CADMIUM Working Towards a Sustainable Future

ICdA International Cadmium Association

International Cadmium Association

Technical Session

Brussels, November 16th, 2020
15:00 -17:00

Agenda

15:00	Welcome, Statement of Compliance
15:05	Occupational exposure to cadmium Status of the process for revising the occupational exposure limit (OEL) for cadmium in the Carcinogens and Mutagens directive (CMD) including: • update of scientific literature on cadmium toxicity • update of exposure scenarios • comments submitted to ECHA
15:30	Reach: Authorisation process for cadmium and other topics
15:40	Update on ICdA workplace monitoring observatory OCdBio and OCdAir
15:55	Water framework Directive (WfD): • cessation of pollution by 2027 • mixed toxicity • review of Ni and Te aquatic toxicity
16:05	Emerging topics: the EU Green Deal and potential implication for cadmium industry
16:15	Cadmium market update
16:25	Positive communication on cadmium
17:00	End of the meeting

STATEMENT OF COMPLIANCE

- The purpose of the meeting is to address, under the applicable confidentiality rules, issues concerning Cadmium and Cadmium compounds producers and importers and more particularly their obligations under the several regulations.

- The minutes kept during 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 (ICdA), 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.

Occupational exposure

Status of the process for revising the occupational exposure limit (OEL) for cadmium in the Carcinogens and Mutagens directive (CMD) including:

- update of scientific literature on cadmium toxicity
- update of exposure scenarios
- comments submitted to ECHA

3rd Revision of the Carcinogens and Mutagens Directive (CMD) - (DIRECTIVE (EU) 2019/983 - 5 June 2019)

- **OEL (8h TWA) of 1 µg Cd/m³** (inhalable fraction) from 7/2027
- In the meantime **transitional values**:
  - **4 µg Cd/m3 (inhalable fraction) at latest implemented in MS by 7/2021 (date of entry into force)**
  - **When a BLV is already in place, the OEL can be set at 4µg/m3 (respirable fraction) in combination with a BLV at 2µg Cd/g creatinine**

Annex III is amended as follows: in point A, the following rows are added:

Name of agent	Limit values 8 hours (III) mg/m³ (V)	Transitional measures
Cadmium and its inorganic compounds	0,001 (11)	Limit value 0,004 mg/m3 (12) until … [eight years after the date of entry into force of this Directive].

(III) Measured or calculated in relation to a reference period of eight hours time-weighted average (TWA).

(V) mg/m3 = milligrams per cubic metre of air at 20 °C and 101,3 kPa (760 mm mercury pressure).

(11) Inhalable fraction.

(12) Inhalable fraction. Respirable fraction in those Member States that implement, on the date of the entry into force of this Directive, a biomonitoring system with a biological limit value not exceeding 0,002 mg Cd/g creatinine in urine.

Important remark in the DIRECTIVE :

the **Commission should**, no later than three years after the date of entry into force of this Directive (July 11th, 2021), **assess the option** of amending Directive 2004/37/EC by adding provisions on a **combination of an airborne occupational exposure limit and a biological limit value** for cadmium and its inorganic compounds.

OEL- setting review with possible biomonitoring by RAC (ECHA) on request of EU COM

- ECHA – call for evidence (March-June)
- Public consultation on ECHA's scientific report (September-November)
- Follow-up process: timings

ECHA call for evidence: March 2nd => June 2nd

Reason of the call for evidence:

ECHA asked for '**support in** the **assessment of the rationale to revise the airborne occupational exposure limit and/or to include a biological limit value** for cadmium and its inorganic compounds under the Annexes to the Carcinogens and Mutagens Directive'

ECHA asked for **any new scientific information since the scientific evaluations by SCOEL (2017)** on uses, exposure, health effects, toxicology, epidemiology and modes of action on cadmium and its inorganic compounds.

ECHA call for evidence: ICdA/REACH Cd Consortium provided input on 3 parts

Uses and workplace exposure:

- Updated info on uses
- Biomonitoring data (since 2008) and workplace air monitoring (since 2013)

Mechanisms of action for the genotoxic activity of Cd and its inorganic compounds *(collaboration with UCL)*

- Overview/update on the genotoxicity literature
- Evidence for a mechanism of action-based threshold

Repeated dose toxicity and carcinogenicity of Cd and its inorganic compounds *(collaboration with EBRC Consulting)*

- Overview/update on the literature of non-cancer and cancer effects
- **Discussion on 4 questions**:
  - ➢Is the kidney still the critical organ (systemic) after repeated exposure? And what is the effect level?
  - ➢Are other systemic endpoints (bone, ED) covered by this effect level?
  - ➢Is lung function impairment still the critical effect after inhalation exposure and what is the effect level? (Consequently can 4 µg/m³ respirable fraction still be retained as protective for this endpoint)?
  - ➢Is an OEL-only based approach protective against renal effects?

Public consultation ECHA's scientific report: September 14th- November 12th

- After the call of evidence closure: 2 subsequent calls took place with the ECHA team tasked with preparing a scientific report to the RAC:
  - August 21st : Our main findings submitted in the call for evidence were summarised and discussed. The documents were well received
  - August 28th : A 2nd meeting was requested by ECHA to clarify some use and exposure questions
    - ✓ Commitment to ECHA to update the Exposure scenarios in the REACH dossiers (cf. next slide)
- ECHA has released on Sept 14th their **scientific report** for consideration by the Committee for Risk Assessment (RAC)
- The public consultation has ended November 12th

REACH exposure scenarios

- Exposure scenarios (ES) are required under REACH for each identified use in the life cycle of a hazardous substance
- The use of occupational exposure data under REACH is crucial to reflect the current cadmium exposure in the industry
- ECHA requested an update the CSR version 2016 data and suggested updating first the substances that fall under the higher tonnages' registrations
- REACH Cadmium Consortium/ICdA mandated EBRC Consulting for this significant update work
- A strict timeline was imposed to EBRC, as we declared in the comments of the public consultation of the ECHA scientific report, to update the dossiers by end of November (to follow the timings of the RAC process ongoing)
- The updated ES will be sent to the members this week for their revision and comments
- Comments will be implemented directly by EBRC to meet our deadline for submission

Note: Total EBRC services amount 102.995,2€

ECHA's scientific report

- In general, the information we provided in the Call for Evidence was correctly integrated, including accepting the scientific evidence that cadmium is a threshold carcinogen.
- But, when ECHA draws its final conclusions, it considers the calculated incidence of lung cancer from BAuA (Germany-2014 assessment), which was developed on the basis of an assumed non-threshold carcinogenic effect based on animal data.
- As such, ECHA concludes that an OEL of 4µg Cd/m³ respirable is not sufficient and therefore recommends keeping the current bOEL of 1µg Cd/m³ inhalable and to add a biologic limit value of 2µg Cd/g creatinine

Public consultation: ICdA comments – submitted October 22nd

- We highlighted flaws in ECHA's argumentation:
  - pointed to **overlooked key evidence in literature** (epi data vs animal data)
  - drew attention to a **recent important revision** (and close to publication) by the **German AGS of the Cd cancer risk** (threshold carcinogen and **sublinear dose-response relationship** to estimate the excess lung cancer risk).
  - A red line of reasoning was developed to **demonstrate** that an **OEL of 4µg Cd/m³ respirable together with** a **biologic limit value of 2µg Cd/g creatinine** provides a **very low health risk to workers**.

