improving the ICdA guidelines.

For the immediate future, preference is given to:

(1) introducing a section in the 2013 ICdA Guidance on how to introduce new workers in cadmium exposed positions, and

(2) evaluating a set of tools to enhance members’ participation (see section 9).

9. Proposals to strengthen commitment of ICdA membership to proper worker protection

During the discussion, a suggestion was made that instead of further tightening up the ICdA Guidance, it would be more productive to ensure a higher commitment of participants to worker protection by means of several tools (like what has been implemented by the Pb industry). These are:

- Making worker protection a key part of ICdA membership and allowing termination of membership for failing to demonstrate continuous efforts on this topic (amendment of by-laws required)
- Increasing the commitment of each member by securing a formal commitment from top management to follow specific guidance (when it does not constitute a relaxing of national legislation). A 'pledge' will be proposed for that purpose,
- Generating individual feed-back to members (top management and H&S manager) after the filing of OCdAIR and OCdBIO. A draft feed-back template will be generated for evaluation.

This proposal was further reviewed discussed by ICdA Chairman (Howard), ICdA H&S Ctee Chairman (Patrick) and ICdA Managing Director (Mik). A package will be shared with members of the H&S Ctee in July to gather their input. It is expected that the revised package will be proposed to the Board after the summer, to assess whether it can be presented to the October GA for approval.

10- Other business)

No other business was proposed and the meeting was convened at 16:00h.

ANNEX 1

Attendance list

Meeting	**ICdA_15th H&S Committee**
Date	***13 June 2017, from 10h am to 16h pm***
Place	***Diamant Meeting Center***

Names	Company	Names	Company
WINBOW Howard	JAMES M BROWN	LOMBAERT Noömi	ICdA
DE METZ Patrick	SAFT	GILLES Mik	ICdA
MARIE Elodie	SAFT	CANOO Christian	IZA
VOS Ann	NYRSTAR	VAN ASSCHE Frank	IZA
THERY Denis	UITS	HOLBROOK Adam	ENERSYS
DEVEZ Jean-Louis	SOFRADIR	ROCHNER Torben	ENERSYS
KREHER Philippe	ARTS-ENERGY	SEIDEL Jörg	ENERSYS
JANOTA Matous	NIMETAL	HEINECKE Mario	GLENCORE/NORDENHAMER
MAES Inge	METALLO		
CORULLA Silvia	METALLO		
By conference call:			
RENARD Alain	5N Plus	WADE Andres	FIRSTSOLAR
NOTTEZ Eric	SNAM	VANMOL Thierry	FLAUREA
Apologies from:			
GIELEN Dirk	NYRSTAR		
DEGROOF Mark	NYRSTAR		

ANNEX 2

Slides presented at the ICdA 14th H&S Committee