Using Test Order Inhalation Data: Early ECRAD Insights

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Agenda

- An Industrial Hygienist (IH)’s perspective on Test Order data
- Recent Test Order successes
- Pitfalls that can impact use of inhalation data
- Areas of interest within test order inhalation data
- Final thoughts
- Questions

An IH's perspective on Test Order data

- As you've heard earlier, the test order process has a lot of components and requires effort from both the Test Order submitters and the EPA staff reviewing submissions
- Having real data is important
  - Strengthens exposure estimates for the risk evaluation
  - Gives realistic information that Existing Chemicals Risk Management Division (ECRMD) can use to refine the Workplace Chemical Protection Program (WCPP)

Recent Test Order Successes

- Success #1 - Ventilation
  - A study plan was developed using a modified sampling method (no approved sampling method was available)
  - There were concerns about a dusty environment leading to overload / breakthrough, so initial plan was to sample in two segments of 4 hours instead of one segment of 8 hours
  - The supplier of the sampling media indicated they had limited supplies and there could be delays by sampling in two segments
  - A test run was completed to evaluate conditions and during the run it was noted that local exhaust ventilation was available and when used no excess dust and debris was present
  - The run showed that because of the available ventilation, overload was no longer a concern and the study's sampling activity could proceed sampling in one segment of 8 hours

Recent Test Order Successes

- Success #2 - A realistic day in the life of an operator
  - In a sampling report, it was noted that several operators were dealing with a process upset (e.g., valve failure, leak, flaring event) and were supporting emergency response activities during their shift
  - This information is vital to understand the different situations that a process operator will go through over the course of a career
  - This event also provided a look into the types of PPE that are used in an emergency and how it differs from performing regular tasks

Pitfalls that can impact the use of inhalation data

- Incorrect Sampling Times (too long/too short)
  - From OSHA Technical Manual: *Full shift sampling is defined as a minimum of the total time of the work shift less one hour (e.g., seven hours of an 8-hour work shift, nine hours of a ten-hour work shift, and eleven hours of a twelve-hour shift).*
    - Samples identified as full shift, but only sampled for a short period
    - Samples that go beyond the duration of a shift shouldn't be used in a full shift TWA due to uncertainties

Pitfalls that can impact the use of inhalation data

- Not collecting blanks
  - *Blanks are sampling media taken into the field and handled as regular samples (but not exposed to a sampling event), then returned to the lab for analysis*
  - Not providing blanks gives no means to ensure the exposures caught by the sampling activity are solely from the work environment

Pitfalls that can impact the use of inhalation data

- Not enough detail on tasks and activities
  - Lack of specific detail on operations, tasks, and processes can limit the value of the inhalation data report
    - Without these details, EPA might not have the meta data needed to understand the inhalation data that is submitted
      - Examples include:
        - » Job tasks and tools used during a full shift of an operator, maintenance worker, laboratory technician, packager, etc.
        - » Ventilation system information
        - » Process information

Top areas of interest within test order inhalation data

- PPE and its usage
  - Inhalation data reports have shown a wide variety of PPE use
    - In addition to selection, when, how, and for how long PPE is being used varied in the data reports
      - Maintenance work
      - Laboratory activities

Top areas of interest within test order inhalation data

- Sampling Methods
  - Test Orders identify the sampling method to be used in the study
    - When possible, NIOSH/OSHA/EPA approved sampling methods are to be used
      - Recent sampling data received used NIOSH 1003 method
    - In situations where there is no approved sampling method available, TO recipient can use a modified method or create a new method
    - EPA reviews and notes study plans method identified, specifically Level of Detection (LOD) and Level of Quantification (LOQ)
      - LOD/LOQ is the lowest concentration of the analyte that can be reliably detected and quantified
        - » This is important in context to risk evaluations to understand if available sampling methods are capable of reliably measuring exposures around a low provisional occupational exposure level

Top areas of interest within the test order data

- Ventilation
  - We have been seeing the value of ventilation in several inhalation data reports we have received
    - Over a three-day period of sampling, a site saw exposure levels drop when an elephant trunk local exhaust ventilation (LEV) was introduced to similar work activities
    - Several sites within a study showed maintenance exposures using LEV were consistently lower than similar activities that had no LEV indicated

Top areas of interest within the test order data

- Exposure Data
  - The exposure data collected, along with details on work being performed and protections in place, paint a realistic picture of exposures
  - Breaking down exposures across Similar Exposure Groups has provided exposure data concerning:
    - Operators and use of automated processes
    - Maintenance work
    - Laboratory work
    - “Packaging” activities

Final Thoughts

- The test order process provides actual data related to the chemicals EPA evaluates, helps to refine our modeling data on present and future chemicals, and strengthens exposure estimates for the risk evaluation
- The process for vetting and approving study plans is involved and thorough
- As we review and evaluate Test Order inhalation data reports, EPA is finding and considering data on sampling methods, PPE use, and engineering controls that will be used in the Risk Evaluation

Questions?