ECHA Follow-up process: timings

2020	
14/9-12/11	Public Consultation on ECHA scientific report (60 days)
Sept	RAC consultation on ECHA scientific report (30 days)
Sept-Nov	RAC rapporteurs: prepare Draft Opinion
Nov	RAC consultation on Draft Opinion
End Nov- Begin Dec	RAC Plenary –1 (RAC 55) : **Cadmium on the Agenda of Nov 30th**
Dec	Post RAC work/revise Draft Opinion and update Annex
2021	
Jan	RAC rapporteurs: prepare **Final Opinion**
Feb	RAC consultation on Final Opinion
March	RAC Plenary –2 (RAC 56)
April/May	Finalise Opinion/report

RAC-55 meeting

- The RAC rapporteurs will present their first draft opinion
- Together with Eurometaux representative (V. Verougstraete), ICdA representative (N Lombaert) will attend the RAC plenary meeting (virtual) on November 30th
- First draft opinion was shared with us last Friday via Eurometaux.
  From a first quick look, the recommendation is however not in line with our comments:

  RAC proposes a BLV of 1 µg cadmium/g creatinine and an OEL (8h TWA) of 1 µg cadmium/m³ (inhalable fraction).

- We will analyse the first draft opinion in detail in the next weeks, in preparation of the Nov 30Th Meeting, where the ICdA representative will be given an intervention time to comment on the draft opinion

CMD revision process: next

- **ECHA/RAC Opinion** on limit values to address occupational exposure to cadmium and its carcinogenic compounds
- The Commission will give this report to the Advisory Committee for Safety and Health at Work (ACSH)

- **OSHA reporting** on biomonitoring and BLV as a tool to control workplace exposure.
- The Commission will share this report with the ACSH to enable them to take the OSHA conclusions into consideration.

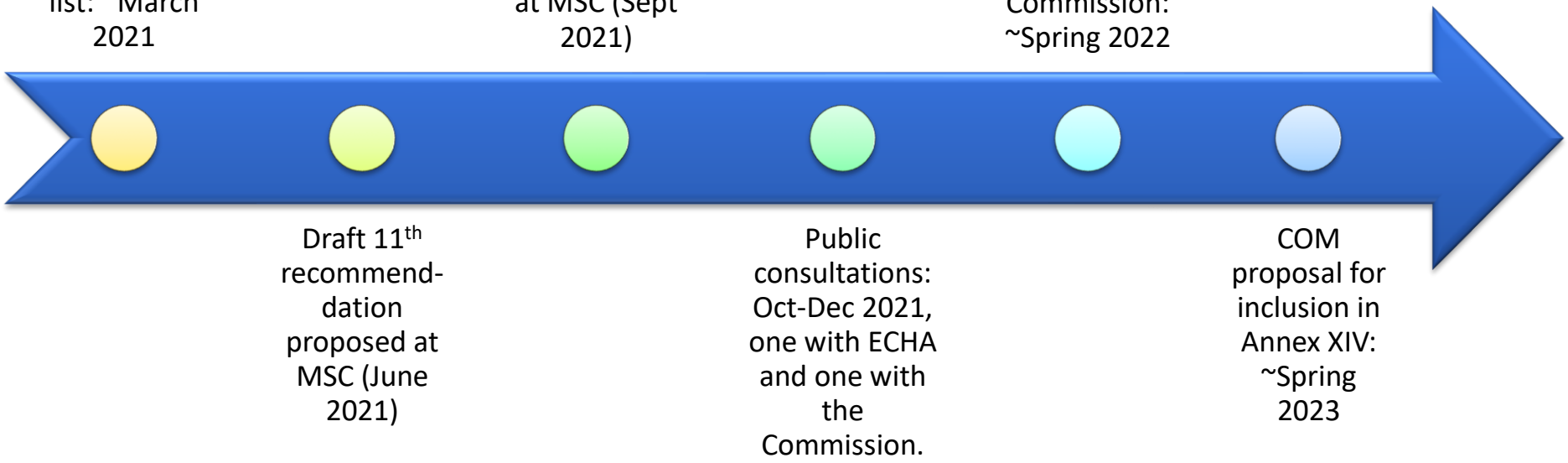
- By Summer 2021, the tripartite Working Party on Chemical committee (with representatives from national administrations, trade unions and employers' organisations), will consider the reports from ECHA and OSHA and make a proposal to the ACSH. The ACSH will draft an Opinion to the Commission.
- The Commission will do an impact assessment.
- The Commission will draft a CMD amendment text for approval by EP and Council

EU Reach

- Authorisation process for cadmium
- CLP and Rapid degradability
- TDp-E

Authorization
Draft recommendation listing: 11th list

Cd-substances (notably $Cd(OH)_2$, CdO & Cd) might be nominated in the 11th recommendation-list of ECHA, around June 2021



Although, is there another option?

- As we have seen, in February 2020, ECHA did NOT include Cadmium on the 10th list of Substances Subject to Authorisation
- Other substances received higher priority
  - With an OEL in place, there is less uncertainty on uncontrolled exposure
  - Due to the timing of the OEL and Biomonitoring, cadmium may be pushed back further to the 12th list in March 2022
  - In which case, with recent updates shared with ECHA on today's low cadmium exposure plus a new CMD entry, ECHA could further reduce priority and consider these as appropriate alternative Risk Management Options (RMOs) to address cadmium rather than the authorization procedure
  - This will be followed attentively…

CLP - Rapid degradability in chronic classification for aquatic effect

Under GHS & CLP, rapid degradation from the water column results in different chronic classification cut-off values and categories.

