International Cadmium Association

7th ICdA H&S Ctee

June 7th 2011

Objective of H&S Com meetings

- Reminder:
  - The H&S Ctee was set up **primarily** to assist ICdA members with the implementation of the ICdA Guidance document
  - "ICdA Guidance on the management of the risk related to chronic occupational exposure to cadmium and its compounds"
- Source of this initiative:
  - Cd/CdO risk assessment (RA) shows a conclusion that there is a risk to workers under current management methodologies (2007)
  - Under the current "REACH" regulation, the same "risk management precautions" apply, for Workers and for the Environment

Past (and future) H&S Ctees

- Launch of the committee, definition of the format and content
  - 1st Ctee, dated Nov 25th, 2008
- Measuring air quality
  - 2nd Ctee, dated March 10th, 2009
- Medical supervision adapted to cadmium risk
  - 3rd Ctee, dated June 16th 2009
- Individual and collective hygiene procedures
  - 4th Ctee, dated October 13th, 2009
- Detailed procedures regarding medical surveillance
  - 5th Ctee, dated June 8th: 2010
- Status a the REACH registration process
  - 6th Ctee, dated October 15th, 2010
- **Choosing and maintaining the right PPE**
  - **7th Ctee, dated June 7th, 2011**
- Implementing a prevention culture in our facilities
  - 8th Ctee, date to be set: October, 2011 ?

Agenda for Today's meeting

- Introduction: - Welcome / Agenda / Competition law compliance
  - Objectives of the meeting: Scope of ICdA program, connection with the REACH process and corresponding "Risk Management measures
- Approval of the minutes of the 6th H&S committee (October 15th 2010)
- Cadmium regulation framework in Germany
- EU Regulatory framework concerning workers protection and the PPE-solutions
- Survey of PPE-standards among ICdA-members

-Lunch-

- Occupational Cadmium Bio Indicators Observations: short review of OCdBio 1 and 2 (data 2008 and 2009); Arrangements for OCdBio 3 (data 2010)
- ICdA –conference in China – November 2011
- Setting of 8th H&S committee and long term planning

Statement of Compliance

- The purpose of the meeting is to address, under the applicable confidentiality rules, issues concerning cadmium and cadmium compounds producers and users and more particularly H&S issues, as reported in the Meeting's objectives .
- The minutes kept at the meeting will have to reflect all significant matters discussed during the meeting.
- No discussions will be held, formally or informally, during specified meeting times or otherwise, involving, directly or indirectly, express or implicit agreements or understandings related to: (a) any company's price; (b) any company's terms or conditions of sale; (c) any company's production or sales levels; (d) any company's wages or salaries; (e) the division or allocation of customers or geographic markets; or (f) customer or suppliers boycotts; or (g) any disclosure of information which may affect applicable rules on Competition Law.
- The International Cadmium Association, as a group will make no recommendations of any kind and will not try to reach any agreements or understandings with respect to an individual company's prices, terms or conditions of sale, production or sales levels, wages, salaries, customers or suppliers.

Minutes - 6th H&S cmtee – 15/10/2010

- Introduction: -Welcome / Agenda / Competition law compliance
- Approval of the minutes of the 5th H&S committee (June 8th 2010)
- Objectives of the meeting: status of REACH process for Cd-substances and corresponding 'Risk management measures'
- Review of registered Cadmium files so far
- Survey of a IUCLID dataset and CSR: case of cadmium metal
- Restitution of OCdBio-2 (Occupational Cadmium Bio Indicators Observations) 2009 data
- Review of the 'Risk management measures' developed in each Cd-Reach dossier, i.e. exposure scenarios and assessment
- Setting of the 7th H&S committee and long term planning

Cadmium
Regulations in Germany

Rolf Rodermund *Xstrata Zink*

Legislation on Hazardous Chemicals in Germany

Committee on Hazardous Substances (1)

- Based on § 20 Hazardous Substances Ordinance
- Tripartite Committee advising **Federal Ministry of Labour and Social Affairs**

  → OSH-measures (incl. classification and labelling)
- 21 members
  (representatives of social partners, enforcing authorities, statutory insurance and others)
- Two meetings each year

Committee on Hazardous Substances (2)

- **3 subcommittees** assisted by **working groups**
  - Hazard management (I)
  - Protection measures (II)
  - Hazard risk assessment (III)

Committee on Hazardous Substances - management board

Bundesanstalt für Arbeitsschutz und Arbeitsmedizin (BAuA)

www.baua.de/en/Topics-from-A-to-Z/Hazardous-Substances/Hazardous-Substances.html

German OEL System

Previous system (abandoned end of 2004)

- health-based OELs (**MAK values**)
  for non-carcinogens (& for carcinogens with threshold)
- technical-based OELs (**TRK values**)
  for about 70 carcinogens (without threshold)

Current system (introduced as part of the new Hazardous Substance Ordinance in 2005)

- only health-based OELs
- technical-based OELs abandoned
- Risk based concept for CMR's without lower effect threshold (**ERB** – Exposure – Risk – Relationship)

German OEL System

Basics of ERB

Announcement 910 of the Federal Ministry of Labour and Social Affairs (BMAS):

- The known risks of a fatal accident at workplaces differ considerably (Alz: working lifetime [40 years]):
  - Agriculture 3 : 1,000 / Alz
  - Building industry 2 : 1,000 / Alz
  - Mining 3 : 1,000 / Alz
  - Retail 4 : 10,000 / Alz
- For the German general population, the Expert Committee for Environmental Issues (SRU) specified an acceptable risk for a graduated reduction of concentration values in the amount of the "internationally discussed risk level of 1 : 100,000".
- The conference of the Ministers of Health agrees with the SRU, indicating that a lifetime risk of 1 : 100,000 for individual substances is the goal of a gradual reduction of environ-mental concentrations.

Committee on Hazardous Substances

Cadmium – Status in AGS

Proposal for ERB (Q1 2010)

Risk	Concentration (resp. Fraction)
"Point of Departure": BMD10, lung cancer, rat (Cadmiumchloride), Takenaka et al., (1983)	40 µg/m³
4 : 1,000 (Tolerable risk)	1.6 µg/m³
4 : 10,000 (Acceptable risk, preliminary)	160 ng/m³
4 : 100,000 (Acceptable risk after 2018)	16 ng/m³

German OEL System

Cadmium – Status in AGS

Actual status of discussion:

- The subcommittee has accepted, that such low values of Cadmium in air are not realistic. Industry will never reach an acceptable risk. An ERB shall not be established.
- The subcommittee has accepted the argument, that at such low concentration in air biomonitoring becomes the most important monitoring factor.
- Biological reference value (BAR*)):

  Cadmium in Urine 0.8 µg/l

  Cadmium in Blood 1.0 µg/l
- A BLW shall be developed. 1st proposal is very close to / identical with the BAR.

*) is the 95 percentile of the general population between 18 and 65 without occupational exposure.

Thank you

Workers protection on the workplace
PPE – EU regulations

Summary

ICdA

EU-regulations >>> PPE

- The council Directive 89/686/EEC covers personal protective equipment (PPE) and lays down harmonized conditions for placing PPE on the market
- The daughter Directive 89/656/EEC defines the term 'personal equipment' as "… designed to be worn by the worker to protect him against hazards encountered at work"
- Such equipment must be used when the existing risks cannot be sufficiently limited by technical means of collective protection or work organization procedures.
- The European Commission is holding a public consultation on the possible approach towards the revision of the Personal Protective Equipment Directive 89/686/EEC and is inviting all interested parties to contribute.
- To participate and contribute your view, you can complete the EU's Interactive Policy Making online questionnaire.
- The consultation process runs from 13 April 2011 to **14 June 2011**.

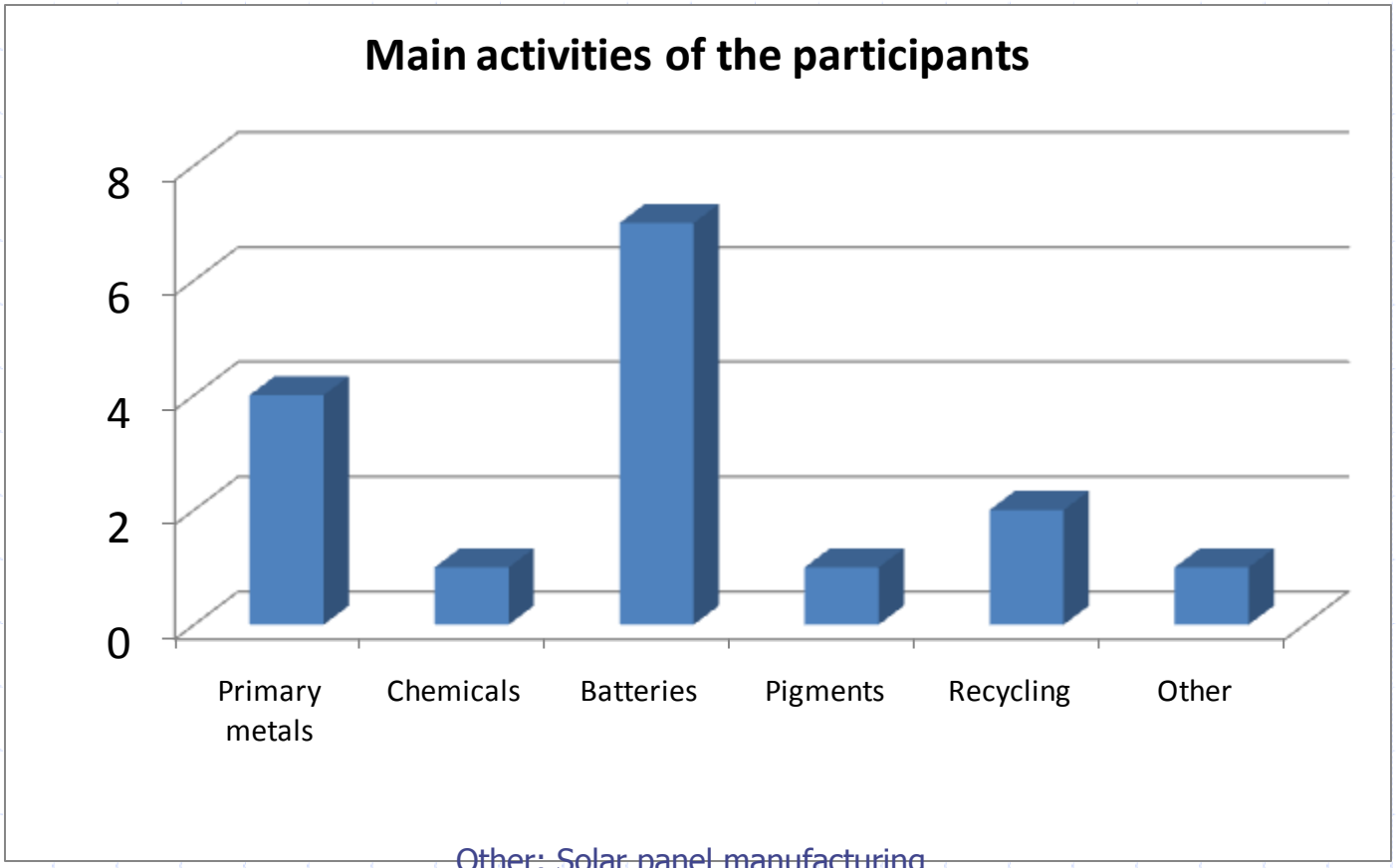
Questionnaire on Personal Protective Equipment

