Work scope details:

Title: Installation, Hood Flow Monitors

Work Scope Summary: - The task involves the installation of flow monitors in specific hoods located in the west and east sections of a facility. The objective is to ensure proper monitoring of airflow in these designated areas.

Key Work Scope Components: - Installation of monitors in West hood EF-97 - Installation of monitors in West hood IE9254 - Installation of monitors in East hood EF-96 - Installation of monitors in East hood IE 9252

Relevant previous events and lessons learned:

Event Title	Event Summary	Lessons Learned	Reference Link
A Working Fume Hood Flow Rate Audible Alarm Found Inoperable After Investigation	On July 8, 2020, an audible flow detection alarm was found inoperable after a post-event investigation. On July 7, fume hood flow indicator lights were observed oscillating between red and yellow, indicating a decreased flow rate. The issue was caused by turbulence from a nearby Continuous Air Monitor (CAM) not in use. The CAM was moved, and the flow indicator lights returned to green. The alarm system was silent due to programming.	Verbal requests to turn alarms on/off based on shift needs were not documented, leading to the alarm being off during shift changes. Laboratory protocols were updated, and a partial work release was implemented to limit fume hood use under new protocols.	Link
Blast Door Interlock Control Panel Failure	On August 7, 2020, a trouble light on the Blast Door Interlock (BDI) system was discovered during a facility inspection. No Limiting Conditions of Operation were necessary. The doors were administratively controlled by setting the muster limit to zero in ARGUS, and a work order was submitted to correct the issue.	Administrative controls were effectively used to manage the situation without operational impact. The importance of regular inspections and prompt reporting of issues was reinforced.	Link

Missing Hazards:

Hazard	Missing or Inadequate Mitigation in Current Work Control Document	Recommended Mitigation for Revision	Reference link	SBMS Link
Inoperable flow detection alarm	Not addressed in current controls	Implement process control changes and monitoring to ensure alarms are functional and provide training on alarm management	Link 1, Link 2, Link 3	Link

Turbulence from nearby equipment	Not addressed in current controls	Implement engineering controls to manage airflow and reduce turbulence exposure	Link 1, Link 2	Link
Time pressures and distractive environment	Not addressed in current controls	Develop administrative controls to manage workload and reduce time pressures, provide training on managing distractions	Link 1, Link 2	Link
High workload and first-time evolution	Not addressed in current controls	Implement task management systems and ensure tasks are assigned to qualified personnel	Link 1, Link 2	Link
Vague guidance and imprecise communications	Not addressed in current controls	Establish clear communication protocols and provide training on effective communication	Link 1	Link
Exposure to chemical agents	Partially addressed under Chemical/Rec ID 1 but lacks specificity	Enhance chemical exposure controls with specific procedures for different agents and provide detailed training	Link 1	Link
High noise operations	Partially addressed under Noise but lacks specificity for high noise operations	Implement additional engineering controls and provide specific hearing protection for high noise environments	Link 1, Link 2	Link

Failure mode analysis:

Current control	Failure mode of the control	Effect of Failure	Cause of Failure	Recommended action
Written permits for the work activity	Permit not obtained or incorrect	Unauthorized work leading to safety hazards	Miscommunication or oversight in permit process	Ensure thorough review and approval of permits before work begins
Precautions, step warnings, Hold Points	Steps not followed or ignored	Increased risk of accidents or exposure	Lack of awareness or training	Conduct detailed briefings and training sessions on precautions and hold points

Personal Protective Equipment (PPE)	PPE not used or inadequate	Injury or exposure to hazardous materials	Lack of enforcement or improper selection	Enforce strict PPE usage and verify adequacy for specific tasks
Work instructions for information	Instructions not followed or misunderstood	Incorrect installation leading to malfunction	Inadequate training or unclear instructions	Provide clear, detailed instructions and verify understanding through demonstrations
ORNL subject area requirements	Requirements not met	Non-compliance with safety standards	Lack of awareness or oversight	Regular audits and compliance checks to ensure adherence to requirements
Discuss group/individual responsibilities	Responsibilities unclear or not assigned	Confusion leading to errors or unsafe practices	Poor communication or planning	Clearly define and communicate roles and responsibilities before starting work
Follow work instructions & safety procedures	Procedures not adhered to	Increased risk of accidents or errors	Complacency or lack of supervision	Implement regular supervision and reinforcement of procedures
Availability/location of materials, tools	Materials/tools not available or misplaced	Delays or unsafe improvisation	Poor planning or inventory management	Ensure pre-job checks for availability and proper storage of materials/tools
Response if work cannot be performed as planned	Inadequate response to unforeseen issues	Increased risk of accidents or delays	Lack of contingency planning	Develop and communicate contingency plans for unexpected scenarios
Potential error traps with the job	Error traps not identified or mitigated	Increased likelihood of mistakes	Lack of foresight or experience	Conduct thorough risk assessments and implement error-proofing measures
Exposure Assessment	Incorrect assessment leading to inadequate protection	Overexposure to hazardous substances	Inaccurate data or assumptions	Conduct detailed exposure assessments and adjust controls accordingly
Hearing protection	Inadequate protection leading to hearing damage	Exposure to high noise levels	Incorrect selection or usage	Ensure proper selection and usage of hearing protection with adequate NRR

Ladder inspection	Ladder failure leading to falls	Injury due to equipment failure	Neglect of inspection protocols	Mandate and document regular inspections prior to use
Wet wipe surface inside hood	Contamination due to improper cleaning	Exposure to hazardous residues	Inadequate cleaning procedures	Implement strict cleaning protocols and verify effectiveness
Verify hood working condition	Hood malfunction leading to exposure	Ineffective airflow monitoring	Lack of maintenance or checks	Conduct regular maintenance and verification of hood functionality