



**S.I. ENVIRONMENTAL**

**"Helping To Make Your Workplace Safer"**

*Air Monitoring  
H&S Consultancy*

*Workplace Noise Monitoring  
Local Exhaust Ventilation Tests*

## ***Occupational Hygiene Survey***

### ***Airborne Dust & Volatile Organic Compounds***

***The Control of Substances Hazardous to Health Regulations, 2002 (As Amended)***

***Report Number: WZPL/0219/TS***

***Revision Number: 0***

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## **EXECUTIVE SUMMARY**

At the request WZ Packaging Limited, an occupational hygiene survey was carried out at the Telford, Shropshire site on Monday 11th February 2019, by S.I. Environmental Limited staff. The purpose of the survey was to carry out monitoring of employee exposure to Respirable Dust, Total Inhalable Dust and Volatile Organic Compounds (VOC's) during normal work activities, to determine whether employee exposure was within the prescribed legal limits, as required by Regulation 7 (Prevention or Control of Exposure to Substances Hazardous to Health) of the Control of Substances Hazardous to Health (COSHH) Regulations, 2002 (as amended).

Three personal samples were taken to measure employee inhalation exposure to Volatile Organic Compounds (VOC's) and Total Hydrocarbons, two personal samples were taken to measure employee inhalation exposure to Total Inhalable Dust and Respirable Dust and two personal samples were taken to measure employee inhalation exposure to Total Inhalable Dust, in order to assess the exposure levels against the recognised exposure limits.

All results for Total Inhalable Dust, Respirable Dust, Total Hydrocarbons & Volatile Organic Compounds (VOCs) exposure are well below the respective workplace exposure limits, indicating that the current control measures are satisfactory.

## **Findings and conclusions**

### **Results**

#### **Respirable Dust Results**

The results of the survey have indicated that the inhalation exposure of the employees monitored were all well below the long-term 8-hour, Time Weighted Average (TWA), Workplace Exposure Limit (WEL) for respirable dust of  $4 \text{ mg.m}^{-3}$ . The highest result was  $<0.15 \text{ mg.m}^{-3}$ .

#### **Total Inhalable Dust (non-specific) Results**

The results of the survey have indicated that the inhalation exposure of the employees monitored were all well below the long-term, Time Weighted Average WEL of  $10 \text{ mg.m}^{-3}$  for Total Inhalable Dust. The highest result was  $1.80 \text{ mg.m}^{-3}$ .

#### **Volatile Organic Compounds (VOC's)**

The results of the survey have indicated that the inhalation exposure of the employees monitored were all well below the appropriate 8-Hour long-term Time Weighted Average Workplace Exposure Limits for the identified VOC's.

#### **Total Volatile Organic Compounds**

The results of the survey have indicated that the inhalation exposure of the employees monitored were all well below the ACTS (Advisory Committee on Toxic Substances) long-term exposure limit of  $1200 \text{ mg.m}^{-3}$  for total VOC's. The highest result was  $5.10 \text{ mg.m}^{-3}$ .

### Local Exhaust Ventilation (LEV)

Effective LEV or dust/fume extraction can carry away airborne contaminants before they can be breathed in. Further information is available from the HSE website at:

<http://www.hse.gov.uk/lev/>

There was Local Exhaust Ventilation (LEV) systems installed within the Finishing Workshop, Engineering Workshop, Mixing Room and at the Printing Presses.

### Respiratory Protective Equipment (RPE)

Respiratory protective equipment (RPE) was available to all site employees for use during normal work activities. The following types were available:

- 3M ½ face Disposable Dust Mask (FFP1 N RD Particulate Filter)

It should be noted however, that RPE should not be used as a primary measure for controlling exposure to dust. Control measures such as Local Exhaust Ventilation (LEV) should be used as the primary control measure, where practical, and RPE should be used for non-routine exposure to high dust levels such as maintenance or cleaning activities.

### Recommendations

Improvements in control and containment to reduce operators' exposure should be based on the; '*COSHH - Principles of good control practice*'. Further information is available on-line at: <http://www.hse.gov.uk/coshh/detail/goodpractice.htm>.

Ensure that LEV plant is thoroughly examined and tested by a competent person at intervals determined by the Control of Substance Hazardous to Health Regulations, 2002 (as amended), but in any event not exceeding fourteen months.

Ensure that the Local Exhaust Ventilation (LEV) is used at its optimum operating performance at all times when work is being carried out and all operators should be trained in the use and maintenance of the exposure control measures including the LEV and filters.