Summary

Rolf Rodermund *Xstrata Zink*

General information

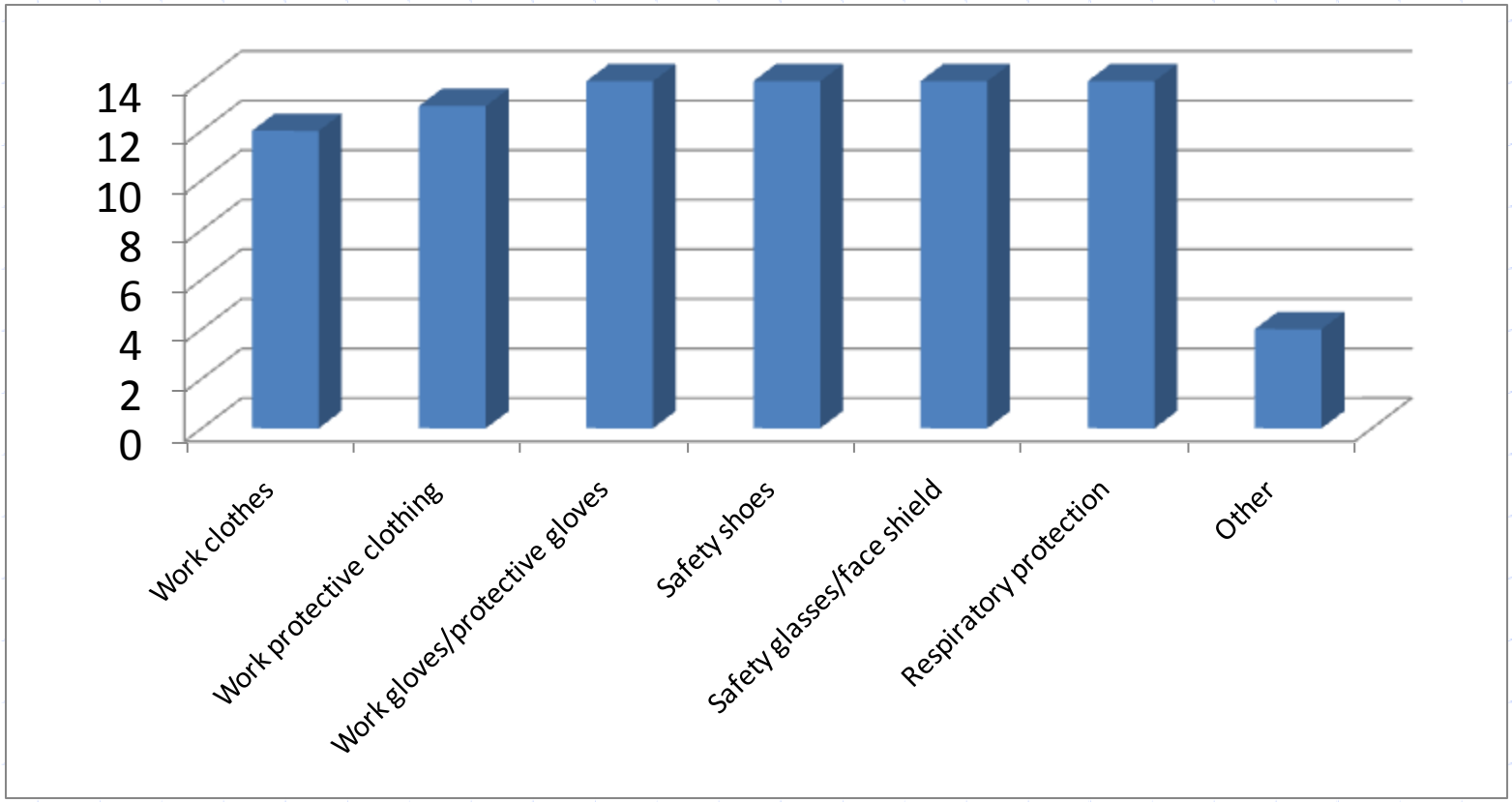
- 14 questionnaires have been recieved back until May, 24th 2011



Other: Solar panel manufacturing

1. Personal Protective Equipment

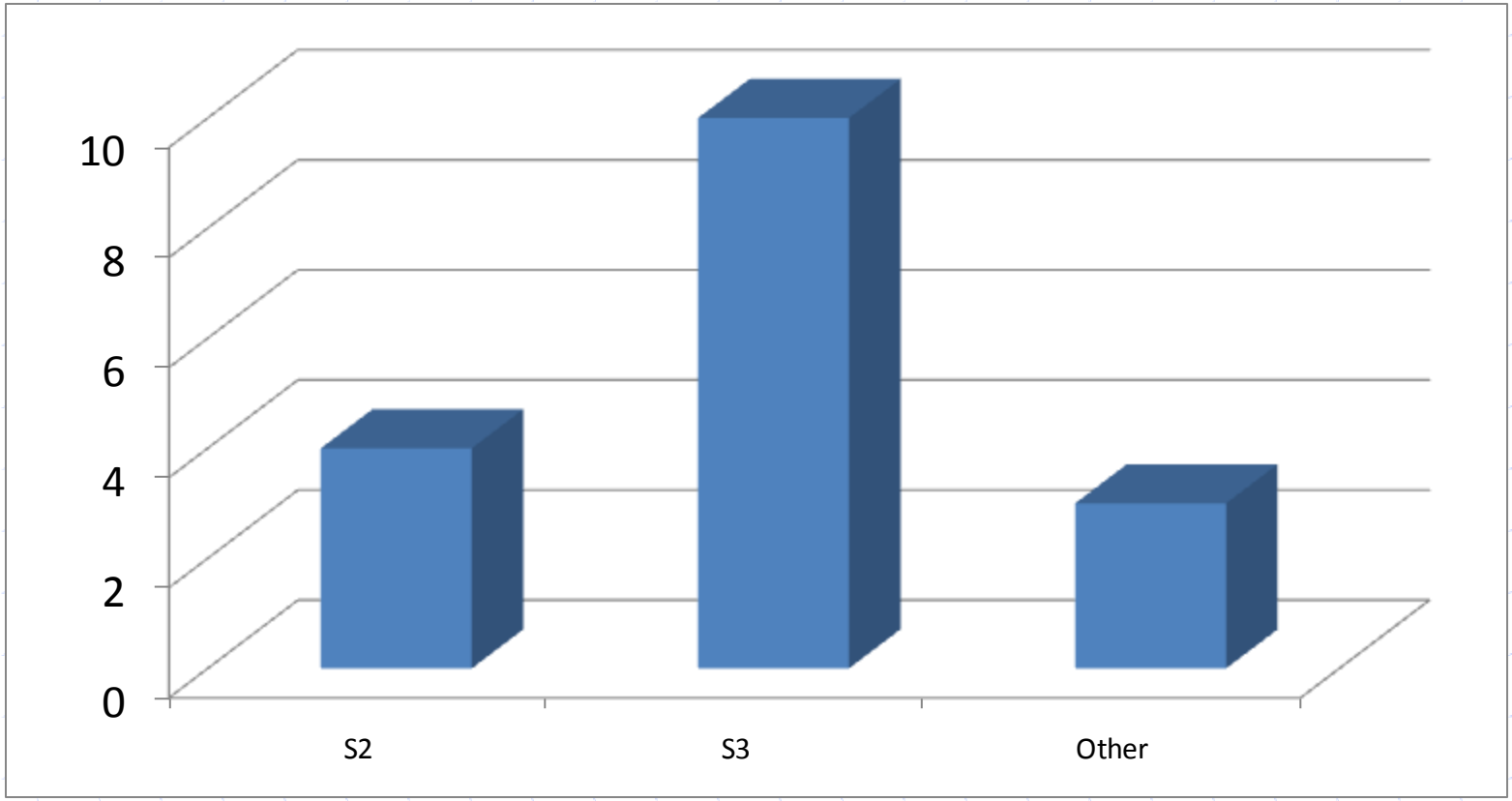
1.1 Which kind of PPE is provided?



Other: hard hat; aprons; wellington boots for secure tasks; particle protection suit; helmet-ear protective equipment

1. Personal Protective Equipment

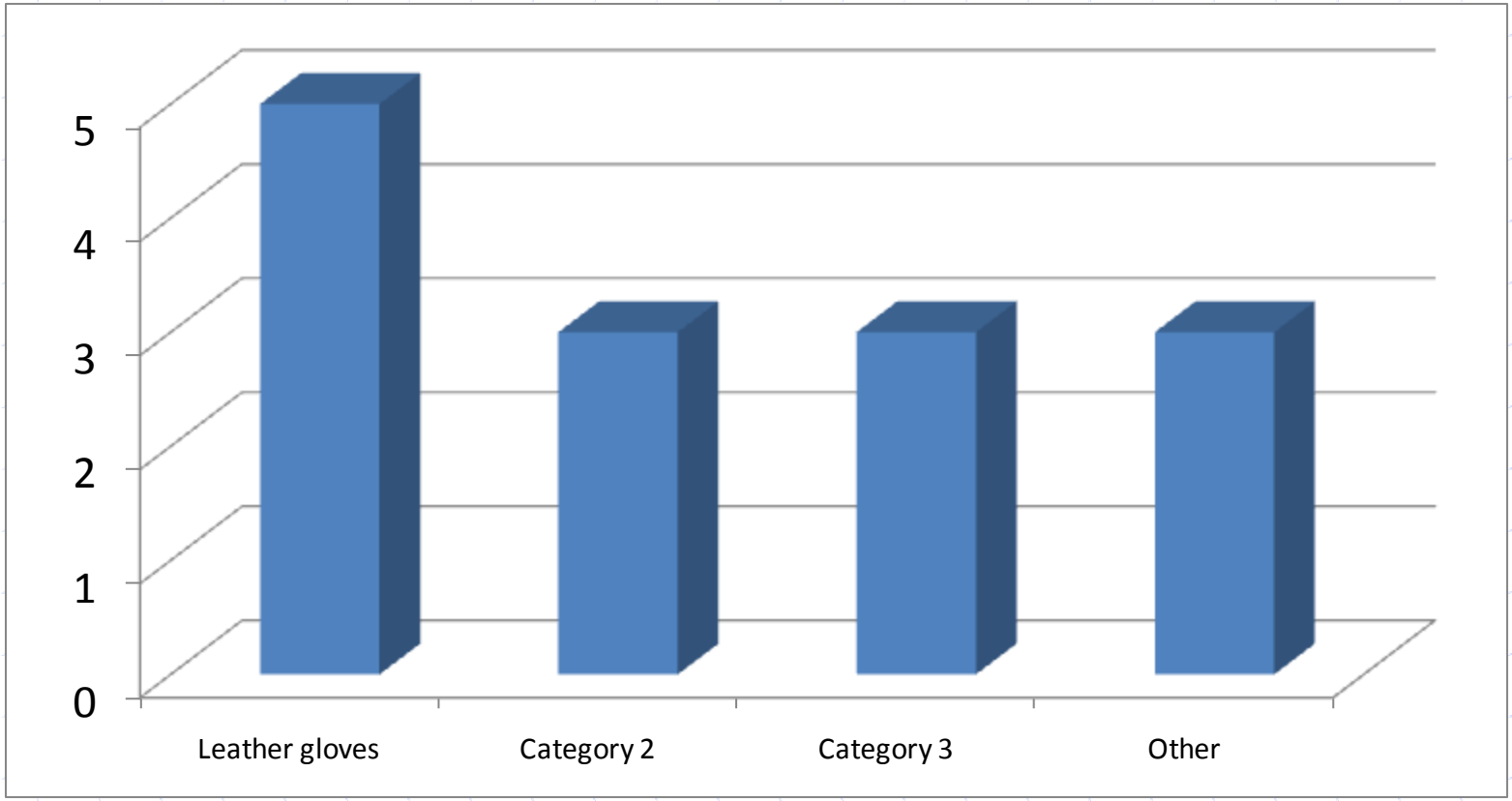
1.2 Which kind of protection class/level do the safety shoes have?



