International Cadmium Association

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Minutes of the 4th ICdA H&S Committee

October 13th, 2009
Eurometaux, Metals Conference Center
100, Rue du Duc – 1150 Brussels

1- Introduction

Christian Canoo welcomes the participants. Twenty four people representing Boliden, Floridienne Chimie, Gaz, IZA, Hoppecke, James M. Brown, Nyrstar, Portovesme, Rockwood Pigments, Saft, Snam and ICdA attend the meeting, and introduce themselves (cf. file 1 Attendance list). Each participant signs a statement of compliance.

The provisional agenda proposed by ICdA is adopted (cf. file 2 Agenda).

2- Approval of the minutes of the 3rd H&S committee (June 16th, 2009)

The minutes of the third H&S committee (June 16th, 2009) are approved unanimously.

3- Objectives of the meeting: the place of individual and collective hygiene procedures in the ICdA guidance document *(Patrick de Metz)*

In his presentation (cf. file 3 Objectives of the meeting) Patrick de Metz reminds the objective of the ICdA Health & Safety committee which is to disseminate the ICdA Guidance document to ICdA member companies and their key personnel, the dissemination program being expected to be approximately 10 sessions long.

Patrick de Metz puts the 4th meeting in the general framework:

- After having discussed about
  - Medical Surveillance
  - Measuring Cd in air
- The today meeting is about
  - Individual and collective hygiene procedures
- The medical surveillance is not a primary tool but has to be considered only as safety net: in a perfect world there would be no need for medical surveillance
- The primary tools for risk management are plant cleanliness and hygiene procedures

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Patrick de Metz introduces the points that will be covered in the following presented themes:

- The review of the existing state of play based on the discovery questionnaire
- A discussion on selected topics

Patrick de Metz, the H&S committee chairman, introduces M Mario Gomez who has been appointed by ICdA as H&S Consultant, after the retirement of M Bernard Pitie.

4- Analysis of individual & collective hygiene procedures questionnaire responses

(Mario Gomez)

In his presentation (cf. Presentation 4th H&S Committee, chapter 4), Mario Gomez presents the analysis of the responses to the questionnaire:

1. A questionnaire had been addressed to the ICdA members on September 17th, 2009. The questionnaire, containing 52 questions, was built in 4 chapters:
   - Cleaning of workplace and equipment procedures
   - General hygiene rules
   - Design of lockers, showers and snack rooms
   - Training and audits

2. The purpose of this discovery questionnaire was to get an overview of the procedures and practices regarding "individual and collective hygiene procedures", and if possible to identify best practices and to set new benchmarks.

3. The results of 15 answers have been analyzed (a 16th late answer could not be integrated in the analysis), the percentages being calculated according to the number of plants (one plant representing 6.7%), not taking into account headcounts.

4. The results of each item are presented and commented

   a. For detailed results cf chapter 4 of the main Presentation file
   b. Scoring for main topics

      Cleanliness:

      i. 87% have vacuum cleaners available
      ii. 13% check list available
      iii. 71% forbid sweeping
      iv. 67% clean upper parts of building structures
      v. 73% empty horizontal sections of dust collectors

      Hygiene:

      vi. 27% prohibit smoking on site
      vii. 93% limit meals to designated areas under special procedures
      viii. 93% hand washing is mandatory
      ix. 60% partial clothe change before meals
      x. 67% impose prevention measures for beverages
      xi. 80% require shower at end of shift
      xii. 93% sub-contract cloth cleaning

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xiii. 80% accept masks in order to meet 8hr TWA OEL
xiv. 73% have clean/dirty sections in locker rooms
xv. 60% location of shower room so that employees have to go through
xvi. 67% impose special procedures for access to snack rooms

Training and audits

xvii. 100% train individually new recruited employees
xviii. 93% check periodically the wearing of PPE

c. The main factors (procedures, organization and equipments, PPE, training and audits) are generally properly taken into consideration
d. Nevertheless the rate of completion of about 70% for some important issues evidently still let room for improvement
e. Some specific items:
   1. Questioning regarding the reliability of fit tests using aerosol protocols.
   2. In lead industry spray-tests are used to put into evidence residuals of contamination (1st spray: solution of acetic acid 5%, 2nd spray: solution of iodide potassium 5% → precipitate of yellow-brown lead iodide). Evaluation of the feasibility of Cd spray-testing.