The use of sweeping brushes to clean up debris is recognised as a source of high employee exposure and should be avoided. The vacuum extraction units provided should be used during cleaning-up work activities.

Results of personal monitoring should be retained for a minimum of 40 years as required by the COSHH Regulations 2002 (as amended).

An annual review of occupational exposure be carried out to ensure the continuing validity of exposure data included in COSHH assessments. Should there be any significant changes in the work procedures, which may affect exposure levels, additional exposure monitoring may be appropriate.

Regulation 11 of the Control of Substances Hazardous to Health (COSHH) Regulations, 2002 (as amended), requires that health surveillance should be provided for operatives at risk from chronic lung and respiratory system damage

Information, instruction and training should be given to the employees about:

- The nature of the substances they work with and the risks created by exposure to those substances.
- The precautions they should take.
- The control measures, their purpose and how to use them correctly.
- Results of the exposure monitoring survey.

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## **1.0 INTRODUCTION**

- 1.1 WZ Packaging Limited is a leading supplier of innovative and high-quality packaging solutions to many market sectors including food, confectionery, dairy, cosmetics, pharmaceutical and industrial. WZ Packaging has expertise in thin-gauge unsupported and laminated printed aluminium foil, and conversion of film-based substrates.
- 1.2 At the request WZ Packaging Limited, an occupational hygiene survey was carried out at the Telford, Shropshire site on Monday 11<sup>th</sup> February 2019, by S.I. Environmental Limited staff. The purpose of the survey was to carry out monitoring of employee exposure to Respirable Dust, Total Inhalable Dust and Volatile Organic Compounds (VOC's) during normal work activities, to determine whether employee exposure was within the prescribed legal limits, as required by Regulation 7 (Prevention or Control of Exposure to Substances Hazardous to Health) of the Control of Substances Hazardous to Health (COSHH) Regulations, 2002 (as amended).
- 1.3 The survey was carried out by Mr A. J. Smedley, Occupational Hygienist. A summary of the requisite qualifications held by Mr Smedley is given in Appendix I.

## **2.0 MONITORING METHODS**

A summary of the monitoring methods employed, applicable laboratory analytical techniques and relevant quality credentials are given in Appendix II at the rear of this report.

## **3.0 PROCEDURE**

- 3.1 Personal monitoring samples were taken from within the employee's 'breathing zone' as recommended by the Health and Safety Executive (HSE) in HSG173, 'Monitoring Strategies for Toxic Substances'. The sampling heads, used during the survey, were positioned on the collar of the employee's overalls / clothing with the sampling head directed horizontally (sideways on).
- 3.2 The following employee/work activities were monitored:
- Mr Ian Perry, a Finishing Area Packing Operative, who, during the period monitored (approx. 4hrs), was employed operating a PPT to transport materials and packaging finished goods.
  - Mr Krzysztof Wozniak, a Finishing Area Operative, who, during the period monitored (approx. 4hrs), was employed operating the Kampf Unial Slitter Machine N°829
  - Mr Mariusz Stachowicz, a Finishing Area Operative, who, during the period monitored (approx. 4hrs), was employed operating the Titan Slitter Machine N°837

- Mr Steven Swinnerton, a Printing Area Operative, who, during the period monitored (approx. 4hrs), was employed operating the Rotomec Printing Machine N°334.
- Mr Paul Hancox, a Mixing Room Operative, who, during the period monitored (approx. 4hrs), was employed mixing printing inks.
- Mr Terry Hughes, a Printing Area Operative, who, during the period monitored (approx. 4hrs), was employed operating the Rotomec Printing Machine N°334
- Mr Ben Greenwood, a Printing Area Operative, who, during the period monitored (approx. 4hrs), was employed operating the Kroenert Glue Lamination Machine N°339

3.3 Production levels were normal, and the shift worked by the staff monitored was a 12-hour period, including up to 70 minutes of rest breaks. The calculated concentrations assume that the exposure determined during the period covered was representative of the full 12-hour shift (time weighted average) and was representative of a standard working day.

#### 4.0 **ADVERSE HEALTH EFFECTS FROM EXPOSURE TO SUBSTANCES SAMPLED DURING THE SURVEY**

##### 4.1 Total Inhalable Dust and Respirable Dust

Breathable dust is generally understood to be an aerosol of solid particles, mechanically produced with individually particle diameters of 0.1 microns upwards. Total inhalable dust is the fraction of airborne material which enters the nose and mouth during breathing, and is therefore available for deposition anywhere in the respiratory tract.