Other: HRO; S5 (wellington bootes); S1 – sole resistant against oil

1. Personal Protective Equipment

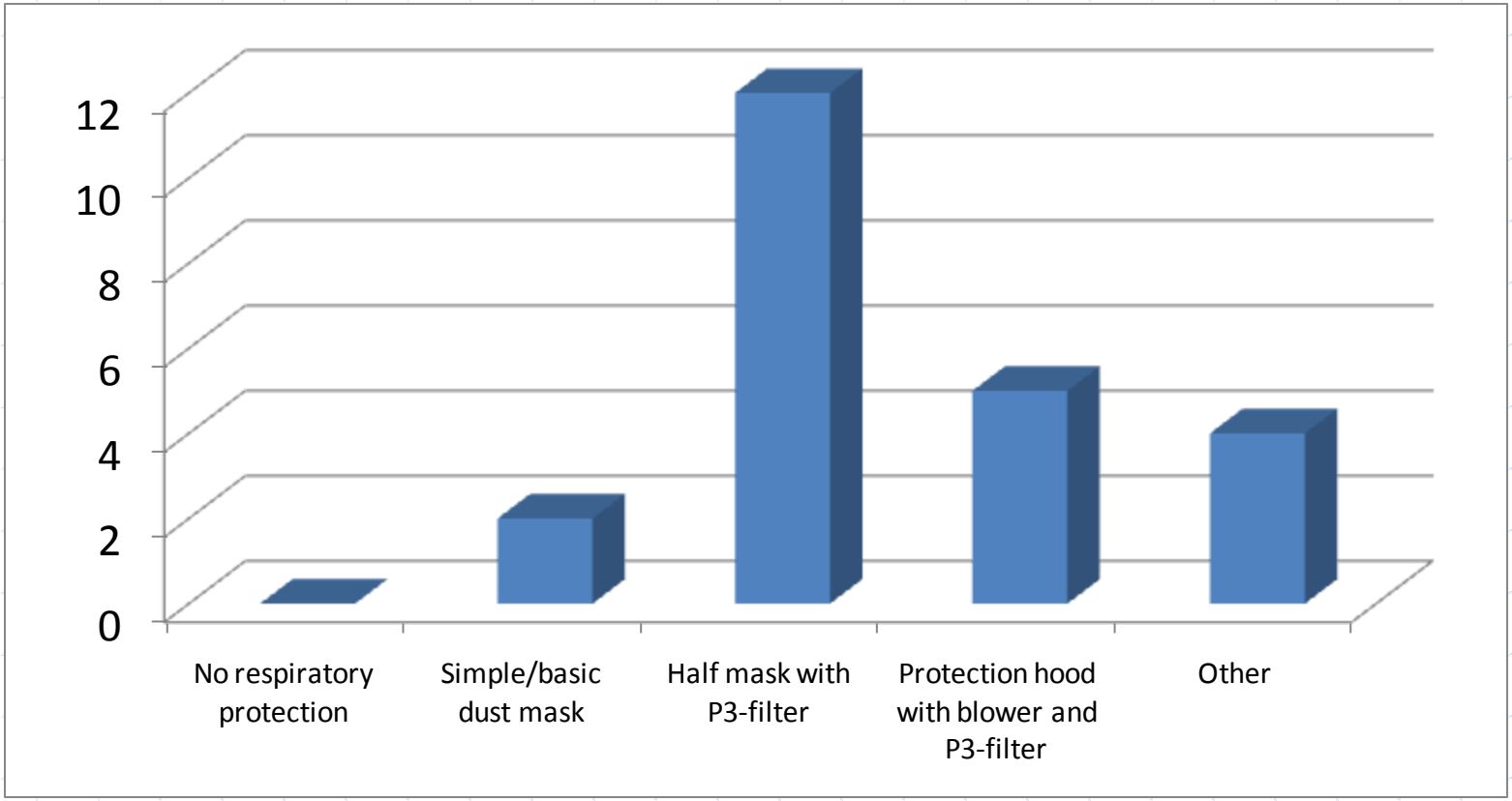
1.3 Which kind of gloves will be used in your company when working with cadmium?



Other: EN 388; EN 374; EN 407; depending on tasks (chemical resistant, disposable, temperature resistant, …)

1. Personal Protective Equipment

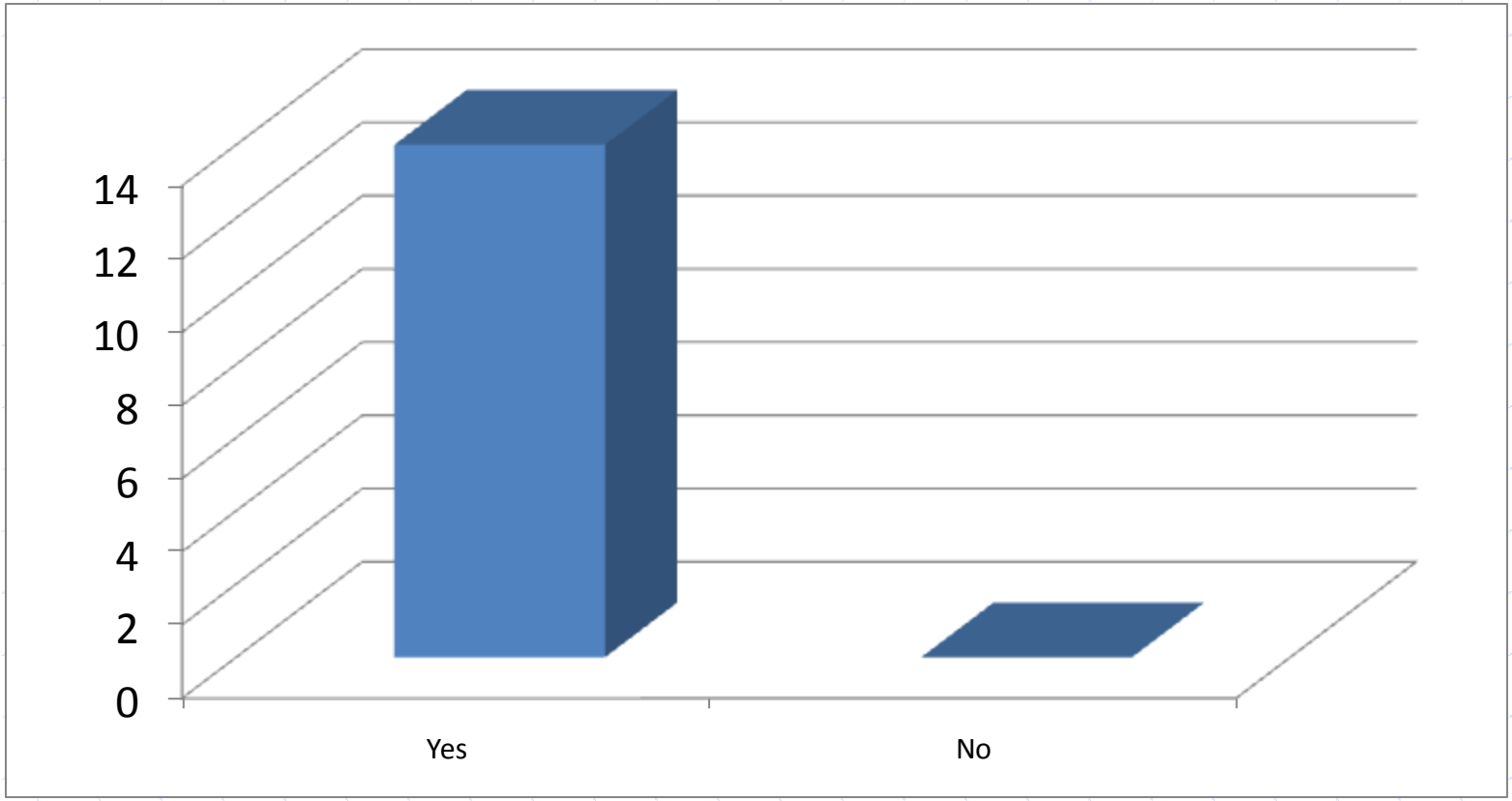
1.4 What kind of respiratory protection is in use?



