International Cadmium Association

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Minutes of the 3rd ICdA H&S Committee

June 16th, 2009
Eurometaux, Metals Conference Center
100, Rue du Duc – 1150 Brussels

Nota Bene: a mistake has been discovered in the English and French translations of the Original Swedish legislation (cf. binder). Page 29, in the first cell of the table, µmol/L must be replaced by nanomol/L.

1- Introduction

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

Patrick de Metz, the H&S committee chairman, introduces the two invited speakers: M. Leif Aringer, Senior medical officer of the Swedish Health Authority for occupational health, and M. Lars Järup, from the Imperial College in London, expert in medical epidemiology, author of many articles on cadmium.

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

2 - Approval of the minutes of the 2nd H&S committee (10 March 2009)

The minutes of the second H&S committee (10 March 2009) are approved unanimously.

3 – The objective of the meeting and the structure of the ICdA guidance document

(Patrick de Metz)

In his presentation (cf. file 3) Patrick de Metz reminds the objective of the ICdA Health & Safety committee and explains the objectives of the present committee:

- Getting familiar with the ICdA medical surveillance programme section
- Understanding the scientific background behind it
- The Swedish programme structure and contents
- The structure of the ICdA guidance document
- The construction of the medical surveillance programme section

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- How to move from where each of us is to the implementation of the Guidance?

Patrick de Metz reminds also the differences existing between countries (and in many cases the difficulties for getting medical information), and the cadmium industry commitment to reduce cadmium exposure.
He insists on the fact that industry should not use a systematic rotation of workers from exposed workplace to less exposed workplace for managing cadmium exposure.

The participants receive a paper binder including the 1996 Eurometaux ICdA Guidance document, a large format decision/action table, the Original Swedish legislation (Arbetsmiljöverkets), its translation in English and its translation in French.

4 – Current status of cadmium as an environmental health problem and discussion on cadmium toxicology *(Lars Järup)*

M. Lars Järup informs the participants that his presentation (cf. file 4) is based on a paper which will be published in July in "Toxicology and applied pharmacology". Then, he presents successively:

- The exposure sources, the exposure pathways, the exposure trend, exposure and dose, occupational exposure and dose.
- Dose bio-markers of exposure
- The target organs (kidney and liver)
- The renal effects and the dose-response studies for tubular effects, glomerular damages, end-stage renal diseases
- On environmental renal effects, the threshold seems to be lower than previously thought ([Cd-U] at or around 1 µg Cd/g creat)
- The bone effects, cancer, other health effects and mortality
- The different risk assessments on cadmium and their proposals on the protection of the general population (environmental exposure).

Summary of the discussion on the presentation

- When one speaks of cadmium concentration in air, it is necessary to know if the concentration concerns total concentration, concentration in inhalable air or concentration in respirable air (alveolar air).
- It is noticed that cadmium concentration in the environment is decreasing in industrial zones when the cadmium emissions are decreasing.
- Women have higher cadmium body burden because they have lower iron stores than men, which facilitates cadmium absorption.
- Beta-microglobuline is degradable in acid urine
- Cadmium effects on bone: many studies reported in the presentation concern only women.
- M. Jarup reminds the well-known confounding factors in the different studies on lung cancer and that there is no scientific proof for cancer in humans. He fully supports the existing EU classification (carcinogen cat. 2).

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- The discrepancies between the different limit values for Cd-U in general population versus exposed workers are mainly due to the healthy worker effect. Workers are in better health than the general population and can tolerate higher concentration without showing adverse effects.
- Nobody knows how it is possible, today, to decrease the Dietary Weekly Intake from 7 to 2.5 µg Cd/kg body weight/week.

5 – Few comments of the coffee break (excellent coffee!)

6 – Swedish regulation on cadmium exposure at work places and discussion on cadmium medical supervision *(Dr Leif Aringer.)*

In his presentation (cf. file 6), Leif Aringer describes the Swedish regulation on cadmium which is based on the following stages:

- Medical surveillance in occupational setting: AFS 2005:6
- Medical surveillance of cadmium exposure; Doctors examination
- Medical surveillance of cadmium exposure; Certificate of fit for work
- Periodic exposure monitoring
- Measures based on exposure monitoring (B-Cd nmol/l)
- Interpretation of urinary analyses (µmol Cd/mol creatinine)
- Registration of the results and Reports to Swedish Work Environment Authority (SWEA)

Summary of the discussion on the presentation

- The Swedish system is not mandatory for self-employed workers.
- Elevated blood pressure is defined as 140/90 mmHg or greater
- Because of differences in metabolism, reference values of biomarkers should (in theory) be different between men and women, but it is difficult to do so for political reasons.
- The Swedish regulation does not specify in details the levels of Low Molecular Weight (LMW) which are acceptable/unacceptable.
- When discussing with the laboratories which do the measurements of LMW micro-protein excretion, it is very important to know the reference (normal) values they will use to base the normal/abnormal conclusion.
- Correcting [Cd-U] by the creatinin concentration is very important and two point sneed to be made:
    - [Cd-U] in µg Cd/L must be divided by [U-Creat] in g creat /L, in order to generate [Cd-U] in µg Cd/g creat
    - To be meaningful, [U-creat] must be (ICdA guidance indicates, section 4.2) > 0.5 g/L.
- Discussions with Professor Bernard (UCL) on this topic are that we should prefer the following levels: **3µg/L > [U-Creat] > 0.3 µg/L.**
- The laboratories should be accredited and involved in inter-laboratories trials of bio-markers (Round Robin tests).
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- The German guidelines for Cadmium biomonitoring are very similar to the Swedish one, but without strict guidance values. But they require an accredited laboratory.
- ICDA should gather the name of the different accredited laboratories used by the companies and receive the information on whether they participate in a Round Robin test on [Cd-U], [Cd-B] and LMW measurement.
- The Swedish regulation has a strict obligation of declaration of Unfitness for Cd-blood because Cd-blood is directly related to present/recent exposure, while Cd-U is related to cadmium accumulation.
- The orange zone (as defined in the Swedish and ICdA guidance document) is interesting because it gives the possibility of making other investigations. It is a warning zone. It is also interesting because of the Healthy worker effect.
- The management of cadmium exposure is based on a combination of science and social considerations (for example, there is a difference in the management of young workers and older workers).
- M. Jarup concludes the discussion by saying that there is no plan to change the Swedish regulation.