Respirable dust approximates to the fraction of airborne material that penetrates to the gas exchange region of the lung. The main adverse health effects from continuous dust exposure are chronic lung and respiratory system damage.

##### 4.2 Volatile Organic Compounds (VOC's)

Volatile Organic Compounds (VOC's) are chemical substances. They are often used as carriers for surface coatings such as paints, varnishes, adhesives, and pesticides. Examples of common solvents encountered in industry are:

- White Spirit - found in paints, varnishes, and cleaning products
- Xylene - found in paint and adhesives
- Butanol - found in natural and synthetic resins, paints, and lacquers

Many products contain mixtures of VOCs. Exposure to VOCs may cause irritation to the skin, eyes and lungs and may also cause headache, nausea and dizziness. Very high exposure may cause unconsciousness and even death.

## 5.0 **RESULTS**

5.1 The results of the monitoring survey can be found in tabulated test report form in Appendix III.

5.2 The results are an estimation of the personal exposure, bearing in mind the variations that can exist, i.e. ambient conditions, wind speeds and direction, air temperatures, nature of the process, shape and degree of the confined area and operators positioning and method. While sampling at the site, the climatic conditions were dry and cloudy with a slight westerly breeze. The maximum temperature was 10°C. It is considered that, during the survey, the weather conditions would not have significantly affected employee exposure to the substances monitored; due to the workplace environment being enclosed and well sheltered from the outside weather.

## 6.0 **LEGISLATION**

6.1 The Control of Substances Hazardous to Health (COSHH) Regulations, 2002 (as amended) requires that employers identify employees' exposure levels by inhalation to hazardous substances. The Health and Safety Executive (HSE) publishes a list of Workplace Exposure Limits (WELs) in their Guidance Note EH40, which form part of the requirements of the COSHH Regulations.

6.2 EH40/2005 (Third Edition 2018) specifies the following WELs relevant to this survey:

Substance	Workplace Exposure Limits (WEL)
	Long Term: 8-hour ( $\text{mg}\cdot\text{m}^{-3}$ )
Total Inhalable Dust	10
Respirable Dust	4
Ethanol	1920
Ethyl Acetate	734
n-Heptane	2085

### 6.3 **Hydrocarbons**

'In house' limits for hydrocarbon mixtures are derived using the reciprocal calculation procedure (RCP). The RCP requires a limit for each component in a mixture of hydrocarbons. Since for many individual hydrocarbons the data on which a WEL could be based is limited, ACTS (Advisory Committee on Toxic Substances) has divided hydrocarbons into discrete groups based on structural similarity and critical health effects and assign guidance values to the groups which can then be used in the RCP. Using these guidance values an 8-hour TWA of  $1200 \text{ mg m}^{-3}$  has been approved by ACTS for hydrocarbon mixtures comprising of normal and branched chain alkanes  $\geq \text{C}_7$ , such as white spirit.

6.4 It should be noted that control of exposure will only be treated as adequate if complying with the requirements of regulation 7.7 of the COSHH regulations. This includes taking cognisance of the principles of good practice for the control of



exposure to substances hazardous to health given in Schedule 2A, which are summarised below:

- a) design and operate processes and activities to minimise emission, release and spread of substances hazardous to health;
- b) take into account all relevant routes of exposure – inhalation, skin absorption and ingestion – when developing control measures;
- c) control exposure by measures that are proportionate to the health risk;
- d) choose the most effective and reliable control options which minimise the escape and spread of substances hazardous to health;
- e) where adequate control of exposure cannot be achieved by other means, provide, in combination with other control measures, suitable personal protective equipment;
- f) check and review regularly all elements of control measures for their continuing effectiveness;
- g) inform and train all employees on the hazards and risks from the substances with which they work, and the use of control measures developed to minimise the risks;
- h) ensure that the introduction of control measures does not increase the overall risk to health and safety.

## **7.0 DISCUSSION**

### **7.1 Results**

#### **7.1.1 Respirable Dust Results**

The results of the survey have indicated that the inhalation exposure of the employees monitored were all well below the long-term 8-hour, Time Weighted Average (TWA), Workplace Exposure Limit (WEL) for respirable dust of  $4 \text{ mg.m}^{-3}$ . The highest result was  $<0.15 \text{ mg.m}^{-3}$ .