Other: P3 + active carbon filter; with fresh air; cannister or 28-day reusable for fume/vapour and small emergency spillages; half mask with E1P2/E1B1P2-filter; full face mask with ABEPK-filter

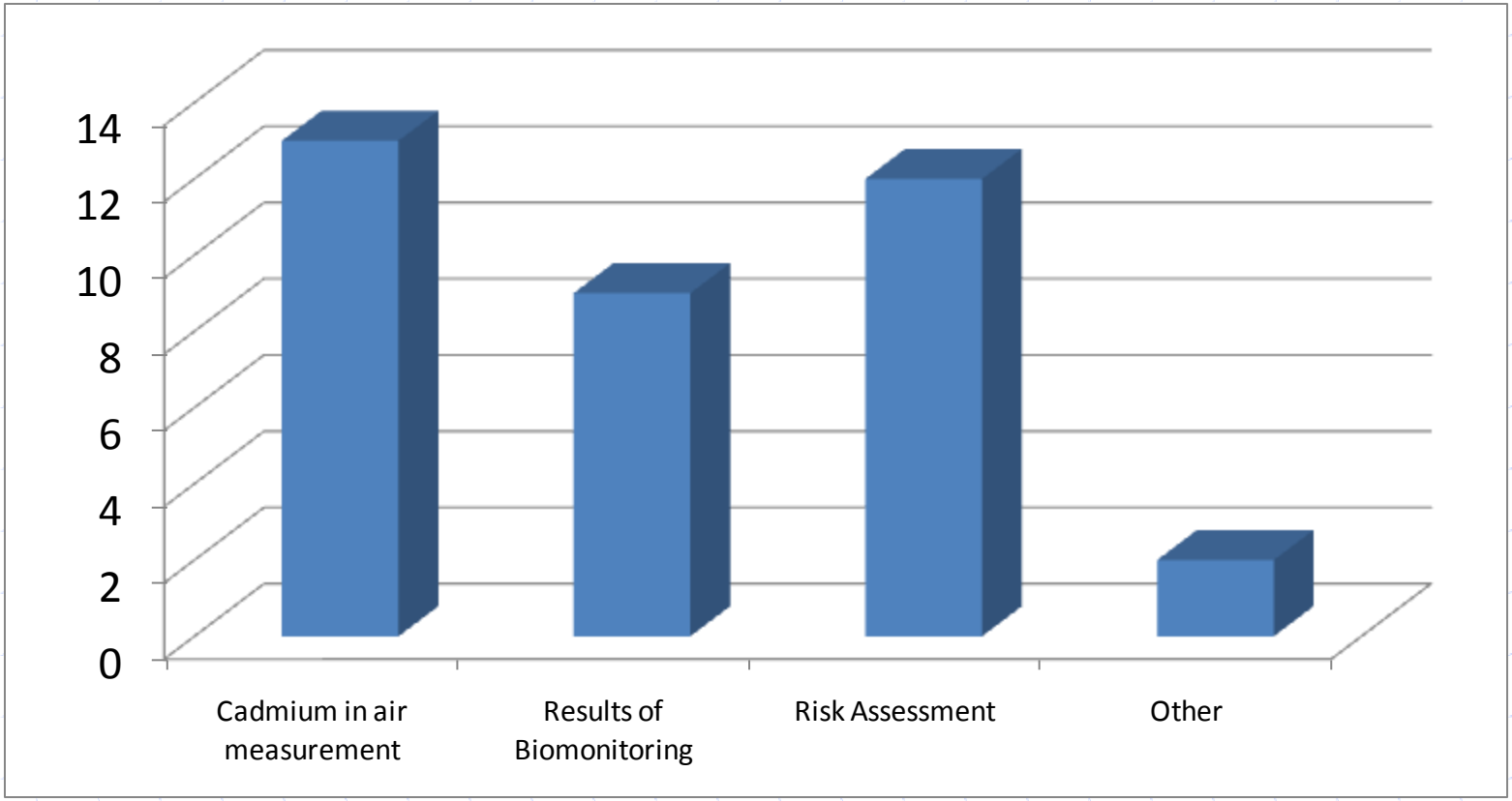
1. Personal Protective Equipment

1.5 Does your company provide one-time overalls for carrying out special (dirty) works?



2. Respiratory Protection

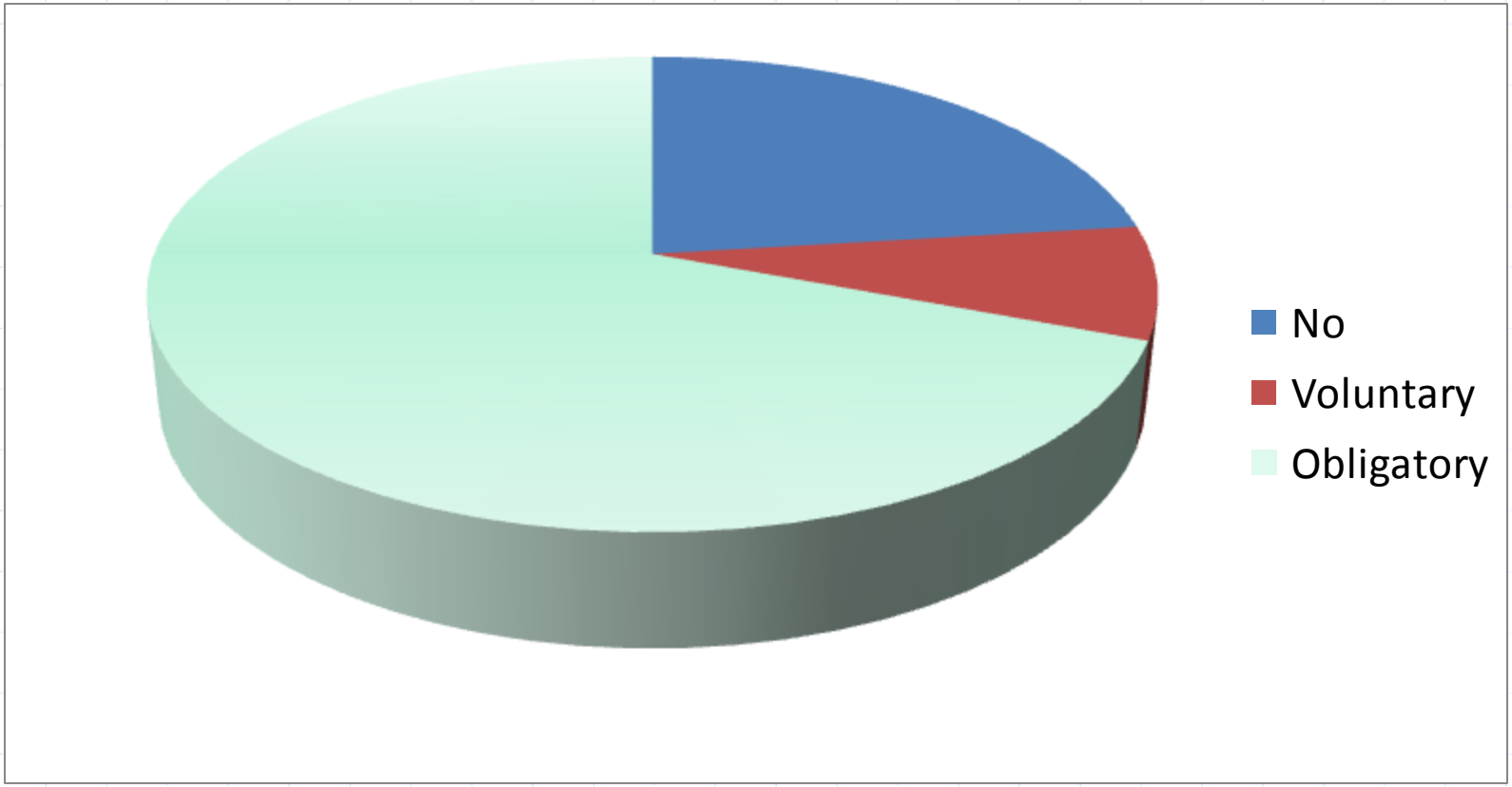
2.1 Which are the criteria to determine areas, where respiratory protective equipment has to be worn?