- *Rapid degradation = classified one category less strict.*

Chronic 2 vs. Chronic 3 comes with much more stringent downstream regulatory consequences, e.g. in transport, waste handling, Seveso…

It is therefore important to make the difference for sparingly soluble or insoluble cadmium-containing substances, and some UVCB's e.g. CdTe, Cd-pigments.

However, 'degradability' is related to organic substances, it does not fit to metals…

- *Hence: Transformation/Dissolution protocol - Extended (TDp-E) approach*

Transformation/Dissolution protocol - Extended (TDp-E)

As a surrogate for “degradability”, the metals industry has developed the concept of “rapid removal from the water column”. This now needs to be more robust. Industry has developed 3 pillars; Model – Measure - Field Studies. Industry Guidance is in draft.

The new test approach measures the time metal remains in the water, before being “removed” by sedimentation, partitioning, etc.

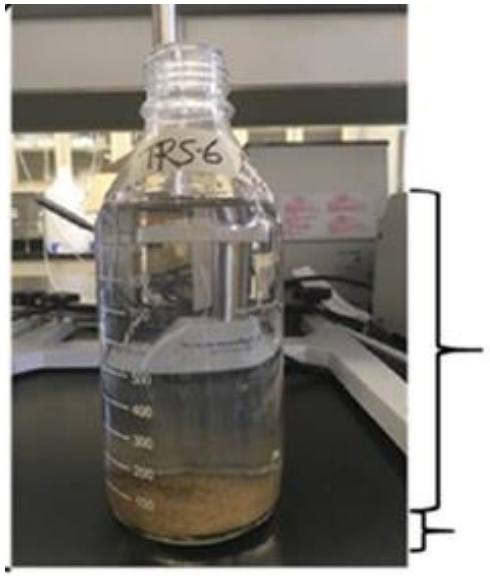
It is an extension from the existing solubility Transformation/Dissolution test, hence ‘TDp-E’. SOP is in development.

It provides key information for making the case of chronic aquatic effects classification for poorly soluble Cd-substances.

Test being performed by CANMET, Canada (helped develop the protocol).

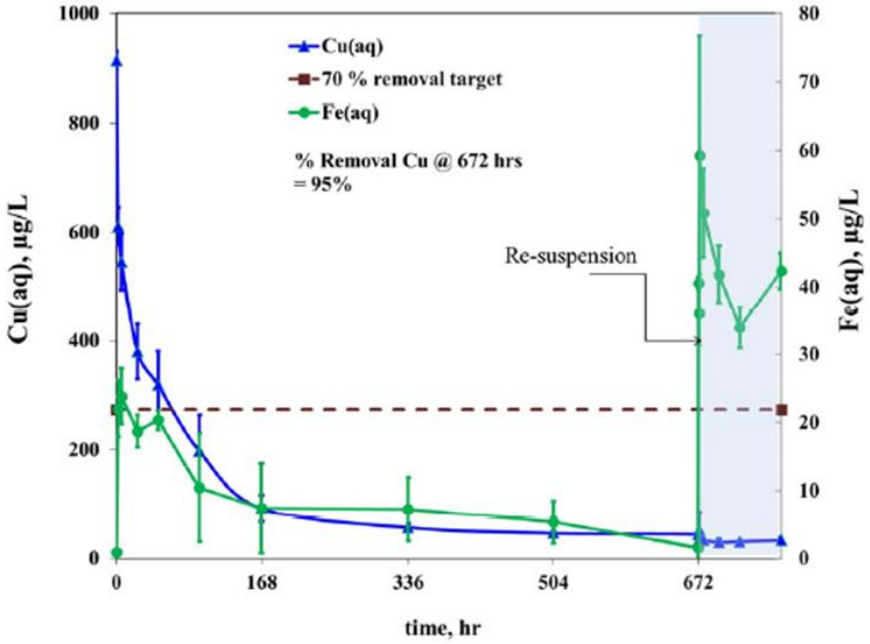
Cost ~ 20 k€ for Cd ; to be started late Q4/early Q1.

TDp-E



1 L 10x dilute
OECD pH 6
freshwater

10 g of sediment



Update on ICdA workplace monitoring observatory OCdBio and OCdAir

OCdAir-7

- Personal air sampling at the workplace
  - Seventh year of data collection
  - Excellent response related to earlier data collections

	2013	2014	2015	2016	2017	2018	2019
Plants	12	22	20	16	30	25	31
SEGs	67	142	131	124	162	165	204
Workers	994	1548	1369	1278	2249	1857	3499

- Good reporting quality
  - More samples for each SEG
  - All measurements mentioned respirable or inhalable fraction
  - Correction for Personal Protection Equipment during sampling

Cd exposure in SEGs : 90 percentile

- In 22 SEGs (10%) the Cd concentration in air is too high!
- In 57 SEGs (28%), there are insufficient samples to assess the exposure.
- In 3 SEGs, the Cd concentration is above 10µg Cd/m³

90 percentile	number of SEGs in this range				
Range [µg/m³] respirable	2015	2016	2017	2018	2019
<4 µg Cd/m³ respirable	31	79	100	99	125
non-conclusive	83	28	40	47	57
4 <=> 7	4	10	10	11	11
7 <=> 10	2	3	5	6	8
> 10	6	7	7	2	3
other non-compliant	5				
total	131	131	162	165	204

90 percentile	% of SEGs in this range				
Range [µg/m³] respirable	2015	2016	2017	2018	2019
<4 µg Cd/m³ respirable	24%	60%	62%	60%	61%
non-conclusive	63%	21%	25%	28%	28%
4 <=> 7	3%	8%	6%	7%	5%
7 <=> 10	2%	2%	3%	4%	4%
> 10	5%	5%	4%	1%	1%
other non-compliant	4%	0%	0%	0%	0%
total	100%	97%	100%	100%	100%