5. It is requested by participants to go really into detail for all the topics. This will be done in the frame of next Committees.

5- Coffee break

6- Some key points and discussion about individual & collective hygiene procedures

(Patrick de Metz)

In his presentation (cf. file 6 Main cleanliness and hygiene points), Patrick de Metz points out that the procedures are generally well implemented but that for some elements awareness levels around 70% are strong but not excellent.

He proposes to discuss selected topics:

- Cleanliness
  - Equipment
  - Upper sections
- Hygiene
  - Smoking
  - Drinking
  - Shower
  - Masks
- Plant design
  - Locker rooms
  - Shower rooms

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Summary of the discussion on the presentation

- Generally dry sweeping (use of brooms) is forbidden, but sometimes may be used as 1st phase to collect metallic residuals, vacuum cleaners or washing being used in a 2nd phase.
- Keeping the floors wet is part of the cleanliness policy: for very fine powders the most effective way is washing.
- Use of individual portable cleaners is discussed considering the risk of contamination due to improper emptying or maintenance, centralized vacuum cleaners are preferred.
- Vacuum cleaners must be equipped with absolute filters.
- Use of vacuum cleaners and wet cleaning for upper structures.
- Special procedure to start heating in order to prevent dissemination of accumulated dust.
- In some sites absolute non smoking policy: new people have to certify that they don't smoke and have not smoked in last years, it is part of the contract and it is agreed with the authorities.
- For others, people always find a way to smoke: it is better to authorize under controlled conditions.
- Several polices for drinking: small "one shot" bottle with screw, only fountains with the water running the whole time, but there is still a risk if people access with their work clothes.
- For meals requirement is partial or total clothe change, sometimes putting on a one way overall.
- The level of confidence in proper showering is generally high.
- Paying shower time has a positive impact, and group pressure helps.
- Hair washing is sometimes an issue.
- 7 from 11 sites provide soap and towel, 2 from 11 provide one of both.
- It is acceptable for most plants to have 8 hours mask wearing as part of the workplace. It is not acceptable in France to use masks to insure the required protection.
- One secondary but important function of a mask is to prevent contact finger to mouth.
- It is important to insure that people wear correctly their masks.
- The best design is to have shower room located between clean and dirty locker areas and to insure proper circulation of air: clean area →shower room→dirty area
- Questioning about air showers efficiency, cost and noise issues
- Work cloth policy is discussed with different preferences: one piece long-sleeved overall, one jacket and trousers easier solution to replace only the top or the bottom when dirty. Sometimes underwear is also provided (tee-shirts and socks).

Based on the questionnaire responses and the discussion recommended practices are joined in the Annex A.

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7- Restitution of OCdBIO (Occupational Cadmium Bio Indicators Observations) 2008 Data *(Professor Bernard)*

Patrick de Metz, the H&S committee chairman, introduces the invited speaker: Pr Alfred Bernard in charge of the Unit of Toxicology and Applied Pharmacology of the Catholic University of Louvain.

In his presentation (cf. file 7), Pr Bernard comments the results of the occupational cadmium Bio indicators observations:

1) The program is based on 3 fundamental observations:
   a. Cd is a cumulative poison, the kidney being the critical organ
   b. Critical renal effects are also observed
   c. It is unique to Cd that the Cd body burden can be estimated based on urinary Cd

2) Some years ago the target regarding risks was to diagnose the disease, and therefore to maintain Cd-U (Cd in urine) under the critical value. Now, risks being less and less accepted, the new objective is to get closer to primary risk and to prevent the accumulation of Cd, the main indicator being Cd-B (Cd in blood).

3) Pr Bernard comments a tentative scale to evaluate risks (slide 5, based on his publication 1996) establishing 4 zones, the red one (>10 µg Cd/g cr) being the zone we should avoid, considering that above this value there is a linear increase of the risk.

4) The distribution of Cd-U (slide 6) has been established using the data of 18 EU sites, representing a large population of 2,009 people:
   - 80.6% of the people, under 2 µg Cd/g cr, have in theory no risk
   - 2.3%, above 10 µg Cd/g cr, are probably people under risk, but we may guess that most of these people have nowadays been removed from exposed areas

5) The distribution of Cd-B (slide 9) is based on the data of 14 EU sites, representing a population of 1,234 people:
   - 72.9% of the people are in the green area (<2 µg/L Cd in blood), and 1.4% in the red area (>10 µg/L Cd in blood)
   - In the slide 11 we may observe a good correlation between the 2 analyses Cd-U and Cd-B, even if the 2 perimeters are not exactly the same

6) It would be relevant to present in the future the data separately for workers who are still exposed to Cd

Summary of the discussion on the presentation

- The presentation allows each site, knowing its own data, to position itself in the analysis and see which place there is for improvement.
- The idea is to see year after year the improvement.
- It is important that workers with high levels are no longer accumulating.