7 - Analysis of medical monitoring questionnaire responses *(Erik Schuurmans)*

In his presentation (cf. file 7), Erik Schuurmans presents the analysis of the responses to the medical monitoring questionnaire:

1) Presentation of Nyrstar
2) Response: twenty questionnaires have been included in the analysis, representing 95% of the plants
3) Structure of the programme, origin of programme, what includes workers in a programme, Model programme, Biomarkers/ BioExposure Indices (BEI's)/ Biological Indicator (BI)
4) Operational information exceeding threshold, conversation with doctor, Confirmation of results, feedback. Difficulties to get information about enhanced surveillance or unfit. Data communication.
5) Quality samples & testing results, Precaution against contamination (urine, blood), Quality assurance
6) Recruitment of new employees
7) Consequences of the SCOEL 2 µg Cd/g creat, ICdA guidance

Summary of the discussion on the presentation

- The number of workers concerned by a medical surveillance in those questionnaires returned is 2321, and about 2500 when including Portovesme workers
- Test on the use of a respiratory mask (slide 11, point 3): the head of the worker, wearing a mask, is covered by a bag in which a sweet aerosol is injected. If the worker identifies the sweetness of air, it means that the mask is not tight-fitted.
- Communication of results: in some cases an agreement is signed between the worker and the company allowing (and limiting the number of) people having access to his personal data.

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- Confidentiality: one of the problems is to get the information when workers go from green zone to orange zone, which is the warning zone.
- Correction of creatinin: this point is very important and its importance is underestimated. If the creatinin correction is not similar between sites it will be difficult to aggregate Cd-U data.
- Use of ICdA guidance document: some companies have answered that they use the ICdA guidance document, but their responses to several questions show that it is not completely accurate. It means that ICdA have to make progress in communication.
- In reality, from time to time, it is the corporate which get the information and not the sites.
- The ICdA website could be useful for communication.
- Simplified ICdA guidance document: it appears a need for a simplified compact list of items.

8 - How to move from the present state to the ICdA recommendations ? *(Patrick de Metz)*

In his presentation (cf. file 8) Patrick de Metz explains:

- Where Industry is at the present time, where Industry needs to go from there and how shall we get there
- What needs to be implemented?
  - -The Decision table
  - Many procedural details
- The need for a comprehensive, coordinated, holistic approach
  - With cleanliness policies
  - With individual and collective hygiene policies
  - The Introduction of new bio-markers must be progressive
- How to ensure a system works?
  - With a joint effort and communication between all actors
  - With a strong coordination with and within the medical team, between occupational doctor and nurse/medical secretary, between medical team and the rest of the plant
  - By measuring what is achieved
- Conclusion: occupational team holds a key role in the process.

Summary of the discussion on the presentation

- Criteria for inclusion in the medical programme are a key point
- If the managers are transparent and honest, there is no problem with employees
- Cd-B is the pertinent indicator for managing young people, but Cd-U is a better indicator for managing “historical employees”.

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9 - Setting up the observatory of cadmium occupational exposure *(Patrick de Metz)*

Patrick de Metz (cf. file 9 and 9-bis)) reminds the decision of the previous meeting for setting up an observatory on cadmium occupational exposure (OCdBIO) and confirms the objectives of this observatory: The next step will be a first run on the data of 2008.

Key points on the organisation of the first run

- ICdA (Christian Canoo) will send an email asking all the plants if they intend to participate in the OCdBIO. The answer about each plant participation, along with an estimate of the number of people under specific Cd medical surveillance has to returned before Friday 26th June
- ICdA will then send a questionnaire to the participating plants on Monday 29th June
- The responses will be sent to ICdA before the 17th of July
- The anonymous and aggregated data will be sent to Pr Bernard (UCL) in July and his report is expected for the beginning of October to be presented to the 4th H&S committee.

Summary of the discussion

- The questionnaire will also include a question on the laboratories which make analyses (Name and address)
- As indicated previously, it is necessary to get more information on the methods used by the laboratories for correcting Cd-U in relation to creatinin.
- ICdA will question Pr Bernard again on this issue and the questionnaire will include a question on this key point.

10 - Fourth H&S committee (13th October 2009) and long term planning

1) Fourth H&S committee
It has been decided to postpone the 4th H&S committee from the Tuesday 15th of September to the **Tuesday 13th of October, in Brussels**

Theme: **Individual and collective hygiene procedures**

2) Fifth H&S committee

Provisional date: **2nd February 2010**
Theme: **Medical surveillance program: implementation details, procedures, solutions.**

11 – Other topics

Cadmium in respirable air and cadmium in inhalable air

- During the 2nd H&S committee ICdA asked to participants to get data on the ratio Cd in respirable air/Cd in inhalable air.

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- These values are necessary for preparing an answer to the SCOEL proposals, when the discussion period will be opened, i.e. not before the end of 2009 because the SCOEL has some difficulties for defining how such low concentration can be measured.
- Few results are briefly given by the members: the ratio Cd respirable/Cd inhalable seems to be comprised between 1/10 and 1/5.
- Patrick de Metz asks to the participants to make more measurements

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