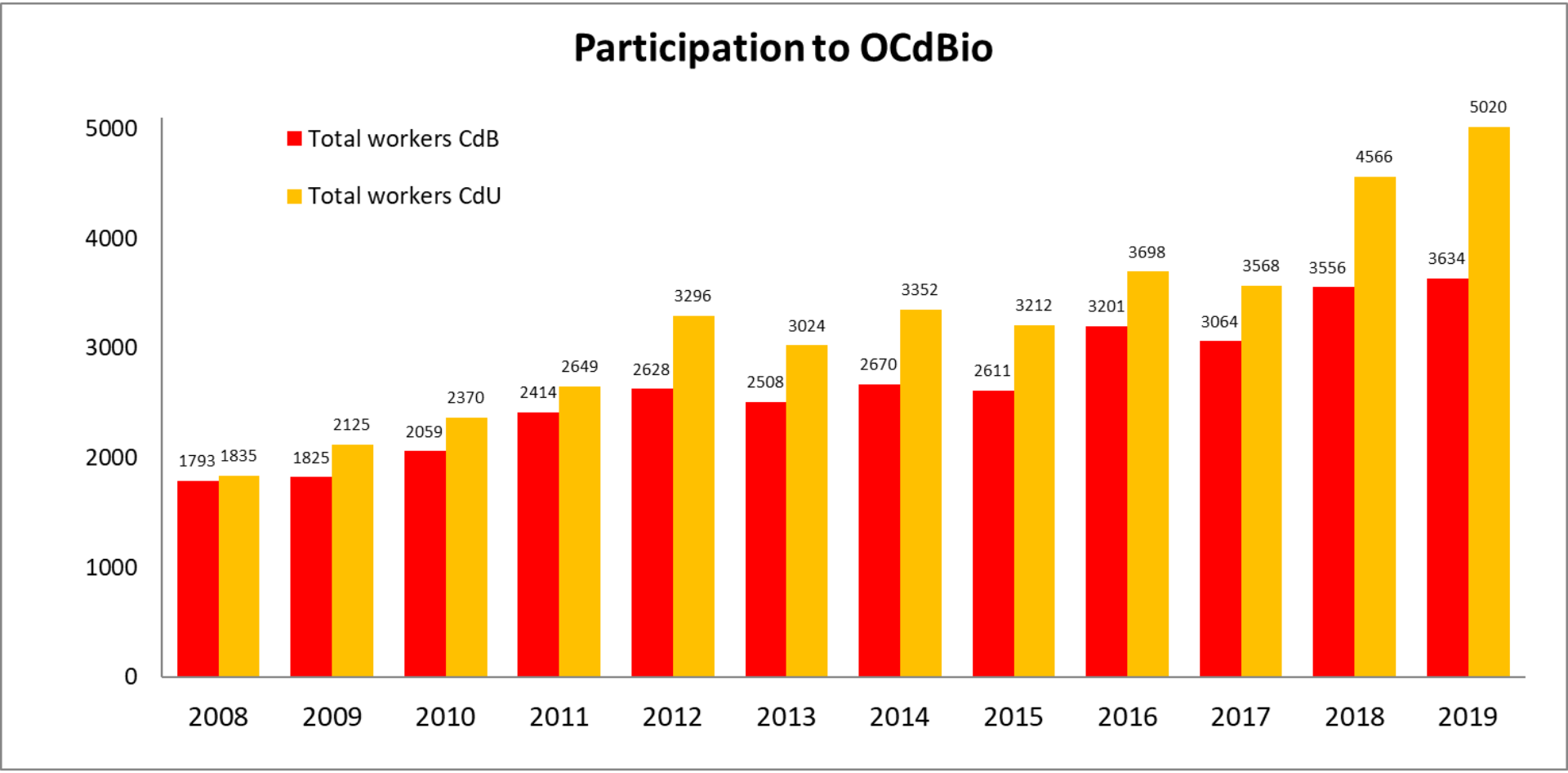
Workers exposure: 90 percentile

- For 608 workers (17%), all samples are below 4µg/µg m³ but insufficient samples for statistical assessment.
- 287 workers (8%) are exposed to a too high Cd concentration
- 18 workers have (sometimes) an exposure > 10 µg Cd /m³

90 percentile	number of workers in this range				
Range [µg/m³] respirable	**2015**	**2016**	**2017**	**2018**	**2019**
<4 µg Cd/m³ respirable	483	975	1672	1207	2604
non-conclusive	648	309	441	405	608
4 <=> 7	29	100	56	178	68
7 <=> 10	49	19	40	52	201
> 10	143	48	40	15	18
other non-compliant	17				
total	1369	1451	2249	1857	3499

90 percentile	% of workers in this range				
Range [µg/m³] respirable	**2015**	**2016**	**2017**	**2018**	**2019**
<4 µg Cd/m³ respirable	35%	67%	74%	65%	74%
non-conclusive	47%	21%	20%	22%	17%
4 <=> 7	2%	7%	2%	10%	2%
7 <=> 10	4%	1%	2%	3%	6%
> 10	10%	3%	2%	1%	1%
other non-compliant	1%	0%	0%	0%	0%
total	100%	100%	100%	100%	100%

