Revising the Workplace Lead Standards: At-A-Glance

Why do the workplace lead standards need to be revised?

- Existing OSHA standards are based on medical and scientific information that is more than 40 years old.
- Current science strongly indicates that worker blood lead levels (BLLs) should not exceed 5 to 10 micrograms of lead per deciliter of blood (µg/dL) over a working lifetime.
- Existing standards allow workers to have BLLs up to 50 - 60 µg/dL before they have to be removed from significant lead exposure. We know this level is harmful to health.
- OSHA set the current limit on the amount of lead in the air workers breathe (permissible exposure limit, or PEL) to keep almost all worker BLLs below 60 µg/dL. We need a much lower PEL to keep worker BLLs below 5 – 10 µg/dL over a working lifetime.
- The workplace air lead levels that trigger many protective requirements (for example, protective clothing and clean change areas) are too high given what we know about the low-level health effects of lead.

What information is available on the health effects of low levels of lead?

- Extensive research on the health effects of low-level lead exposure has been done over the last 40 years since the original lead standard was developed in 1978.
- Environmental Health Perspectives (EHP), the National Toxicology Program (NTP), and the U.S. Environmental Protection Agency (U.S. EPA) have published reviews of this large body of research. Dr. Michael Kosnett also presented on the health hazards of low-level lead exposure to adults at a symposium in November 2013 sponsored by the Center for Occupational and Environmental Health. To see a video stream of Dr. Kosnett's presentation, go to: https://www.youtube.com/playlist?list=PLOyuQaVrp4qpzCa45kpuMIHwd34y-Ao9v
- Key findings from EHP: High blood pressure, decreased kidney function, and lower birth weight are associated with chronic BLLs at or above 10 µg/dL.
- Key findings from NTP: Increases in blood pressure, high blood pressure, and essential tremor (a nervous system effect) are associated with BLLs even lower than 10 µg/dL. Decreased kidney filtration rate and reduced growth of the fetus are associated with BLLs lower than 5 µg/dL.
- Key findings from U.S. EPA: There is a causal relationship between low-level lead exposure and high blood pressure, heart disease, and male reproductive effects. There is a likely causal relationship between low-level lead exposure and decreased brain functions such as learning and memory, as well as psychological effects such as depression and anxiety.

California Department of Public Health
Occupational Health Branch
Occupational Lead Poisoning Prevention Program

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- Based on these reviews, the California Department of Public Health, Occupational Lead Poisoning Prevention Program (CDPH-OLPPP), has concluded that there is convincing evidence that chronic, low-level lead exposure causes harmful health effects and that worker BLLs should not exceed 5 – 10 µg/dL over a working lifetime.

What steps has CDPH-OLPPP taken to support the revision of the Cal/OSHA standards?

- CDPH-OLPPP made specific recommendations to Cal/OSHA to revise the general industry and construction lead standards in 2010 and 2011. For details go to the Recommendations for Improving the Cal/OSHA Lead Standards web page: https://www.cdph.ca.gov/Programs/CCDPHP/DEODC/OHB/OLPPP/Pages/LeadStdRecs.aspx
- Our key recommendations are:
    - Lower the BLL at which workers must be removed from lead exposure to two BLLs at or above 20 µg/dL, or one BLL at or above 30 µg/dL
    - Increase the frequency of BLL testing
    - Base the requirement for BLL testing on the creation of a lead hazard (release of lead dust, mist, fume, or other particles) rather than the results of air monitoring for lead
    - Lower the PEL to 0.5 – 2.1 µg/m^3 averaged over an 8-hour workday
- CDPH-OLPPP contracted with the California Environmental Protection Agency (Cal/EPA) to determine the relationship between the amount of lead in the air workers breathe and their BLLs over a working lifetime. The results of Cal/EPA's work, together with new information on the BLLs at which health effects occur, are the basis of our recommendation to Cal/OSHA for a PEL. For our PEL recommendation go to: https://www.cdph.ca.gov/Programs/CCDPHP/DEODC/OHB/OLPPP/CDPH%20Document%20Library/LeadStdPELRec.pdf

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