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- Statistics will mechanically improve as old workers retire and new workers are not expected to accumulate,Cd due to the progressive tightening of risk control measures in place.

- It is necessary to be careful with the results of Cd-U by excluding the cases with very low value of creatinine.
- It could be interesting to make a circular analysis exercise between laboratories to compare their results.

Suggestions made by Pr Bernard to improve the OCdBIO:

- The data should detail the numbers of people still exposed in each class,
- The data should detail the number of workers who left the cohort between two years and the number of new workers in the cohort:
    - New Count = Old Count + Additional workers monitored – Workers no longer monitored
    - For each exposure category, indicate the number of workers with an elevated protein excretion

Suggestions made by participants:

- Rather than communicating the last values, the average value should be communicated in order to improve accuracy.

8- SCOEL provisional recommendations regarding OEL and BLV. SUMDOC (Summary Documentation) and industry response strategy *(Patrick de Metz)*

In his presentation Patrick de Metz explains:

- The SCOEL/SUM reasoning based on:
    - The occupational exposure analysis which point to a threshold of 5-10 µg Cd/g cr
    - The general population studies stating that renal effects could be detected at Cd-U level of 2 µg Cd/g cr
    - The general scientific background considering that in occupational settings the dose/response relationship is documented
    - The dose/effect table (effects on kidney due to cadmium exposure)
    - The conclusion that, by applying an uncertainty factor of 3, the recommended BLV should not exceed 2 µg Cd/g cr
- The Cd REACH kidney study
    - The study concerns a cohort 608 workers in battery manufacturing
    - Dose/effect relationships have been analyzed between:
        - Urinary RBP and urinary Cd
        - Urinary β_2-m and urinary Cd
        - Urinary protein HC and urinary Cd

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  - Urinary RBP and urinary Cd never-smokers only
  - Urinary β_2-m and urinary Cd never-smokers only
  - Urinary protein HC and urinary Cd never-smokers only
  - The box-plot presentation allows to show up at what level of Cd in urine a probable meaning can be demonstrated (for example for urinary β_2-m in slide 13: the mean value is very similar for the categories 0-1 to 6-10, and only changes for the category >10)
- The specificity of cadmium pigments properties

Summary of the discussion on the presentation

- The proposed BLV (today 2 µg Cd/g cr) is a guidance BLV, it will stay within the SUMDOC but will not be integrated in an EU Directive
- The proposed OEL (today 4 µg/m3 respirable) will be an indicative OEL and will be integrated in an annex of an EU Directive
- The SCOEL reasoning is questionable because the safety factor 3, leading to the conclusion 2 µg Cd/g cr, is not explained
- The results of the Cd REACH kidney study don't support the statement made by SCOEL:
  - The box-plots show significant change only above 10 µg Cd/g cr, smokers being included or excluded
- There is a discussion about the opportunity to contest by SCOEL
  - The confusion between occupational and general population studies
  - The risk factor of 3
- But it appears that the SCOEL approach is different and considers the necessity to protect sensitive people, and that we cannot exclude that healthy workers will become more sensitive in some years
- The properties of cadmium pigments are different from those of other cadmium compounds (including CdS), the OEL should be set differently than other compounds for the same reason that the classification has been set differently

Next steps

- Pr Bernard will be generating an abstract within next 2-3 weeks
- Christian Canoo will coordinate the setting up of a meeting with SCOEL people within next weeks

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9- Setting of 5th H&S committee and long term planning

Fifth H&S committee:

Tuesday **2nd February 2010** (with medical doctors, Brussels)
Theme: **Medical surveillance program: implementation details, procedures, solutions.**

Sixth H&S committee:

Tuesday **8th June 2010**
Theme: **Choosing and maintaining the right Personal Protective Equipments (PPE)**

Seventh H&S committee:

Tuesday **19th October 2010**
Theme: **Implementing a prevention culture in our facilities**

10- Any other business

No special issue has been raised

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