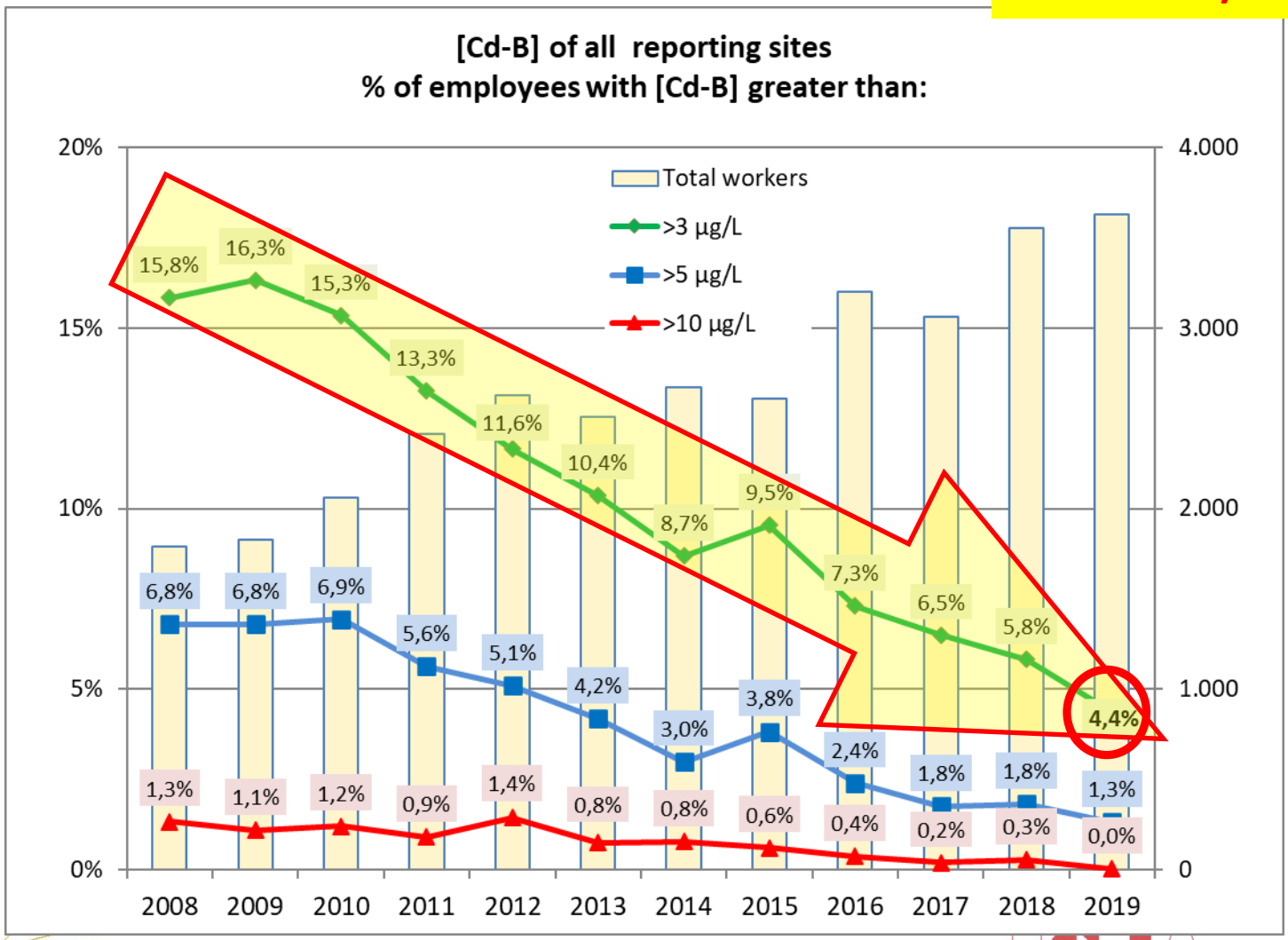
OCdBio: biomonitoring observatory



- Excellent response from **36 plants**
- Reporting data from more than **5000 workers**

Cd in Blood distribution
- all sites in % -

The trend of decreasing Cd uptake continues. A clear indication that workplace exposure is continuously reduced!

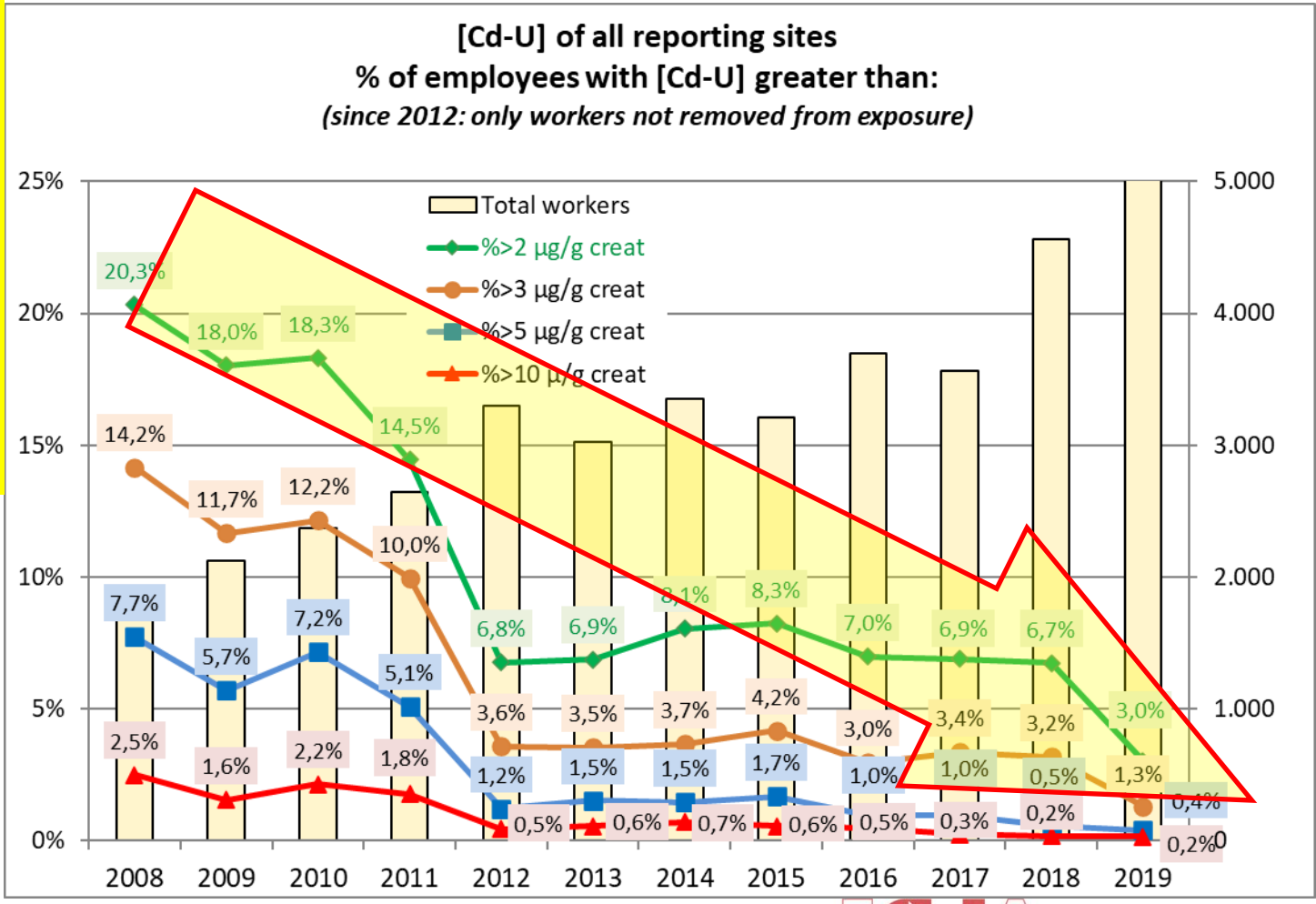


Cd in Urine distribution

- all sites in % - (removed workers excluded)

- 3,1 % of workers above proposed BLV (CdU >2 µg/g creat.)
- 20 workers with CdU >5µg/g creat. are not removed, including 9 above 10µg/g creat.

Review criteria for removal with doctor!



Conclusion

- Cd in Blood
  - Over the past 12 years, our industry has consistently improved the workplace exposure of its workers…and these efforts should continue
  - exposure to Cd is continuously going down but levels are likely too high to keep all workers <2µg Cd/g creat.
  - The new CdB action levels now respectively set at 2µg/L and 4µg/L (see Guidance 2018) need to be strictly implemented by the occupational doctor to ensure that CdU of recent workers (hired since 2000) does not rise above 2 µg/g creat.

