



Beryllium PEL vice New TLV

John Bishop, MS, CIH
Navy & Marine Corps Public Health Center

Disclaimer

- The views expressed in this presentation are those of the author and do not necessarily reflect the official policy or position of the Department of the Navy, Department of Defense, nor the U.S. Government

Impact of using TLV

- Decreasing the beryllium OEL affects how safety and health practitioners anticipate, recognize, evaluate, and control exposures in the workplace.
- Current practices will need to be reviewed to ensure continued protection of worker health and safety:
 - use of engineering controls
 - update to infrastructure (e.g., installation of showers or cordoning of regulated areas)
 - state of the art monitoring and laboratory analytical methods
 - increased use of personal protective equipment, and
 - possible changes to work processes (e.g., maintenance of beryllium-containing assets).

TLV Use Considerations

- Epidemiological data may be correlated to different sampling and analytical methods with varying degrees of efficiency and quality.
- A change in the sampling and analysis methodology will most likely not be equated to previous airborne evaluations and exposure estimates of previously evaluated operations. Therefore, a process formally considered “acceptable” may be now considered “unknown” and require additional evaluation due to previous limit of detection issues.
- Impacts may be significant for previous industrial hygiene “acceptable” assessments that may now require augmentation of protective recommendations.

TLV Use Considerations

- The standard plastic 37 mm closed face cassette doesn't meet any of the ACGIH particle size sampling criteria (inhalable, thoracic, or respirable).
- Note the impact on field evaluators in using the IOM vice CFC for both the initial cost and the management of sending the IOM inserts to the lab with a needed protocol for appropriate cleaning and the ultimate return to the user.
- Need an increase of air volume sampled to get the Reporting Limit down to at least one half of the TLV.
- May require an increase in sample time (to gain necessary volume) which reduces the ability to evaluate "transient" (short term) exposures or to determine the actual task that causes exposures.

Be Exposures > = PEL 2 ug/m3 TWA - Date Range 2000 - 2007

OPERATION DESCRIPTION	Count of Total TWAs	Percentage % TWAs >= Old TWA OEL	Percentage % TWAs >= Old TWA OEL with Inequality Qualifier
Abrasive Blast, Shot	15	6.67%	0%
Metal Cleaning Mechanical, Polishing And Buffing	4	25.00%	0%
Abrasive Blast, Aluminum Oxide	15	26.67%	0%
Metal Machining, Turning	16	12.50%	0%
Welding, Multiple Operations	28	3.57%	0%
Dental, Prosthetics, Grinding	22	9.09%	0%

OPERATION DESCRIPTION	Count of Total TWAs	Percentage % TWAs >= New TWA TLV	Percentage % TWAs >= New TWA TLV with Inequality Qualifier
Administrative/Clerical	1	100.00%	100.00%
Metal Cleaning Mechanical, Multiple Operations	13	7.69%	100.00%
Abrasive Blast, Glass Bead	11	100.00%	90.91%
Abrasive Blast, Mineral Grit	50	80.00%	85.00%
Abrasive Blast, Shot	15	60.00%	77.78%
Abrasive Blast, Organics	23	47.83%	100.00%
Metal Cleaning Mechanical, Grinding	17	23.53%	75.00%
Metal Cleaning Mechanical, Polishing And Buffing	4	100.00%	75.00%
Metal Cleaning Mechanical, Sanding	52	40.38%	95.24%
Metal Cleaning Mechanical, Needlegunning	2	100.00%	50.00%

OPERATION DESCRIPTION	Count of Total TWAs	Percentage % TWAs >= New TWA TLV	Percentage % TWAs >= New TWA tlv with Inequality Qualifier
Abrasive Blast, Glove Box	11	54.55%	83.33%
Abrasive Blast, Aluminum Oxide	15	86.67%	38.46%
Cleaning, Other, Multiple Operations	2	100.00%	100.00%
Spray Painting, Compressed Air	2	100.00%	100.00%
Metal Machining, Multiple Operations	72	44.44%	90.63%
Metal Machining, Cutting	3	66.67%	100.00%
Metal Machining, Abrasive Grinding	19	42.11%	100.00%
Metal Machining, Drilling/Boring	5	60.00%	100.00%
Metal Machining, Milling	2	50.00%	100.00%
Metal Machining, Turning	16	56.25%	77.78%
Welding, Multiple Operations	28	85.71%	95.83%
Welding, Shielded Metal Arc (SMAW/Stick)	13	92.31%	100.00%
Welding, Gas Metal Arc (GMAW/MIG)	2	50.00%	100.00%
Welding, Gas Tungsten Arc (GTAW/TIG)	5	60.00%	100.00%
Welding, Plasma Arc	2	50.00%	100.00%
Welding, NEC	3	66.67%	100.00%
Cutting, Multiple Operations	4	50.00%	50.00%
Oxygen Cutting	2	50.00%	0.00%
Plasma Cutting	2	100.00%	50.00%
Cutting, NEC	2	100.00%	100.00%

OPERATION DESCRIPTION	Count of Total TWAs	Percentage % TWAs >= New TWA TLV	Percentage % TWAs >= New TWA TLV with Inequality Qualifier
Fiber Reinforced Composite, Grind/Sand, Mechanical	3	66.67%	100.00%
Equipment Repair/Maint/Test, Mechanical Assembly/Repair	10	60.00%	100.00%
Equipment Repair/Maint/Test, Electrical/Battery	2	50.00%	100.00%
HM/HW Handling/Cleanup, Multiple Operations	6	16.67%	100.00%
HM/HW Handling/Cleanup, Ballast Installation	3	100.00%	0.00%
HM/HW Handling Cleanup, Filter Maintenance	5	20.00%	0.00%
HM/HW Handling/Cleanup, NEC	7	85.71%	100.00%
Explosive Production, Testing	3	66.67%	50.00%
Dental, Prosthetics, Grinding	22	68.18%	73.33%
Weapons Handling, Multiple Operations	2	100.00%	100.00%
Weapons Cleaning/PMS	4	25.00%	100.00%
Workplace Sampling/Measurements	2	100.00%	50.00%
Research and Development, Multiple Operations	4	75.00%	100.00%

OPERATION DESCRIPTION	Count of Total TWAs	Percentage % TWAs >= New TWA TLV	Percentage % TWAs >= New TWA TLV with Inequality Qualifier
Transportation, Multiple Operations	8	87.50%	100.00%
Motor Vehicle Maintenance, Body Work	2	50.00%	100.00%
Facility Maintenance, Clean Ventilation Systems	4	50.00%	0.00%
Protective Services, Fire, Training	3	33.33%	100.00%
Boiler Cleaning	19	21.05%	25.00%
Boiler Repair	2	50.00%	0.00%
Supply/Materials Handling, Multiple Operations	4	75.00%	100.00%
Supply/Materials Handling, Material Handling Equipment/Forklift Operation	2	100.00%	100.00%

Conclusions

- Operations with high numbers of Censored data above the new TLV must be re-evaluated.
- We must assume augmentation of PPE in the interim
- Loose the ability to focus in on short term tasks which may be the bad actors