Other: Industrial Hygiene Assessment; static and personal dust monitoring

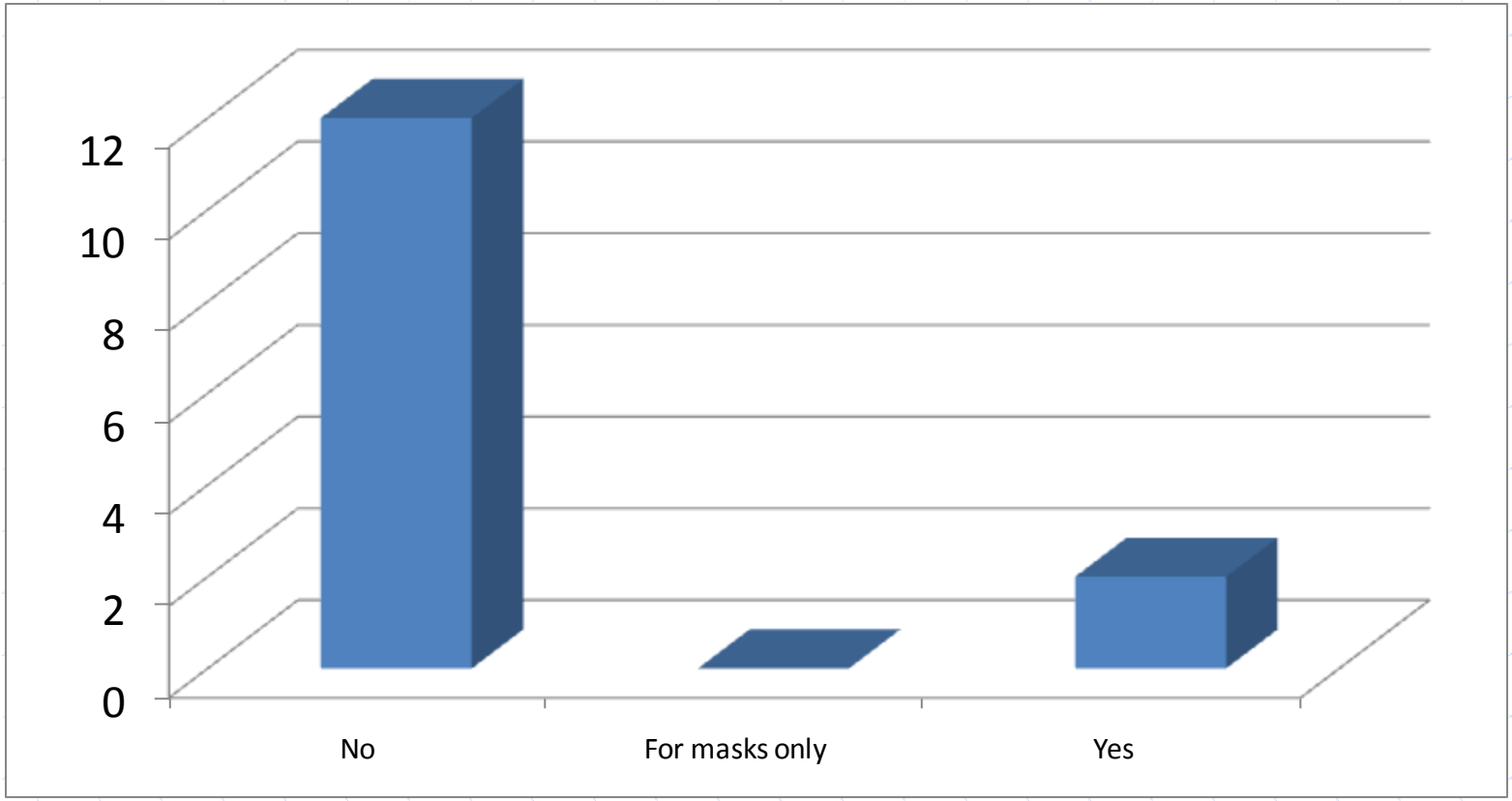
2. Respiratory Protection

2.2 Is there a medical examination for concern on wearing respiratory protective equipment?



2. Respiratory Protection

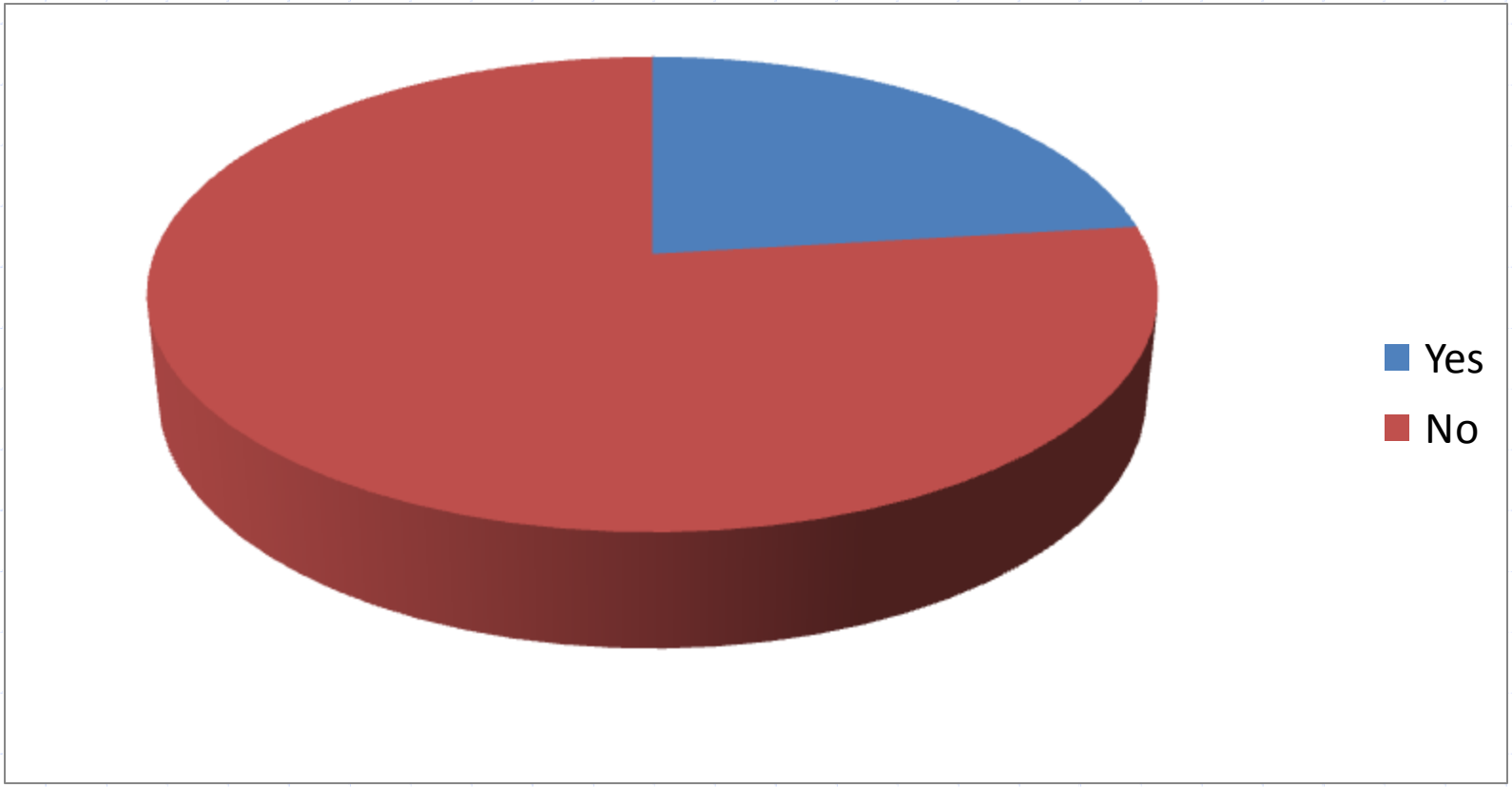
2.3 Is there a time limit for wearing respiratory protective equipment?



Yes: one shift; see BGR 190 (regulation of the employers' liability insurance association – „Use of respiratory protective equipment"/ German law)