#### **7.1.2 Total Inhalable Dust (non-specific) Results**

The results of the survey have indicated that the inhalation exposure of the employees monitored were all well below the long-term, Time Weighted Average WEL of  $10 \text{ mg.m}^{-3}$  for Total Inhalable Dust. The highest result was  $1.80 \text{ mg.m}^{-3}$ .

#### **7.1.3 Volatile Organic Compounds (VOCs)**

The results of the survey have indicated that the inhalation exposure of the employees monitored were all well below the appropriate 8-Hour long-term Time Weighted Average Workplace Exposure Limits for the identified VOC's.

#### **7.1.4 Total Volatile Organic Compounds**

The results of the survey have indicated that the inhalation exposure of the employees monitored were all well below the ACTS (Advisory Committee on Toxic Substances)

long-term exposure limit of 1200 mg.m<sup>-3</sup> for total VOC's. The highest result was 5.10 mg.m<sup>-3</sup>.

## 7.2 Local Exhaust Ventilation (LEV)

Effective LEV or dust/fume extraction can carry away airborne contaminants before they can be breathed in. Further information is available from the HSE website at:

<http://www.hse.gov.uk/lev/>

There was Local Exhaust Ventilation (LEV) systems installed within the Finishing Workshop, Engineering Workshop, Mixing Room and at the Printing Presses.

## 7.3 Respiratory Protective Equipment (RPE)

Respiratory protective equipment (RPE) was available to all site employees for use during normal work activities. The following types were available:

- 3M ½ face Disposable Dust Mask (FFP1 N RD Particulate Filter)

It should be noted however, that RPE should not be used as a primary measure for controlling exposure to dust. Control measures such as Local Exhaust Ventilation (LEV) should be used as the primary control measure, where practical, and RPE should be used for non-routine exposure to high dust levels such as maintenance or cleaning activities.

## 7.5 Face-fit Testing

To ensure that the selected RPE has the potential to provide adequate protection for individual wearers, the ACoPs supporting COSHH recommend face-fit testing of RPE. Such testing should prevent the selection of inadequately fitting face-pieces. An inadequate fit will significantly reduce the protection provided to the wearer. Further information regarding face fit testing is given in the HSE document OC 282/28.

## 7.6 Health Surveillance

Health surveillance is required where you answer 'yes' to *all* the following:

- Is the work known to damage health in some particular way?
- Are there valid ways to detect the disease or condition? \* Health surveillance is only worthwhile where it can reliably show that damage to health is starting to happen or becoming likely. A technique is only useful if it provides accurate results, is safe and practical.
- Is it reasonably likely that damage to health may occur under the particular conditions at work?
- Is surveillance likely to benefit the employee?

\* Valid techniques are those that are precise enough to detect something wrong that could be caused by exposure to a particular health risk; and which are safe and practicable in a workplace setting.

Further advice regarding Health Surveillance can be found online at [www.hse.gov.uk/health-surveillance/index.htm](http://www.hse.gov.uk/health-surveillance/index.htm) which replaces HSE document HSG61 'Health surveillance at work'.

## **8.0 RECOMMENDATIONS**

- 8.1 Improvements in control and containment to reduce operators' exposure should be based on the; '*COSHH - Principles of good control practice*'. Further information is available on-line at: <http://www.hse.gov.uk/coshh/detail/goodpractice.htm>.
- 8.2 Ensure that LEV plant is thoroughly examined and tested by a competent person at intervals determined by the Control of Substance Hazardous to Health Regulations, 2002 (as amended), but in any event not exceeding fourteen months.
- 8.3 Ensure that the Local Exhaust Ventilation (LEV) is used at its optimum operating performance at all times when work is being carried out and all operators should be trained in the use and maintenance of the exposure control measures including the LEV and filters.
- 8.4 The use of sweeping brushes to clean up debris is recognised as a source of high employee exposure and should be avoided. The vacuum extraction units provided should be used during cleaning-up work activities.
- 8.5 Results of personal monitoring should be retained for a minimum of 40 years as required by the COSHH Regulations 2002 (as amended).
- 8.6 An annual review of occupational exposure be carried out to ensure the continuing validity of exposure data included in COSHH assessments. Should there be any significant changes in the work procedures, which may affect exposure levels, additional exposure monitoring may be appropriate.
- 8.7 Regulation 11 of the Control of Substances Hazardous to Health (COSHH) Regulations, 2002 (as amended), requires that health surveillance should be provided for operatives at risk from chronic lung and respiratory system damage
- 8.8 Information, instruction and training should be given to the employees about:
  - The nature of the substances they work with and the risks created by exposure to those substances.
  - The precautions they should take.
  - The control measures, their purpose and how to use them correctly.
  - Results of the exposure monitoring survey.

