



Lead REACH
CONSORTIUM

Exposure Scenarios

Blood lead data analysis



Outline

- Pb REACH Consortium
- Blood lead monitoring
- Analysis of blood lead data
- Sector example
- Conclusions

Pb REACH Consortium

- Managed by ILA Europe
- Covering:
 - Lead metal
 - Lead oxide, lead tetroxide, “battery oxide”
 - Lead stabilisers (10 substances)
 - Lead alloys
 - Intermediates **resulting from lead production**

Membership

Current members are

- EU lead substance producers
- Importers of lead substances to the EU
- EU-based traders
- Users of lead (companies or associations)

Currently 90 companies (legal entities)

Blood Lead Monitoring

- We will determine risk by comparing biological monitoring data with derived no-effects levels (DNELs).
- Blood lead data provide a valuable exposure index that integrates input from all relevant exposure pathways.
- Most lead exposed workers in EU have their blood lead value monitored-in comparison to other metals which tend to measure external exposure parameters.
- All safe thresholds (DNELs) derived for Pb in terms of blood leads-unlike many other metals.

Why collect this data?

- ES must display adequate control
 - i.e. Blood lead values for sector/company must fall below a safe threshold.
- Ideally blood lead data will be collected which covers all sectors.

Occupational Health Questionnaire - blood lead levels

- Worked with EBRC to create blood lead questionnaire.
 - Primary
 - Secondary
 - Battery
 - Lead Sheet
 - Oxides and Stabilisers
- 75% Consortium companies submitted data.

How will we use the data?

- Calculate median, 75 and 90 percentile values per year for:
 - Worker.
 - Workplace.
 - Company.
 - Sector.
- **75 Percentile new for REACH cf VRAL**
- Compare these values with DNELs.
- Aim to display adequate control for both individual companies and sectors.

DNELs applicable to workers

➤ DNEL: Derived No Effect Level

- | | |
|--|--|
| ➤ Renal system effects (adult) | 60 $\mu\text{g}/\text{dL}$ |
| ➤ Haematological effects (adult) | 50 $\mu\text{g}/\text{dL}$ |
| ➤ Reproductive effects (male adult) | 45 $\mu\text{g}/\text{dL}$ |
| ➤ Nervous system effects (adult) | 40 $\mu\text{g}/\text{dL}$ |
| ➤ Reproductive effects (female) | 30 $\mu\text{g}/\text{dL}$ |
| ➤ Nervous system effects (foetus) | 10 $\mu\text{g}/\text{dL}$ |

Sector Analysis

- If 75P only slightly higher than DNEL-analyse company by company:
 - majority of companies may not be at risk, but one company brings sector down. This would be suitable to display no risk for all but one of the companies. The company at risk would then have to implement the RMMs which are implemented at other sites.

Sector Analysis

- If several companies within a sector above 40, find companies < 40 .
- Use their RMM to prepare ES which poorly performing companies must then implement. If RMM same at all sites, then RMM need to be properly implemented at poor sites.
- Could also be worker specific-i.e. one worker doesn't stick to RMM, high blood lead etc.



Example Sector

Sector	Min	Median	P75	P90	Max
1	2	19	29	35	44.5
2	24	39	44	45.8	55
3	4	23	31	37	58
4	2.9	20.1	26.7	32.7	42
5	2.9	26.5	33.7	38.9	53.2
6	4	25	32.2	37.2	47
7	1.5	26.1	33.6	42.3	53.3
8	8.33	33.5	42	47.1	66
Sector A	1.5	22.475	30.97	37	66



Workplace-Sector A

75 percentile blood lead values are all well below 40 $\mu\text{g}/\text{dL}$, demonstrating adequate control-i.e. no risk. Conclusion for male workers only – no data to assess presence of women of reproductive capacity.

Sector	Workplace	Min	Median	P75	P90	Max
A	w1	4	29	36.7	42.5	66
A	w2	4	25.7	32.375	38.85	45
A	w3	2.9	23.35	29.6	35	43.5
A	w4	3.1	22	28.15	33.12	47
A	w5	1.5	16.525	23.25	29.025	41
A	w6	1.9	17	28	34.38	55
A	jr	3.6	30.15	37	42.63	53.2
A	na	2	11	16	22.3	37
A	total	1.5	22.475	30.975	37	66

Conclusions

- Due to lead bio-monitoring data, we have different approach to ES than many other metals, i.e.
 - Blood lead data in essence provides integrated information on all routes of exposure.
 - Thus no estimates of external exposure are required in most cases.
 - After analysis of blood lead data, it is straight forward to identify non-compliance (and adequate control):
 - How this relates to the way individual companies apply RMMs,
 - And even manner that individual workers apply RMMs.