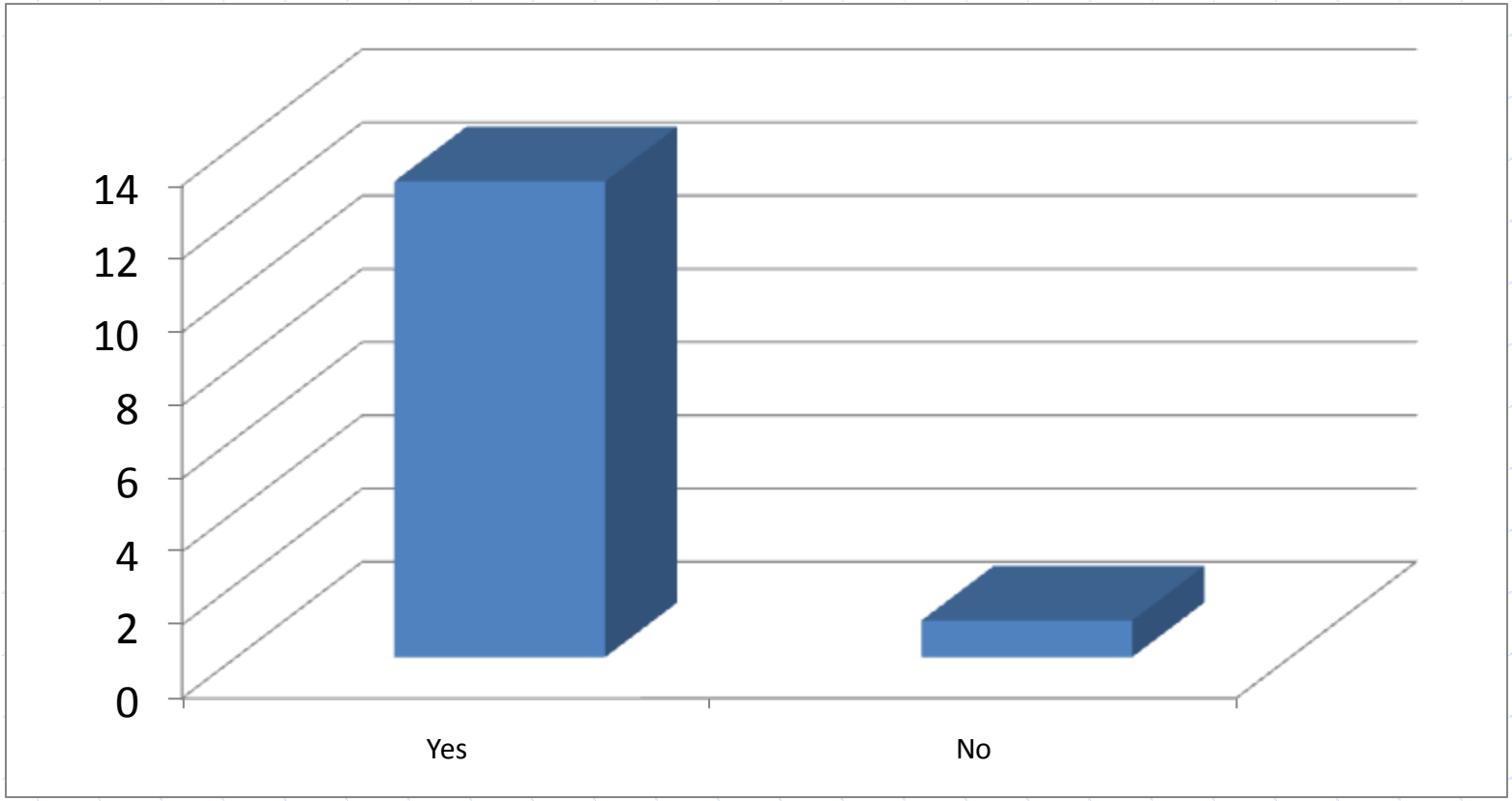
2. Respiratory Protection

2.4 Is there an extra payment for wearing respiratory protective equipment?



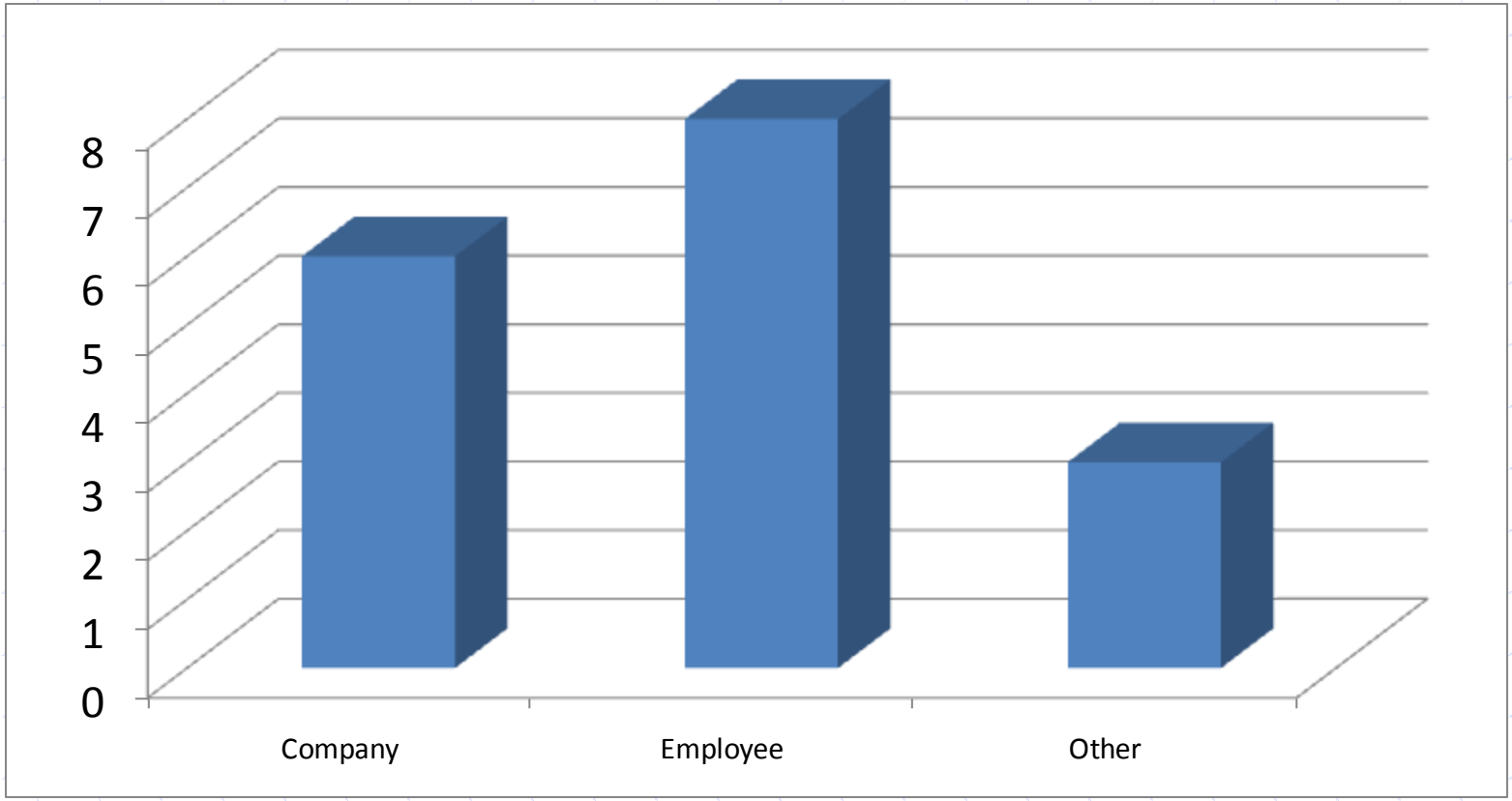
2. Respiratory Protection

2.5 Are contractors treated like own personnel?



2. Respiratory Protection

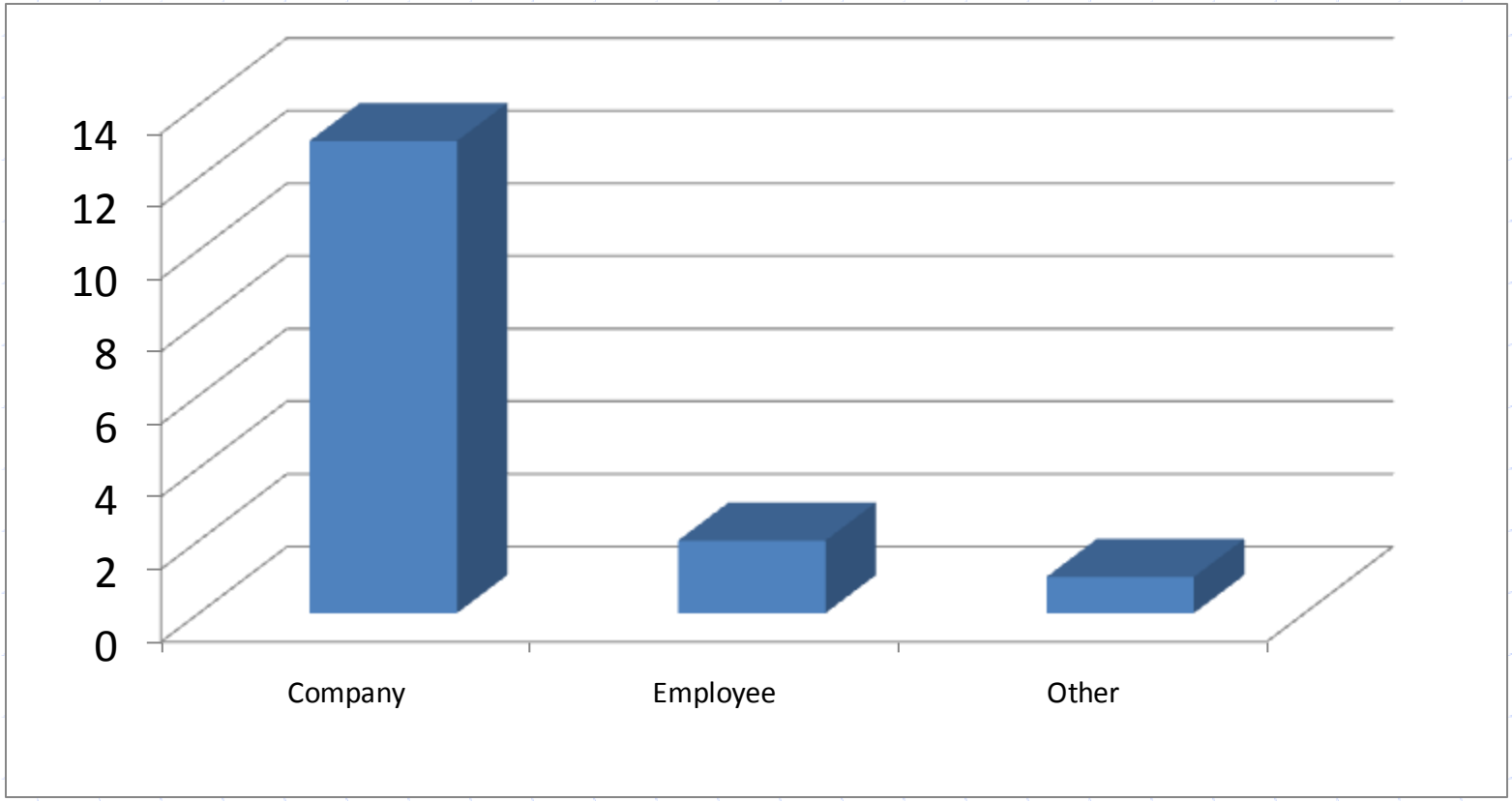
2.6 Who is responsible for cleaning the respiratory protective equipment?



Other: employee + HSE team (at the end of the shift); no one because of using new masks daily; external company

2. Respiratory Protection

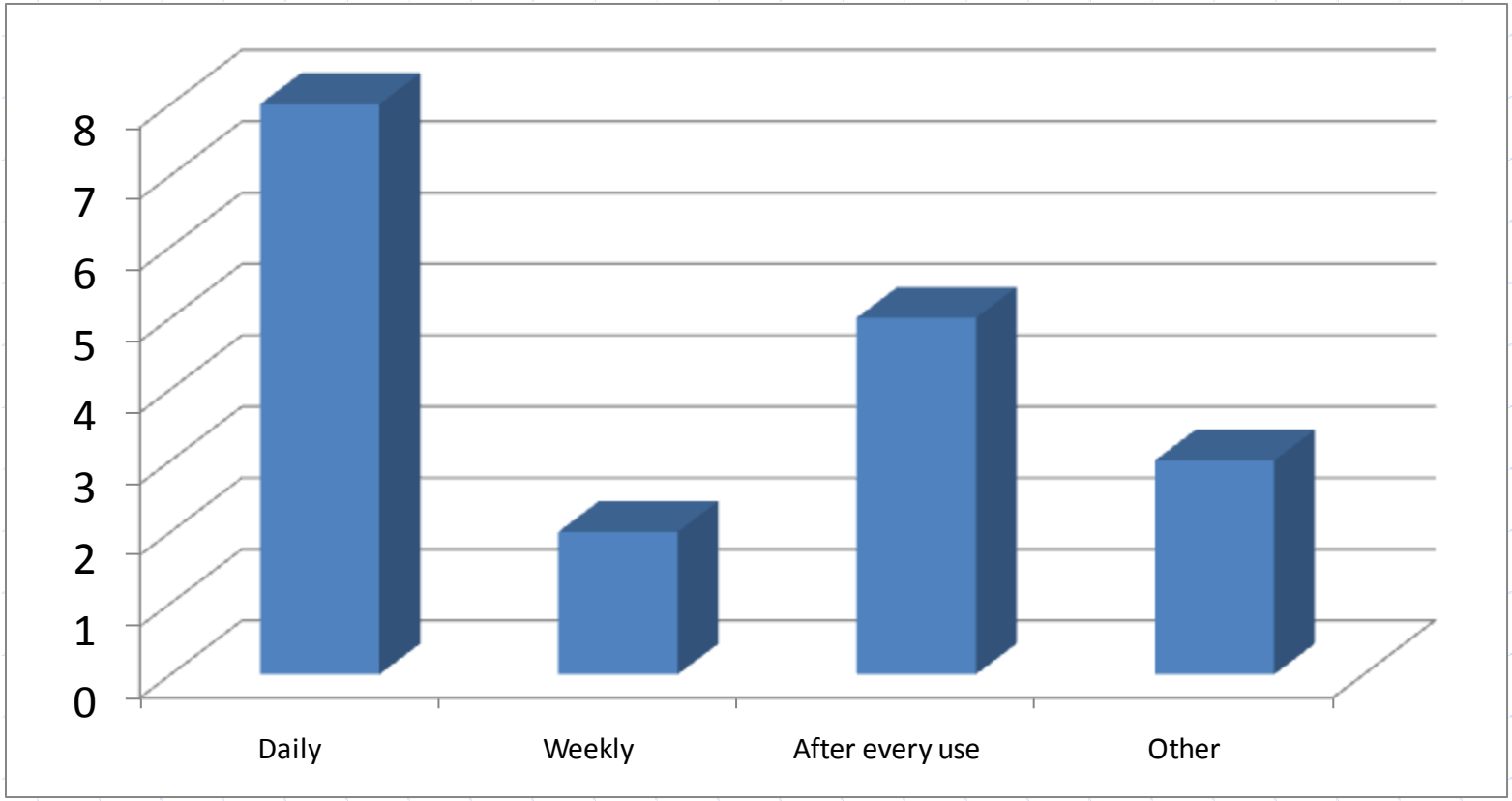
2.7 Who is responsible for repairs?



Other: external company

2. Respiratory Protection

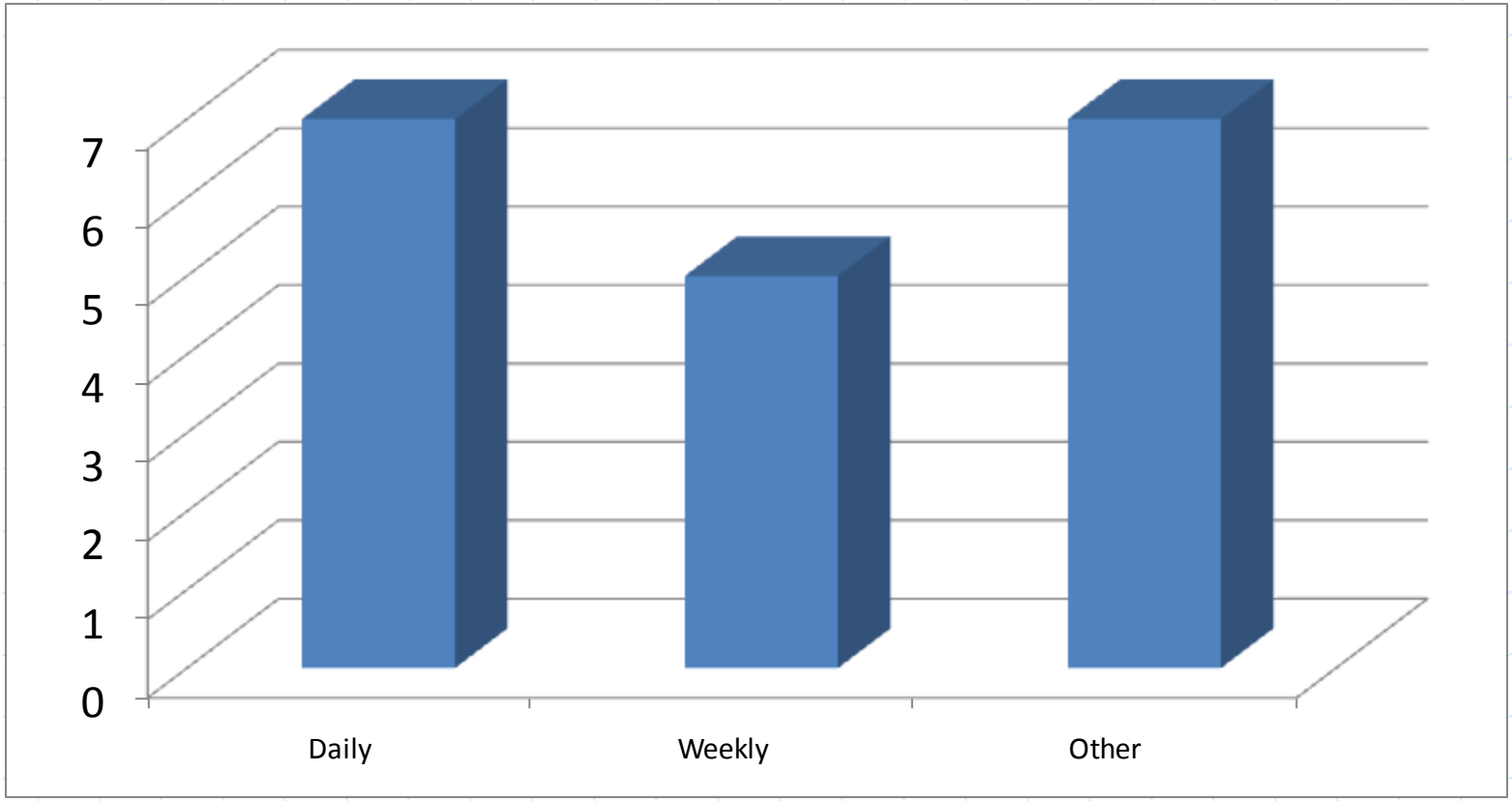
2.8 How often are the masks/filters be cleaned/maintained?