## 9.0 **REFERENCES**

1. The Control of Substances Hazardous to Health (COSHH) Regulations, 2002 (as amended) Approved Code of Practice and Guidance; L5 (Sixth edition) Published 2013.
2. HSE Guidance Notes: HSG173: Monitoring Strategies for Toxic Substances
3. HSE: MDHS 104: Volatile Organic Compounds in Air
4. EH 40/2005 'Workplace Exposure Limits'. Third Edition 2018.

# APPENDIX I

## QUALIFICATIONS SUMMARY

Surveyor: Mr Tony Smedley
<p>British Occupational Hygiene Society (BOHS) Certificate:</p> <ul style="list-style-type: none"><li>• <i>W501 Measurement of Hazardous Substances</i></li></ul> <p>British Occupational Hygiene Society (BOHS) Certificate:</p> <ul style="list-style-type: none"><li>• <i>W201 Basic Principles in Occupational Hygiene</i></li></ul> <p>NEBOSH General Certificate in Occupational Health &amp; Safety</p> <p>City &amp; Guilds (C&amp;G) Environmental Engineers Certificate</p>

# APPENDIX II

## Summary of Sampling and Analytical Methods

<b>Substance</b>	Total Inhalable Dust and Respirable Dust
<b>Analytical Method</b>	Gravimetric
<b>Reference Documentation</b>	HSE HSG 173 & HSE MDHS 14/4
<b>Sampling Technique</b>	Personal sampling pump
<b>Flow Rate</b>	~ 2.0 l.min <sup>-1</sup>
<b>Sampling Pump Calibration</b>	Casella Flow Detective
<b>Sampling Head</b>	IOM sampling head
<b>Sample Media</b>	Pre-weighed 25mm Ø MCE filter/multi foam disc
<b>Detection Limit</b>	-
<b>Accreditation</b>	UKAS
<b>Analysis Laboratory</b>	Concept Life Sciences Ltd, Manchester

<b>Substance</b>	Volatile Organic Compounds (VOC's)
<b>Analytical Method</b>	Gas Chromatography – Mass Spectrometry (GC/MS)
<b>Reference Documentation</b>	HSE HSG 173 & MDHS 104, NIOSH 1501
<b>Sampling Technique</b>	Personal sampling pump
<b>Flow Rate</b>	~ 100 ml.min <sup>-1</sup>
<b>Sampling Pump Calibration</b>	Casella Flow Detective
<b>Sampling Head</b>	Sorbent tube holder/cover with low flow CPC
<b>Sample Media</b>	SKC 226-01 Anasorb charcoal sorbent tube
<b>Detection Limit</b>	5 µg
<b>Accreditation</b>	-
<b>Analysis Laboratory</b>	Concept Life Sciences Ltd, Manchester

**HSE: Health & Safety Executive - United Kingdom**

**OSHA: Occupational Safety and Health Administration - USA**

**NIOSH: National Institute of Occupational Safety & Health – USA**

# APPENDIX III

## SURVEY RESULTS



**WZ Packaging Ltd, Telford, Shropshire**

Total Inhalable Dust (non-specific) &amp; Respirable Dust(non-specific)

## Sample Analysis Results

Survey Date	Sample Details	Sampling Head/Filter	Sample Collection Data			Substance	Measured Conc.	8-hour TWA Conc.	Long Term (8 hr) WEL
			Flow Rate ml.min <sup>-1</sup>	Duration (mins)	Volume (m <sup>3</sup> )		(mg.m <sup>-3</sup> )		
11.02.19	Mr Ian Perry Finishing Area Packing Operative	IOM 33 L-666	2000	240	480	Respirable Dust	<0.10	<0.15	4
						Total Inhalable Dust	1.20	1.80	10
11.02.19	Mr Krzysztof Wozniak Finishing Area M/C 829 Operative	IOM 20 H-679	2000	240	480	Respirable Dust	<0.10	<0.15	4
						Total Inhalable Dust	<0.21	<0.32	10
11.02.19	Mr Steven Swinnerton Printing Area M/C 334 Operative	IOM 11 S-577	2000	240	480	Total Inhalable Dust	0.45	0.68	10
11.02.19	Mr Mariusz Stachowicz Finishing Area M/C 837 Operative	IOM 35 S-576	2000	240	480	Total Inhalable Dust	0.11	0.17	10

\*8-Hour Time Weighted Average calculated result based on a normal 12-hour working shift length.