- Cd in Urine:
  - Decrease of workers in the segment 2-5 µg Cd/g creat.!!!
  - 20 workers (0,4%) with CdU> 5 µg Cd/g creat. are not removed from exposure => check assessment procedures with doctor.
  - 221 workers have > 2µg Cd/g creat and 118 of them above 3µg.
    Today 69 workers are removed from exposure.
    should a very stiff compliance with CdU>2 be regulated, this would mean that an additional 152 workers will have to be removed, yielding severe operational disruptions. ICdA advice is to ensure this number continues to go down through strict compliance with existing 2018 Guidance.

Water framework Directive (WfD):

- Phasing out of Priority Hazardous Substances
- WfD reviews - Ni and Se

WfD Legal Text: Cessation/phasing out of Priority Hazardous Substance (PHS)

Under DIRECTIVE 2008/105/E: ***Phasing out emissions of PHS***
"In accordance with Article 4 of Directive 2000/60/EC, Member States should implement the necessary measures in accordance with Article 16(1) and (8) of that Directive, with the aim of ceasing or phasing out emissions, discharges and losses of priority hazardous substances."

DIRECTIVE 2000/60/EC; Article 16(1+8): ***Timescale for PHS cessation?***
"The cessation or phasing-out of discharges, emissions and losses of the substances as identified in accordance with paragraph 3 *[PHS proposed by the Comm.]*, including an appropriate timetable for doing so. The timetable shall not exceed 20 years after the adoption of these proposals by the European Parliament and the Council *[2008]* in accordance with the provisions of this Article."

Water Framework Directive vs Industrial Emissions Directive – what's the issue?

IED:

- New non-ferrous metals BREF took effect in June 2020.
- Air and Water emissions Permitted;
  - New European wide binding water and air BAT-AELs.
    - ➢ ↓ Emission Limit Values; some plants will need to renew their permits.

WFD:

- Phasing out 'Priority Hazardous Substances' (n=20, inc. Cd, Hg).
  - Shall not exceed 20 years after adoption.
  - Cd and Hg adopted as PHS in 2008 (cessation by 2028).
    - ➢ ICdA member permit request was initially declined because of this.

Water Framework Directive vs Industrial Emissions Directive – what's the issue?

Regulatory Conflict IED –v- WFD:

- ICdA supported the member by providing information of the context and interpretation of the the 2 Directives
- Canvassed other Members for their experience in the respective Member States
- More broadly sought help from Eurometuax regarding the interpreatation being adopted for other metals
- Presented a case for IED taking precedence over WfD and the ✔ Permit was granted until 2028.

WfD: Candidates for the Priority Substances List: Dossiers to be finalised

Pharmaceuticals

1. Hormones (group), azithromycin, clarithromycin (DE) diclofenac (DE)
2. Carbamazepine (JRC)
3. Ibuprofen

PPPs, Biocidal products

1. Nicosulfuron (FR?) Neonicotinoids (group), pyrethroids (JRC), BPA° (JRC), glyphosate (JRC), triclosan (JRC)
2. Malathion (JRC)

Heavy metals

1. Silver (SE/JRC)
2. Uranium
3. Selenium

Emerging Pollutants

1. PFAS (JRC)

Sunscreen ingredients

1. Avobenzone and octocrylene
2. Oxybenzone
3. EHMC (JRC)

Candidates for the Priority Substances List: Timeline

Middle of January 2021

Silver

Hormones (group), antibiotics (azithromycin and clarithromycin, erythromycin?), diclofenac, carbamazepine

Nicosulfuron, neonicotinoids (group), pyrethroids, BPA, glyphosate, triclosan

Middle of April 2021

PFAS and malathion

Middle of June 2021

Ibuprofen, avobenzone and octocrylene

Middle of October 2021

Uranium, Selenium, oxybenzone, EHMC

The time frame for work on revising EQS for some existing PS e.g. ***Nickel***, will be determined in the light of the additional information on toxicity and monitoring data received from WG Members (and gathered from the EEA database etc.) by the end of October 2020 [*still waiting*…].

Emerging Topics

EU Green Deal and potential implications for Cadmium industry

- The most complex (chemicals) legislation ever introduced in EU..

- One of the few *'rolling regulations'* = a legal requirement to provide regular updates. Now even tighter requirements and deadlines from a new Implementing Regulation Oct 2020. The requirement to update 'without undue delay' is in most cases specified as three months and, in more complex cases, up to 12 months. Including;

  - ✓ Tonnage band
  - ✓ Uses
  - ✓ Change of Legal Entity
  - ✓ Exposure Scenarios eg CMD-OEL/BLV
  - ✓ Gaps in original submission eg MISA
  - ✓ New test data
  - ✓ New Scientific data eg CMD-OEL/BLV

  And also..

  - ✓ In response to a Compliance check eg CdTe
  - ✓ In response to an Evaluation eg ZnO
  - ✓ In response to a Restriction eg Artist Paint or Authorisation Proposal eg $Cd/CdO/Cd(OH)_2$