Other: every shift a new one; on request

3. Working clothes

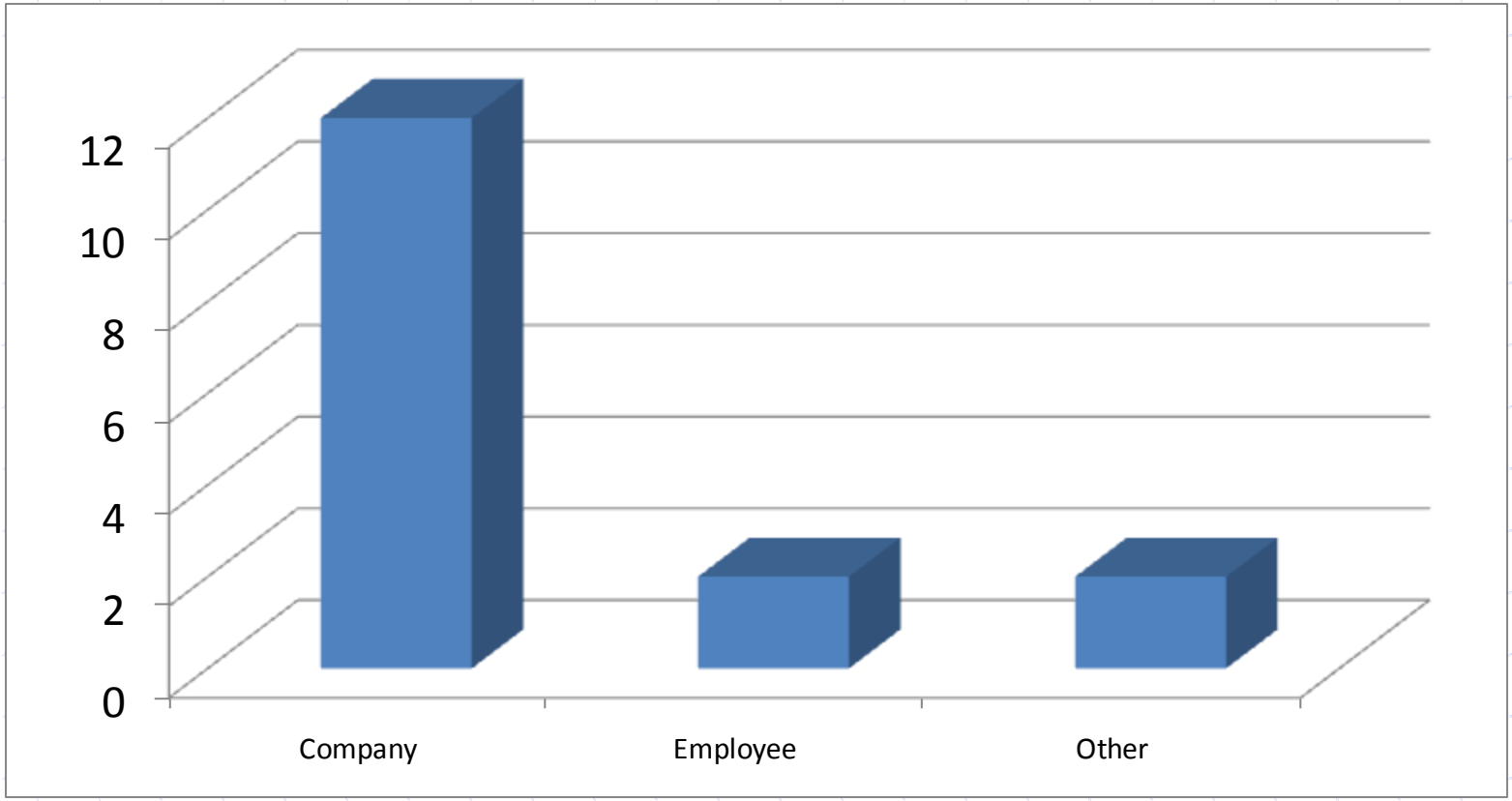
3.1 How often are the clothes changed?



Other: twice a week; after heavy maintenance activities; depends on where the employee works; on request; worker decide himself

3. Working clothes

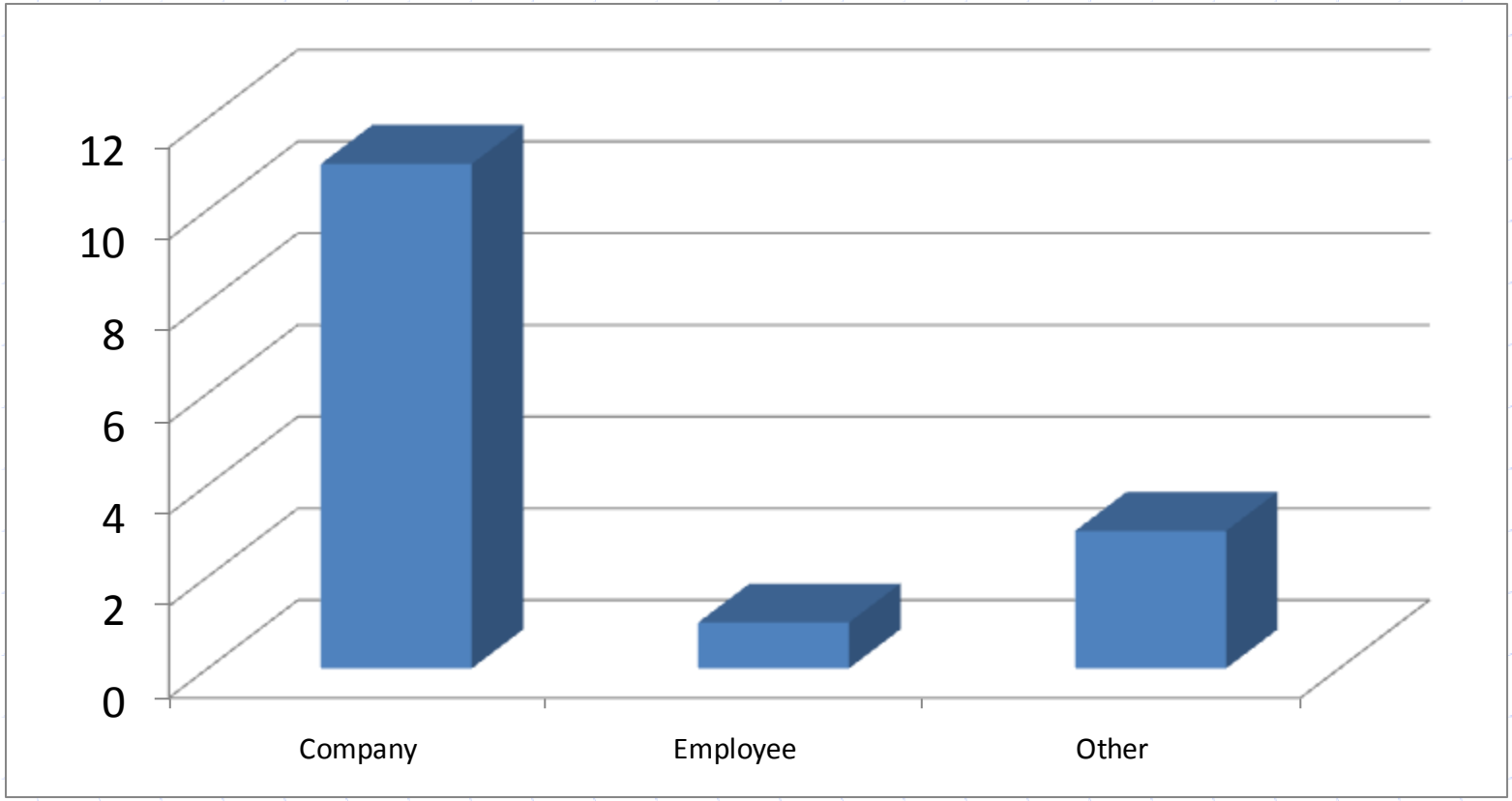
3.2 Who is responsible for cleaning?