	≤ 50% WEL		< WEL ≥ 50% of WEL		≥ WEL
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**WZ Packaging Ltd, Telford, Shropshire**

Volatile Organic Compounds (VOC's)

Sample Analysis Results

Survey Date	Sample Details	Tube Reference	Sample Collection Data			Substance	Measured Conc.	8-hour TWA Conc. *	Long Term (8 hr) WEL
			Pump Flow Rate (ml.min <sup>-1</sup> )	Duration (mins)	Volume (m <sup>3</sup> )		(mg.m <sup>-3</sup> )		
11.02.19	Mr Paul Hancox Printing Area Mixing Room Operative	226-01 7896874091	105.0	240	0.0252	Ethanol	8.40	12.60	1920
						Ethyl Acetate	30.0	45.0	734
						Heptane	1.20	1.80	2085
						Branched Cycloalkane C7	0.75	1.13	-
						Branched Cycloalkane C4	1.90	2.85	-
						Total Hydrocarbons	2.10	3.15	1200 <sup>^</sup>

\*8-Hour Time Weighted Average calculated result based on a normal 12-hour working shift length.

<sup>^</sup> ACTS (Advisory Committee on Toxic Substances)

	≤ 50% WEL		< WEL ≥ 50% of WEL		≥ WEL
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**WZ Packaging Ltd, Telford, Shropshire**

Volatile Organic Compounds (VOC's)

Sample Analysis Results

Survey Date	Sample Details	Tube Reference	Sample Collection Data			Substance	Measured Conc.	8-hour TWA Conc. *	Long Term (8 hr) WEL
			Pump Flow Rate (ml.min <sup>-1</sup> )	Duration (mins)	Volume (m <sup>3</sup> )		(mg.m <sup>-3</sup> )		
11.02.19	Mr Terry Hughes Printing Area Rotomec 334 Operative	226-01 7898674893	107.0	240	0.0257	Ethanol	6.20	9.30	1920
						Ethyl Acetate	20.0	30.0	734
						Heptane	5.80	8.70	2085
						Branched Alkane C7	3.30	4.95	-
						Branched Cycloalkane C7	3.70	5.55	-
						Total Hydrocarbons	3.40	5.10	1200 <sup>^</sup>

\*8-Hour Time Weighted Average calculated result based on a normal 12-hour working shift length.

<sup>^</sup> ACTS (Advisory Committee on Toxic Substances)

	≤ 50% WEL		< WEL ≥ 50% of WEL		≥ WEL
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**WZ Packaging Ltd, Telford, Shropshire**

Volatile Organic Compounds (VOC's)

Sample Analysis Results

Survey Date	Sample Detail	Tube Reference	Sample Collection Data			Substance	Measured Conc.	8-hour TWA Conc. *	Long Term (8 hr) WEL
			Pump Flow Rate (ml.min <sup>-1</sup> )	Duration (mins)	Volume (m <sup>3</sup> )		(mg.m <sup>-3</sup> )		
11.02.19	Mr Ben Greenwood Printing Area Machine 339 Operative	226-01 7898674902	104.0	240	0.025	Ethanol	7.50	11.25	1920
						Ethyl Acetate	19.0	28.5	734
						Heptane	0.72	1.08	2085
						Branched Cycloalkane C7	0.44	0.66	-
						Total Hydrocarbons	1.20	1.80	1200 <sup>^</sup>

