

DOCUMENT NO: ES-LEV-01-TG-01

SAFE SYSTEM OF WORK – LOCAL EXHAUST/DILUTION VENTILATION THOROUGH EXAMINATION AND TEST

Purpose

To provide task specific 'Safe Systems of Work' information that requires application during the Thorough Examination and Test (TEt) of Local Exhaust/Dilution Ventilation Systems.

General Work Activities

In support of ES-LEV-01 (Safety), all sites/locations and all work activities produce their own levels of risk giving rise to the potential for danger. General Work Activity Risk Assessments for such sites/locations, including Safe Systems of Work may be found in the Technical Health and Safety Manual (OHS 6.1.2-01 Document Series) and should be duly referred to at all times.

Specific Work Activities

This Safe System of Work is designed to control the exposure (via inhalation, ingestion, absorption, contact and injection) to the hazards associated with the control of hazardous substances being controlled by the Ventilation System of the process being conducted and from the general workplace atmosphere.

Further guidance may also be found within the HSE document 'Five Steps to Risk Assessment' (INDG163) which should be referenced.

Additional Consideration

Upon the application of control measures, it should be considered that there are residual hazards associated with this safe system of work. For hazards other than those associated with the hazardous substance, reference should be made to the appropriate general risk assessment procedures and application of point of activity dynamic risk assessments (RA1, RA2 & RA3).

The following abbreviations shall be used within the remainder of the document;

- 1/ COSHH - Control of Substances Hazardous to Health
- 2/ CLAW - Control of Lead at Work
- 3/ TEt - Thorough Examination and Test

Schedule of Contents

Reference Number	Risk Assessment Description
LEVRA01	Preliminary Assessment - Procedure for the purpose of obtaining site and area access for the purpose of conducting a TEt
LEVRA02	Procedure for the purpose of conducting the 'Dead' Qualitative testing of a Ventilation System
LEVRA03	Procedure for the purpose of conducting the 'Live' Qualitative testing of the Ventilation System
LEVRA04	Procedure for the purpose of conducting Quantitative testing of the Ventilation System
LEVRA04A	Procedure for the purpose of conducting Quantitative testing within ducts

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Risk matrix to be applied to all tasks

Probability	5 (Almost Certain)	5	10	15	20	25
	4 (Likely)	4	8	12	16	20
	3 (Moderate)	3	6	9	12	15
	2 (Unlikely)	2	4	6	8	10
	1 (Rare)	1	2	3	4	5
		1 (Very Low)	2 (Low)	3 (Medium)	4 (High)	5 (Very High)
		Severity				

Probability of the event occurring:

- 1. Unlikely: Less than once every 10 years
- 2. Unlikely: Once every 5 to 10 years
- 3. Moderate: Every 1 to 5 years
- 4. Likely: Every 6 to 12 months
- 5. Almost certain: Every 1 to 6 months

Severity of the event:

- 1. Very low: Very minor injury
- 2. Low: Minor injury requiring first aid
- 3. Medium: Lost time injury
- 4. High: RIDDOR reportable injury
- 5. Very High: Fatality or life changing injury

Ranking:

- Green (1 - 4): Low risk
- Yellow (5 -12): Medium risk
- Red (15 - 25): High Risk (Unacceptable)

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1	<p>Location/Site Details: Locations utilising ‘Local Exhaust or Dilution Ventilation Systems’ for the control of substances hazardous to health as governed by both COSHH and/or CLAW</p>
2	<p>Persons at Risk: Engineer Surveyor Accompanying Person(s) Persons present at Location Persons adjacent to the location</p> <p>Property at Risk: Installed equipment and product</p> <p>Responsible Manager(s): Discipline Technical Operations Manager, Regional Technical Operations Manager, Chief Engineer and HSQ Manager.</p>
3	<p>Hazard(s) (potential to cause harm):</p> <ul style="list-style-type: none"> • Fire or explosion hazards; Explosion of equipment, Explosion of substances, Temperature control failure, Combustible material, Oxidising substances. • Mechanical hazards; Crushing, Shearing, Cutting, Severing, Impacting, Entanglement, Drawing-in or Trapping considering; Vehicular movement, Guards or moving parts of; mechanical and electrical equipment. • Stored energy hazards; Pressurised systems. • Slip, trip and fall hazards; Overreaching, Work at heights, Spillages on floors, Uneven floors, Damaged supports, Obstacles, Poor lighting, Inadequate access. • Electrical hazards; Automatic start-up of systems, Overhead conductors, Transmission lines, Exposed live parts of defective equipment and cabling, Use of non-certified electrical equipment in explosive atmospheres, Static electricity, Exposed heating elements. • Thermal hazards resulting in; burns, scalds, sears and frostbite caused by; Defective electrical equipment, Short circuits, Friction, Temperature control failure, High or low operating temperatures of equipment, Low temperature of process materials, High running temperatures of parts of equipment for example; pumps and motors. • Noise and/or vibration hazards; Excessive vibration and/or noise from plant or the area around plant where hearing protection is required. • Hazards resulting from skin contact, inhalation, ingestion or absorption of harmful substances in various forms eg, fluids, dusts, gases, mists or fumes; Latent chronic ill health effects, for example; COPD, Disease, Cancer, Allergenic or Sensitising. Oxygen depletion (oxidation). • Hazards generated by neglecting ergonomic principles in machine design; (mismatch of machinery with human characteristics and abilities) caused, for example, by; unhealthy postures or excessive efforts, Inadequate assessment of human limb interface with process or work equipment, Inadequate design, location and /or identification of controls, Inadequate lighting, Inadequate assessment of access and egress requirements for operation, inspection and/or maintenance activities.