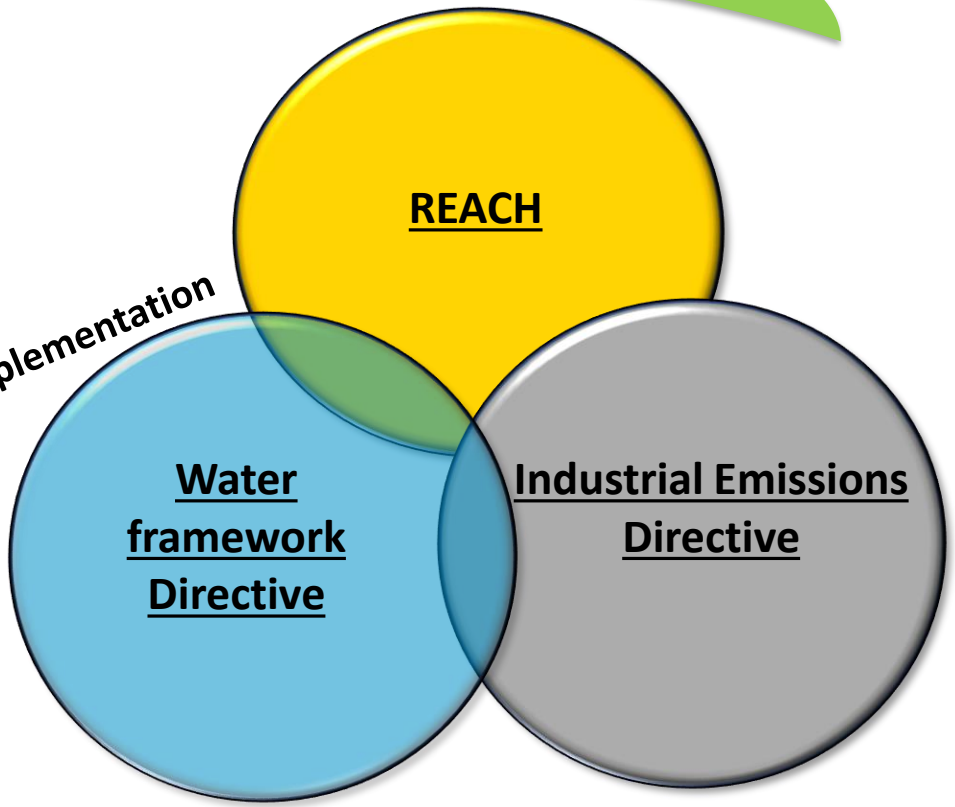
GREEN DEAL

- **Aim – '**climate neutral by 2050'
- **Policy** – 'To transform the EU's economy for a sustainable future'

- Strategies/Action Plans/Roadmaps:
  - ✓ Chemicals Strategy for Sustainability
  - ✓ Zero Pollution Action Plan for air, water and soil

But can be in conflict with..

- ✓ Industrial Strategy
- ✓ Circular Economy Action Plan
- ✓ Raw Material Alliance
- ✓ Climate Change Goals



GREEN DEAL

- With Eurometaux = identified top 16 high priority and/or high impact topics
- Many of these proposals will be looked at within current Regulatory Instruments..
- For Zn/Cd = focus on 3 key areas

➢ Definition of 'substance of concern'
➢ Combined toxicity and concept of Mixture Assessment Factor

Can impact on the use of Cadmium

➢ Definition of 'essential use'

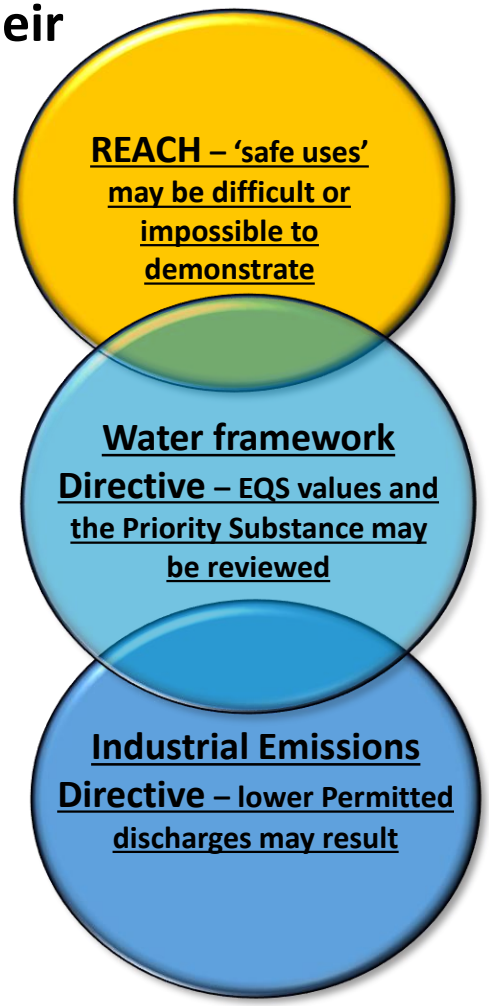
Could have positive outcome or backfire!

One Example of emerging issues and their Inter-dependency

- In the text of the Green Deal > Chemicals Strategy for Sustainability > Zero Pollution Ambition, the concept of **'Combined Toxicity'** is raised as an Action area.

- Considers the combined toxic effect of metals, inorganics and organics in the environment and for human health.
- A simple regulatory approach may be taken where;
  - all effects are additive, and
  - apply a simple Mixture Assessment Factor (MAF) of eg 10.

- Such an approach, not taking account of;
  - ✓ the essentiality of Zinc, low EQS of Cd
  - ✓ the competition for uptake between metals
  - ✓ background concentrations in Env and HH
- Will be challenged as it could affect:



The EU in 2020:

- *The current chemicals regulatory measures do not fully take into account the objectives of the Green Deal*

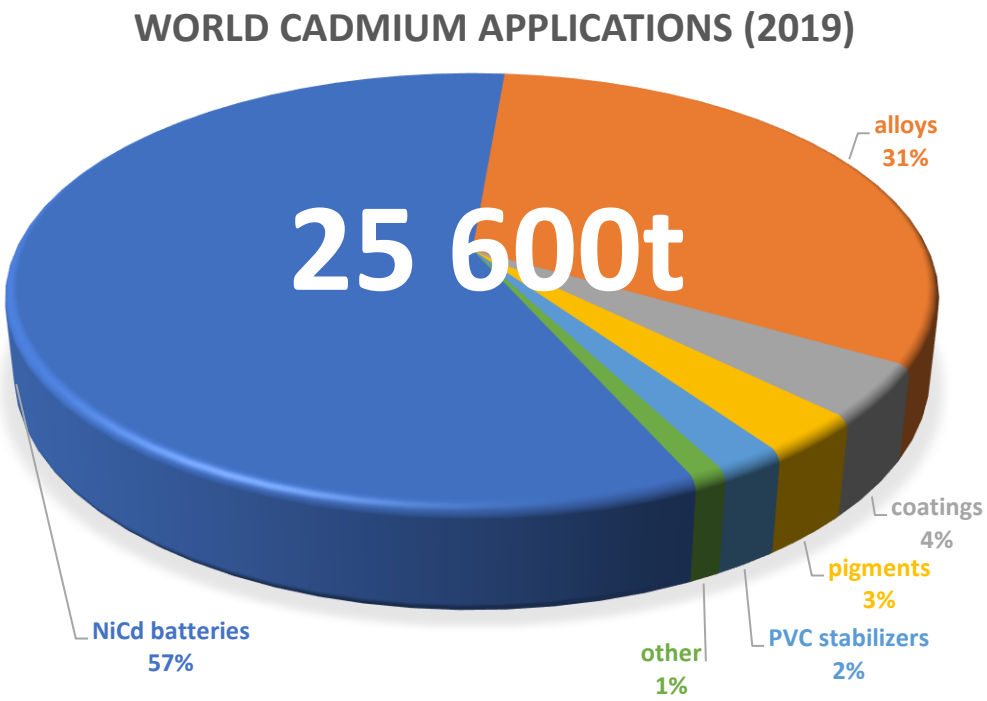
- *The new Chemicals Management for Sustainability will shape the workstreams of the coming years…*

