Compliance Monitoring Using Direct Reading Instruments: A Practical Guide

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Focus

• Joint EFCOG IHS TTG and AIHA EA Strategies Committee effort
  • Protection of worker health
  • Solid exposure decisions based on occupational exposure limits (OELs), while successfully managing compliance with applicable regulations
DOE/NNSA Requirements

• 10 CFR 851
  • Preamble: “the term overexposure is commonly understood to mean exposures above an established limit (whether set by OSHA, ACGIH, or DOE).”
  • Preamble: “DOE notes that the reference to “overexposure” in final rule section 851.20(b)(3) applies specifically to notification of monitoring results.”
  • Appendix A section 6(a): “…exposure monitoring [is required] as appropriate of all work areas or operations to identify and evaluate potential worker health risks.
(Reference FR page 6891)
OSHA perspective

• OSHA regulations in general neither require nor prohibit measurement of air contaminants using real time detection instruments for an employer to determine compliance with exposure standards.

• There is a general duty to provide workplaces “free from recognizable hazards that are causing or likely to cause death or serious harm to employees.”
Challenges for IHs in the Field

• Constraints of instrument sensors
• Data logging: how many data points will I end up with?
• Alarm set points: at an OEL, at 50% of an OEL?
• Applicability of results to OELs:
  • time-weighted averages
  • ceiling limits
  • short term exposure limits
  • excursion limits
• Applicability of results to worker exposure:
  • Personal breathing zone vs. general area
• Applicability of TLVs for which there are either:
  • no recognized sampling methods
  • impractical sampling methods
Challenges for IHs in Evaluation of Results

• Agreement on “overexposure” in general
  • Per 10 CFR 851, overexposures are exposures above an established limit (whether set by OSHA, ACGIH, or DOE).
  • Respiratory protection

• Agreement on ceiling value “overexposure.”

• Understanding ceiling value vs. peak value
  • Ceiling value (per OSHA, exposure shall at no time exceed the OEL)
    • Instantaneous monitoring
    • 15-minute TWA when instantaneous monitoring is not feasible
  • Peak value (instrument and time-period dependent)

• Potentially large number of data points (e.g., one 8-hour sample with data logged every minute has 480 data points): how can statistics be used?
Limitations and Caveats

• Some instrument manuals: Not to be used for compliance due to sensor limitations
• Use of colorimetric tubes for a 15-minute sample
• Follow up or replacement of real time data with use of OSHA or NIOSH method for a 15-minute sample—minimum sample volume issues for some contaminants
Guide

• DOE/NNSA compliance requirements
• Use and limitations of direct reading instruments
• Data logging constraints of direct reading instruments
• Practical use of alarm set points of direct reading instruments
• How to use for direct reading instruments for compliance exposure monitoring
• How to report results from direct reading instruments for compliance exposure monitoring
  • TWA
  • C
  • STEL
  • Excursion
• “How to” algorithm/matrix
Timeline

• To EFCOG IH/S TTG for review 9/1/18
Discussion