Guidance

EXPOSURE ASSESSMENT

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Exposure Monitoring

• Determine worker exposure to diacetyl, 2,3-pentanediol, and other flavoring chemicals used in the workplace

• Evaluate the effectiveness of work practices and engineering controls

• Facilitate selection of appropriate personal protective equipment, if appropriate.
Objectives of Sampling

• Characterizing (qualitatively or quantitatively) the flavoring chemicals present in workplace air or in bulk materials
• Ensuring compliance with existing OELs
• Assessing the effectiveness of engineering controls, work practices, PPE, training, or other methods used for exposure control
• Identifying areas, tasks, or jobs with higher exposures that require additional exposure control
Objectives of Sampling

- Evaluating exposures related to production process changes and from changes in products made or materials used
- Evaluating specific high risk job categories to ensure that exposures do not exceed exposure standards or guidelines
- Measuring exposures of workers who report symptoms or illnesses
Exposure Monitoring

- Exposure monitoring should be conducted by qualified industrial hygiene personnel
- Appropriate sample handling, storage, and shipping methods should be used
- Working closely with the analytical laboratory before sampling is advised
- Accredited analytical laboratory should analyze collected samples
What to Sample

• Requires preliminary knowledge of the specific flavoring chemicals being produced or used
• Chemical, physical, and toxicological properties
• Chemical quantities in use
Whom and Where to Sample

- Sampling protocol based on objectives
- Sampling considerations include:
  - distance from a diacetyl, 2,3-pentanedione, or flavoring chemical exposure source,
  - worker mobility,
  - air movement patterns,
  - specific tasks or work patterns,
  - individual work habits, and
  - exposure controls,
How to sample

- Gas and vapor air methods,
- Methods to sample particulates in air,
- Direct reading and real-time methods
- Evacuated container sampling methods,
- Particle size distribution methods,
- Bulk air methods, and bulk material methods
Outcomes of Exposure Monitoring

- Compare results before/after engineering controls or work practice changes

- Compare with recommended OELs (8hr TWA or 15 min STEL)
Notification

• Employers should establish procedures for the timely notification of workers

• Workers should know identified exposure hazards, and any subsequent actions taken to reduce exposures

• Employers should ensure that workers understand their role in helping to maintain a healthful workplace