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Risk Assessment LEV RA01

Activity/Hazard	Preliminary Assessment - Procedure for the purpose of obtaining site and area access for the purpose of conducting a TExT
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Prior to Safe System of Work Application:		
Probability:	Potential Outcome:	Risk Ranking:
All persons and property identified 4 (Likely)	Fatality or life changing injury, Explosion, Fire 4 (high)	16 (High Risk)

Control measures –

- 1/ Application of Allianz Generic Risk Assessments
- 2/ Through effective communication with the client, apply client provided site specific Risk Assessments and/or Permit to Work systems
- 3/ Determine areas of the premises and items requiring access and egress ensuring a suitable and safe means of access is available and used correctly to complete intended activities
- 4/ Determine Hazardous Substances present and their properties (associated risks can be further cross-referenced within HSE document EH40) applying appropriately publicised protective measures
- 5/ Determine if an area is used for microbiological hazards, if so determine the assigned Hazard Group (HG) classification and Containment Level (CL) classification, resulting in the following;
 - i) If a Hazard Group or Containment Level classification is absent, entry is not permitted
 - ii) If the Hazard Group classification is either HG3 or HG4, entry is not permitted
 - iii) If the Containment Level classification is either CL3 or CL4, entry is not permitted
- 5/ Establish if work activities require entry into a defined or potential, explosive atmosphere, applying necessary publicised protective measures, for example; prohibited introduction of any activities or equipment that present an ignition source
- 6/ Establish the location of appropriate hygiene facilities
- 7/ Select PPE and RPE as appropriate for the identified Hazards and ensure fitness for purpose
- 8/ Select test equipment appropriate for the environment and intended activities

Re assessment after application of control measures:		
Probability:	Potential Outcome:	Risk Ranking:
All persons and property identified 2 (Unlikely)	Fatality or life changing injury, Explosion, Fire 4 (High)	8 (Medium)
Conclusion/ Recommendations:	The risk can be controlled and is considered acceptable, so far as is reasonably practicable, with the stated control measures in place.	

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Risk Assessment LEVRA02

Activity/Hazard	Procedure for the purpose of conducting the 'Dead' Qualitative testing of a Ventilation System
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Prior to Safe System of Work Application:		
Probability:	Potential Outcome:	Risk Ranking:
All persons and property identified 4 (Likely)	Fatality or life changing injury, Explosion, Fire 4 (high)	16 (High Risk)

Control measures –

- 1/ Seek permission and apply effective isolation and 'lock-off' procedures of the affected process(es) and equipment from use for the duration of the 'dead' examination.
- 2/ Implement effective isolation and 'lock-off' procedures to the Ventilation System to be subjected to the 'dead' examination
- 3/ Utilise correct tools and implement approved procedures for access to parts requiring examination. Consideration should be given to Manual Handling, Confined Spaces and Working at Height if appropriate
- 4/ Notwithstanding the use of appropriate PPE and RPE, avoid any unnecessary contact/exposure to all hazardous substances
- 5/ On completion restore the systems isolated to the condition as presented. Advising the client appropriately
- 6/ Conduct standard decontamination and hygiene procedures as appropriate for the Hazardous Substances

Re assessment after application of control measures:		
Probability:	Potential Outcome:	Risk Ranking:
All persons and property identified 2 (Unlikely)	Fatality or life changing injury, Explosion, Fire 4 (High)	8 (Medium)
Conclusion/ Recommendations:	The risk can be controlled and is considered acceptable, so far as is reasonably practicable, with the stated control measures in place.	