Other: contractor; leasing company (for work clothes)

3. Working clothes

3.3 Who is responsible for repairs ?



Other: no repairs; contractor; leasing company (for work clothes)

Thank you

Occupational Cadmium Bio-Indicators Observatory

OCdBIO

Noömi Lombaert *ICdA*

OCdBIO -Occupational Cadmium Bio-monitoring Observatory

- Since 2008, data on Cd biomonitoring in the Cd industry is collected in order to convince ourselves and authorities on
  - ✓ the efficiency of our risk management program
  - ✓ the compliance of the current exposure levels with the OELs
- It is interesting for ICdA members to compare their own data with aggregated data from the whole Cd using industry
- A follow-up is interesting only if there is a long-term involvement of the companies (at least 3 years: 2008-2010)

Selected biomarkers of exposure

- Cadmium in blood – CdB: indicator of recent exposure
  - ✓ Cadmium in blood (µg/L)
- Cadmium in urine – CdU: biomarker of the amount of Cd stored in the body and in particular in the kidney cortex where the first signs of Cd toxicity develop
  - ✓ Cadmium in urine (µg/g creatinin)

Data collection (1)

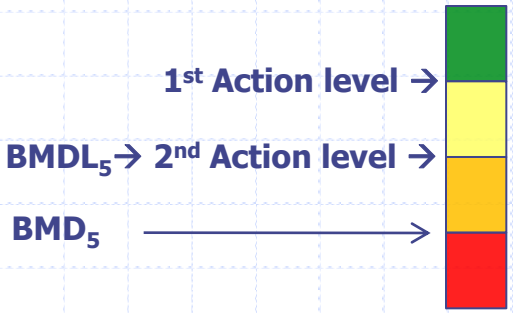
- As sets of categorized data giving the number of workers in seven pre-defined categories

Cd in Blood µg/L whole blood	Number of workers
0.00-2.00	
2.01-3.00	
3.01-5.00	
5.01-7.00	
7.01-8.00	
8.01-10.00	
>10.00	
Total workers	

Cd in Urine µg/g creatinine	Number of workers	**Of which** number of workers **medically** removed from Cd exposure
0.00-1.00		
1.01-2.00		
2.01-3.00		
3.01-5.00		
5.01-7.00		
7.01-10.00		
>10.00		
Total workers		

Data collection (2)

- Predefined categories are grouped in categories based on the action levels of CdU and CdB used in the industry



Cd-U (µg/g cr)	Risk of Cd-induced renal dysfunction
<2	None
2-5	Unlikely
5-10	Only in highly sensitive subjects
>10	Increases linearly with Cd-U

OCdBio 1 (data 2008) – OCdBio 2 (data 2009): **Characteristics**

Cd-U	Data sent	Data used *
OCdBio 1	18 EU sites 2074 workers	15 EU sites 2009 workers
OCdBio 2	18 EU sites 2651 workers	15 EU sites 2626 workers

* Exclusion of data because of no correction for ug/g creatinine or expressed in different units

Cd-B	Data sent	Data used
OCdBio 1	14 EU sites 1692 workers	14 EU sites 1692 workers
OCdBio 2	16 EU sites 1883 workers	16 EU sites 1883 workers

OCdBio 1 (data 2008) – OCdBio 2 (data 2009): **Results**

CdU

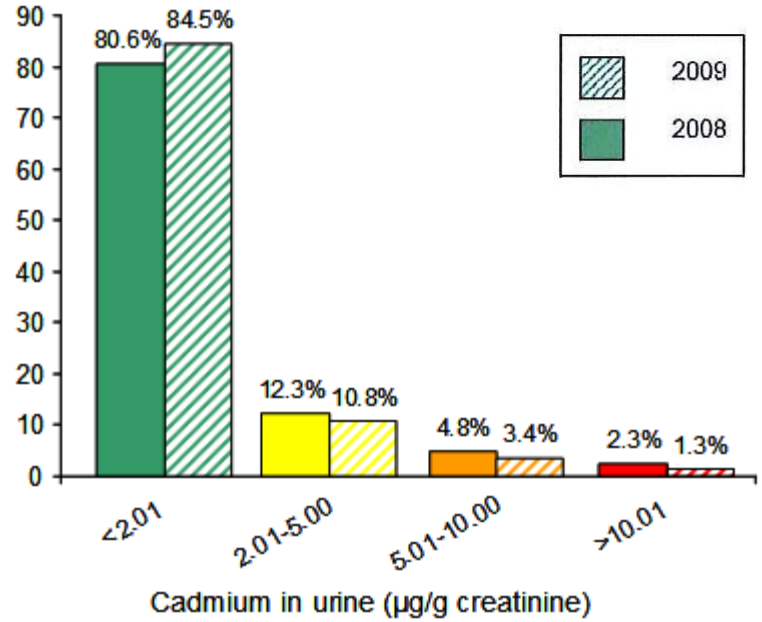


Figure 1. Comparison of the distributions of CdU values between 2008 and 2009.

CdB

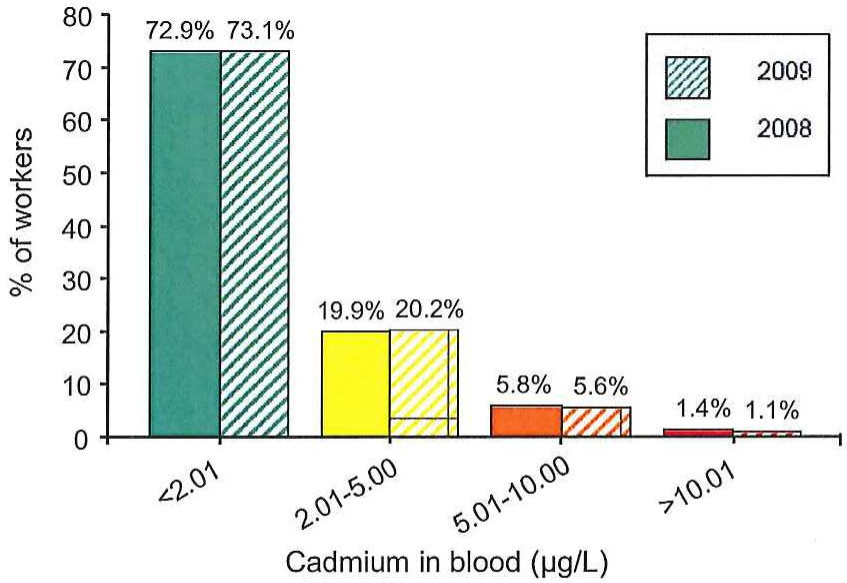


Figure 2. Comparison the distributions of CdB values between CdB values between 2008 and 2009.

- ✓ decrease in the proportions of workers with CdU > OEL of 5 µg/g creatinin
- ✓ reduction in exposure levels is however not reflected by CdB values

OCdBio 1 (data 2008) – OCdBio 2 (data 2009): **Conclusions**

- Decreasing trend in CdU is most probably the consequence of the removal from the database of workers who retired

- Efforts should be pursued to further reduce the exposure levels in some sites in order to maintain CdB values at a level which is unlikely to result in an excessive accumulation of Cd (<5µg/L)

- Third OCdBIO -Occupational Cadmium Bio-monitoring Observatory

Period covered: 2010

DATE :
COMPANY / GROUP :
SITE :
CONTACT PERSON :
TELEPHONE :
EMAIL :
LABORATORY NAME :

Recommendations

1.All workers having been controlled for Cd in 2010 are included in the study,
2.For those plants where Cd-U is not taken every year, please include 2009 (if Cd-U taken every other year) or 2009 and 2008 (if Cd-U taken every third year),
3.Indicate clearly below whether the urine-data for which creatinine is outside the 0.3 µg/L to 3.0 µg/L range are excluded (outside of this range, creatinine correction is incorrect)
4.In case of several measurements, report the latest one,
5.Indicate on top of this sheet the name of the laboratory performing the analysis.

With regard to the urinary cadmium which should be standardized relative to creatinine concentration in order to correct for possible dilution, please confirm that you have used a screening test on the urinary creatinine value: **YES / NO**

If your answer to the above question is positive, please indicate if this screening test is (please circle the right answer):
1.the screening suggested on p 22 of the ICdA Guidance, which is: [urinary creatinine] > 0.5 g/L?
2.the screening proposed by Pr Bernard, which is: [urinary creatinine] > 0.3 g/L **AND** [urinary creatinine] <3 g/L
3.another screening test, please describe:

Please send the completed questionnaire, as soon as possible, and before June 25th to: ccanoo@cadmium.org
The data received will be treated confidentially and only forwarded for assessment as aggregated values

Cd in Blood µg/L whole blood	Number of workers
0.00-2.00	
2.01-3.00	
3.01-5.00	
5.01-7.00	
7.01-8.00	
8.01-10.00	
>10.00	
Total workers	

Cd in Urine µg/g creatinine	Number of workers	**Of which** number of workers **medically** removed from Cd exposure
0.00-1.00		
1.01-2.00		
2.01-3.00		
3.01-5.00		
5.01-7.00		
7.01-10.00		
>10.00		
Total workers		

OCdBio-2 Data of 2009

- Most of the (European) sites asked for bio-monitoring data responded favorably
- It would, of course, be better to have everybody on board for this exercise
- The questionnaire has been answered by 19 EU-sites for biomonitoring in 2009
  - ✓ 18 are giving Urine data >> 2651 workers
  - ✓ 16 are giving Blood data >> 1883 workers

1	Boliden - Odda
2	Boliden - Kokkola
3	Nyrstar - Auby
4	Nyrstar - Budel
5	Nyrstar - Balen
6	Nyrstar - Overpelt
7	Xstrata - Nordenham
8	Xstrata - San juan
9	Porto Vesme
10	KCM - Plovdiv
	OCK - Kardjali
	Miasteczko
	Boleslav
	Copsa - Mica
11	SAFT - Oskarshamn
12	SAFT - Ferak
13	SAFT - Nersac
14	SAFT - Bdx
15	La Floridienne - Ath
16	SNAM - Viviez
17	ACCUREC - Wiehagen
	Gaz - Zwickau
	Hoppecke - Brillon
18	Rockwood - Kidsgrove
19	JMB - Fenton
	ZM SIL - Katowice

OCdBio-3 Data of 2010

- Reminder:
  - Anonymous data sent to ICdA as trustee,
  - Data aggregated across all respondents and shared with Pr Bernard,
  - Pr Bernard to conduct a review and present us with results in the next H&S Ctee with an assessment.

- Practical:
  - Encourage again, all companies and plant directions to participate voluntarily (*questionnaire* to be *filled* in ***before end of July***)
  - Technical recommendation: to adopt all the same reported units for the data:
    - ✓ µg Cd/g creatinine for Cd_{Urine} (the correction of creatinine concentration is essential for valid interpretation)

    and
    - ✓ µg Cd/L for Cd_{Blood}

Cd Conference-

November 11-12-13, 2011

Kunming (Yunnan) China

Noömi Lombaert *ICdA*

ICdA –conference in China –

- **Venue**: Kunming, China preceeding the Pb/Zn Conference in Kunming
- **Date**: 11-12-13 November 2011(two and half days)
- **Theme**: Risk Management and Control of Cadmium
- **Anticipated Attendees**: 200
- **Organizational Committees**:
  - Steering Committee (Arrangements, Program, Publications)

The former Cadmium Conferences

Number	Date	Location
First	Jan 31 – Feb 2 1977	San Francisco
Second	Feb 6 – 8 1979	Cannes
Third	Feb 3 – 5 1981	Miami
Fourth	Mar 2 – 4 1983	Munich
Fifth	Feb 4 – 6 1986	San Francisco
Sixth	Apr 19 – 21 1989	Paris
Seventh	Apr 6 – 8 1992	New Orleans

Program: topics

- Welcome and Organizational Overview
- Four General Overview Papers – Market and Applications, Health Effects, Environmental Effects, Regulations
- Controlling Cadmium Exposure in the Workplace
- Controlling Cadmium in the Environment
- Controlling Cadmium in the General Population
  - ✓ Recycling of Cadmium
  - ✓ Cadmium in Consumer Products
  - ✓ Cadmium from Non-Product Sources

Next meetings

- Proposed next date: October 2011(tbd)
  - ✓ Theme: Implementing a prevention culture in our facilities
    A questionnaire will be prepared and circulated
- Long term planning: 1st 2012- Meeting
- As agreed previously, the key activities of the H&S Committee will remain:
  - ✓ To generate a revision of the ICdA Guidance
  - ✓ To make a follow up of the new regulation requirements
  - ✓ To keep updated the OCdBio Observatory