Cadmium market update

Update on use of cadmium in the different applications

Estimate of Cd use 2019

World total		2019
NiCd batteries	57%	14 500 t
alloys	31%	8 000 t
coatings	4%	1 000 t
pigments	3%	750 t
PVC stabilizers	2%	500 t
other	1%	250 t
total		**25 600 t**

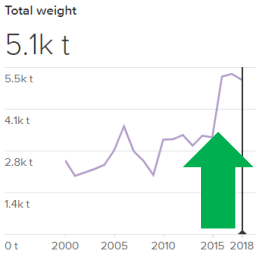


- In the past, estimates were made for each of the uses, where the difference with the total was attributed to the use in NiCd batteries.
- In this estimate, we made an (high) estimate for use in NiCd batteries and allocated the remainder to alloys. It looks like much of Cd trade for casting occurs in a grey area and applications are not always legal. Most Western traders keep away from this business.

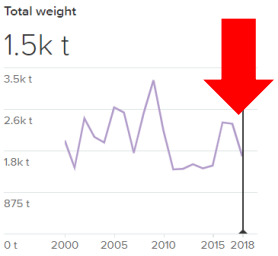
Change in cadmium trade: caused by changing EHS regulation?

Exporters

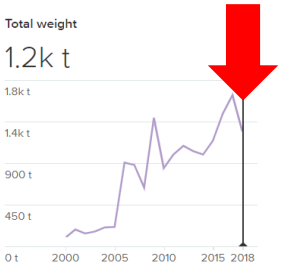
South Korea



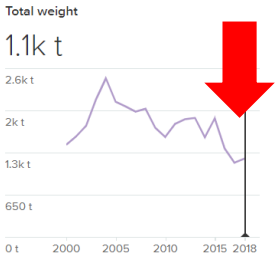
Canada



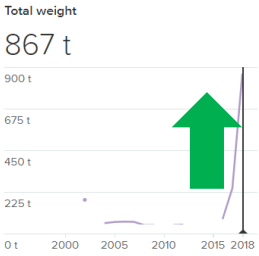
Japan



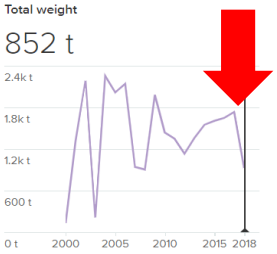
Mexico



HongKong

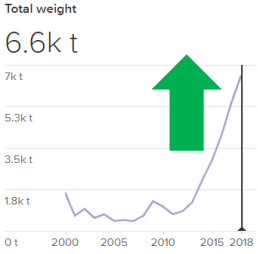


Kazakhstan

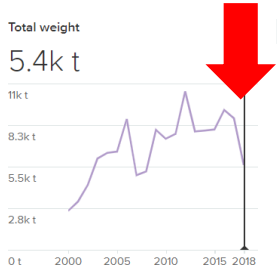


Importers

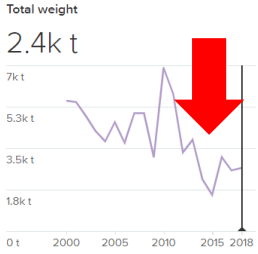
India



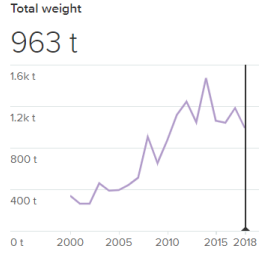
China



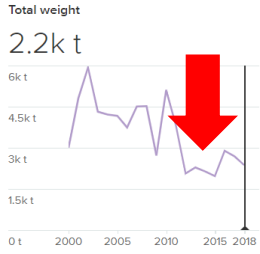
Belgium



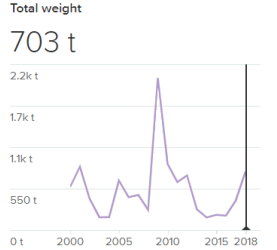
Sweden



EU28



HongKong



Cadmium use: prospects

- None of the application is expected to generate significant growth of the cadmium market.
- Although CdTe thin film PV applications might see a healthy growth, Cd consumptions in absolute numbers will always be low.
- The significant share taken by cadmium in alloy application is a concern
  - Likely these applications are linked with unhealthy workplace conditions
  - Used by consumers that are unaware of the presence of Cd in cast articles and the associated risk
  - Legal actions (India?) to address this activity can have a dramatic effect on total worldwide cadmium demand (30% market share)

Positive communication on cadmium

Positive image building (1)

Most of the applications of cadmium are unique with no equivalent alternatives available

- Highly robust and safe rechargeable batteries for critical applications
  - ✓ Safety systems in aviation, trains& metro, hospitals
- Extremely stable colours that do not fade
  - ✓ Essential for risk and hazard marking, artist paintings, high temperature decoration
- CdTe IR and gamma ray detectors
- Thin film CdTe PV cells
  - ✓ Higher yields than Si based PV cells in warm climates
- Cd coatings in aviation
  - ✓ Unequalled high corrosion and wear resistance of critical parts

Positive image building (2)

High impact elements to consider when working on Cd image

- For many applications, the high toxicity of cadmium is named as a disadvantage. Communications should therefore balance addressing these elements of concern with the scientific knowledge and handling and use for key niche applications
  - ✓ Occupational exposure in processing and manufacturing according to highest standards
  - ✓ Safe use, limited to professional applications which are strictly regulated, niche and without substitutes
  - ✓ Very data rich substance with scientific knowledge to derive risk-based rather than hazard-based approaches to handling and use.
  - ✓ Some uses of Cd are key for delivery of Green Deal – eg Solar energy and Rechargeable batteries
  - ✓ Specific collection and recycling schemes in place to close the end of life loop.

Communication tools

- Website update
  - Information on the ICdA was update
    - ✓Uses
    - ✓Occupational exposure
  - The look and feel needs to be addressed
    - ✓Good example: the new IZA website with focus on positive messaging
  - Need for keeping the scientific information on health on board.
    - ✓How to avoid bypass of our positive messaging via google search?

Communication tools

- Position paper
  - General paper or paper by topic/application?
  - Which topics and application to address?