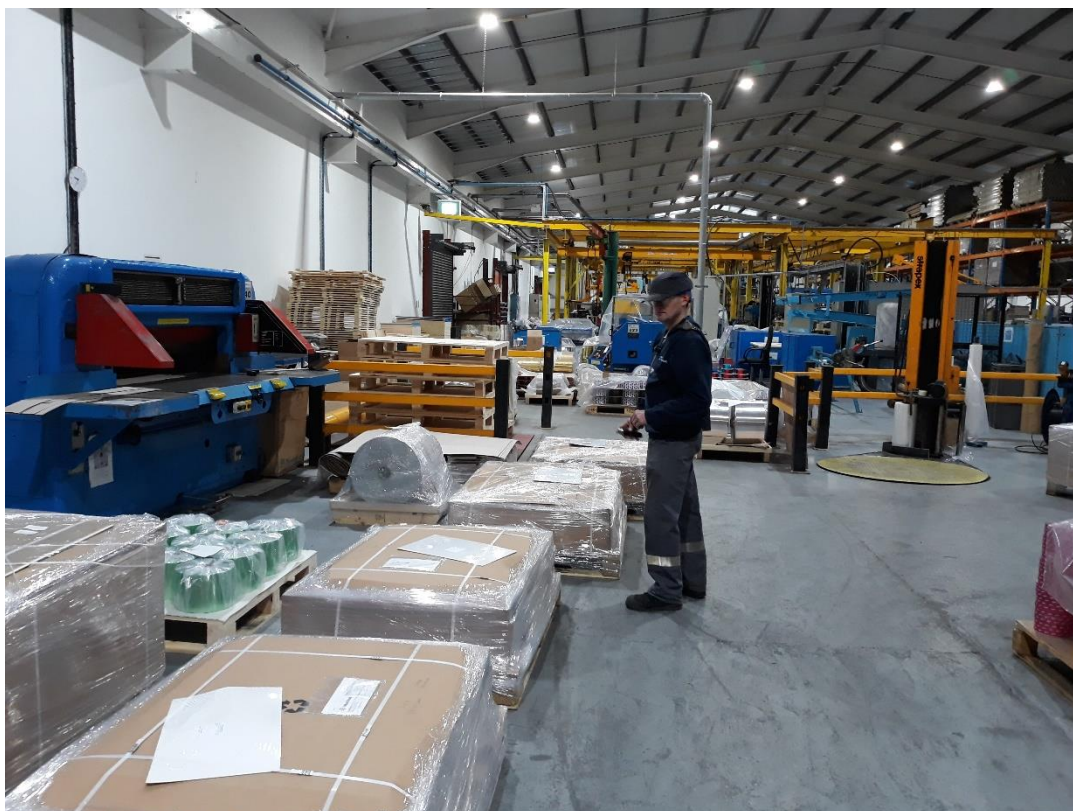
\*8-Hour Time Weighted Average calculated result based on a normal 12-hour working shift length.

<sup>^</sup> ACTS (Advisory Committee on Toxic Substances)

	≤ 50% WEL		< WEL ≥ 50% of WEL		≥ WEL
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# Appendix IV