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Risk Assessment LEVRA03

Activity/Hazard	Procedure for the purpose of conducting the 'Live' Qualitative testing of the Ventilation System
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Prior to Safe System of Work Application:		
Probability:	Potential Outcome:	Risk Ranking:
All persons and property identified 4 (Likely)	Fatality or life changing injury, Explosion, Fire 4 (high)	16 (High Risk)
<p>Control measures –</p> <p>1/ Effectively communicate with operators advising of intentions. This should include, for example, an appropriate brief on the effects of the use of the high intensity light beam</p> <p>2/ Apply a 'safe distance', appropriate to the hazard, from moving parts of the process associated with the Ventilation System under examination</p> <p>3/ Determine the nature of potential exposure to the Hazardous Substances in relation to their emission type, considering particulate size and velocity/direction of release, applying appropriate protective measures</p> <p>4/ Ensure that intended qualitative techniques applied are appropriate for the environment (for example, the smoke test may introduce contamination of equipment and/or product as well as activating smoke alarm/fire protection systems)</p> <p>4/ Notwithstanding the use of appropriate PPE and RPE, avoid unnecessary contact/exposure to all hazardous substances. This may include a consideration of radiated light and/or excessive noise created by the process operation</p> <p>5/ On completion, conduct standard decontamination and hygiene procedures as appropriate for the Hazardous Substances</p>		
Re assessment after application of control measures:		
Probability:	Potential Outcome:	Risk Ranking:
All persons and property identified 2 (Unlikely)	Fatality or life changing injury, Explosion, Fire 4 (High)	8 (Medium)
Conclusion/ Recommendations:	The risk can be controlled and is considered acceptable, so far as is reasonably practicable, with the stated control measures in place.	

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SAFE SYSTEM OF WORK – LOCAL EXHAUST/DILUTION VENTILATION THOROUGH EXAMINATION AND TEST

Risk Assessment LEVRA04

Activity/Hazard	Procedure for the purpose of conducting Quantitative testing of the Ventilation System
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Prior to Safe System of Work Application:		
Probability:	Potential Outcome:	Risk Ranking:
All persons and property identified 4 (Likely)	Fatality or life changing injury, Explosion, Fire 4 (high)	16 (High Risk)

Control measures –

- 1/ Effectively communicate with operators, intentions for testing completion
- 2/ Establish the suitability and condition of test equipment to be used for each activity. Additional consideration should be given to potentially explosive atmospheres and test equipment selection
- 3/ Ensure that a 'safe distance' is maintained from all potential mechanical, chemical and biological hazards associated with both the process(es) and the Ventilation System
- 4/ Notwithstanding the use of appropriate PPE and RPE, avoid unnecessary contact/exposure to all hazardous substances.

For the purpose of qualitative testing within ducts refer to [LEVRA04A](#)

- 5/ On completion conduct standard decontamination and hygiene procedures to person and equipment as appropriate for the Hazardous Substances

Re assessment after application of control measures:		
Probability:	Potential Outcome:	Risk Ranking:
All persons and property identified 2 (Unlikely)	Fatality or life changing injury, Explosion, Fire 4 (High)	8 (Medium)
Conclusion/ Recommendations:	The risk can be controlled and is considered acceptable, so far as is reasonably practicable, with the stated control measures in place.	

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Risk Assessment LEVRA04A

Activity/Hazard	Procedure for the purpose of conducting Quantitative testing within ducts
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Prior to Safe System of Work Application:		
Probability:	Potential Outcome:	Risk Ranking:
All persons and property identified 4 (Likely)	Fatality or life changing injury, Explosion, Fire 4 (high)	16 (High Risk)
<p>Control measures –</p> <p>1/ Establish suitability of presence and positioning of test points If test points are not present apply the following hierarchy;</p> <ul style="list-style-type: none"> • Indicate to the client the position and type of required points, requesting their provision • Obtain permission to create test points as required <p style="padding-left: 40px;">Note – Creation of test points within flexible ducting should be avoided</p> <p>2/ Utilise only safe means of access to test points 3/ Utilise only the pitot tube and electronic manometer for testing</p> <p style="text-align: center;">Return to LEVRA04</p>		
Re assessment after application of control measures:		
Probability:	Potential Outcome:	Risk Ranking:
All persons and property identified 2 (Unlikely)	Fatality or life changing injury, Explosion, Fire 4 (High)	8 (Medium)
Conclusion/ Recommendations:	The risk can be controlled and is considered acceptable, so far as is reasonably practicable, with the stated control measures in place.	

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