## Survey Photographs



**Photo N°1 – Mr Ian Perry - Finishing Area, Packing Operative**

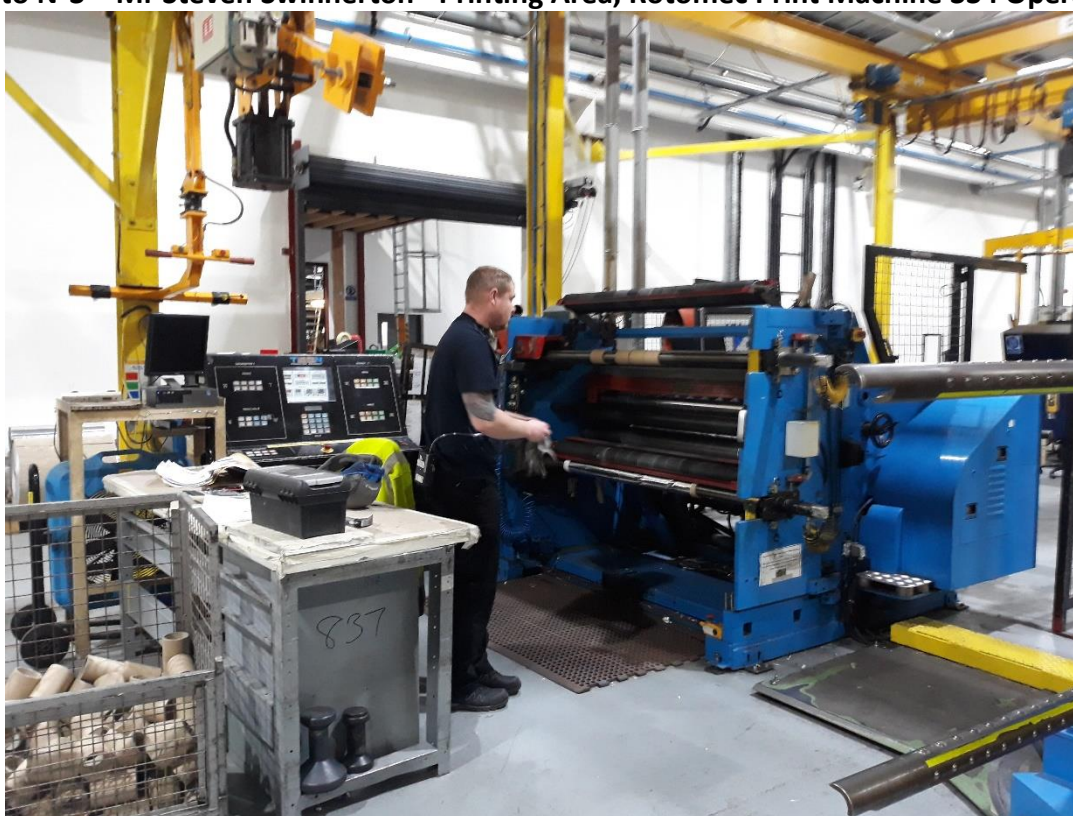


**Photo N°2 – Mr Krzyszeof Wozniak - Finishing Area, M/C 829 Operative**





**Photo N°3 – Mr Steven Swinnerton - Printing Area, Rotomec Print Machine 334 Operative**

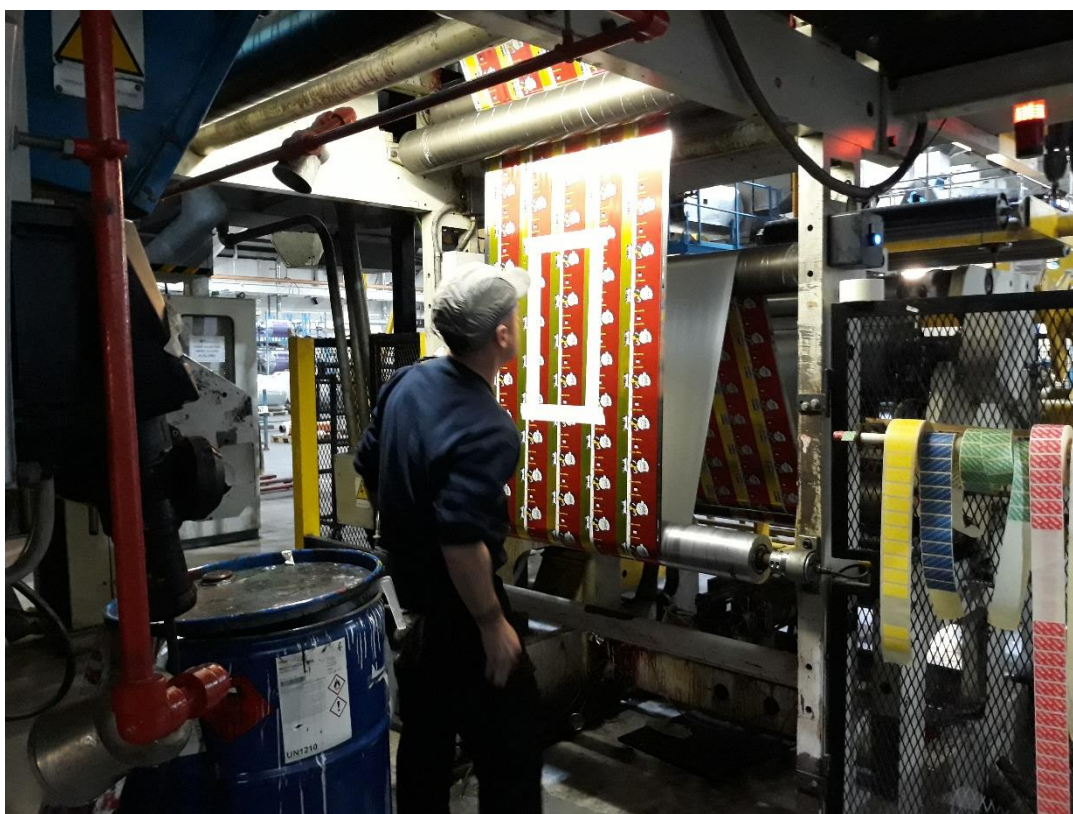


**Photo N°4 – Mr Mariusz Stachowicz - Finishing Area, M/C 837 Operative**





**Photo N°5 – Mr Paul Hancox - Printing Area, Mixing Room Operative**



**Photo N°6 – Mr Terry Hughes - Printing Area, Rotomec Print Machine 334 Operative**





**Photo N°7 – Mr Ben Greenwood - Printing Area, Glue Lamination Machine 339 Operative**