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Occupational Hygiene Report

Sound Level Survey

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Prepared for: Company ABC

Report dated: October 4, 2005

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Sound Level Report

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Introduction

STACS Inc. was hired by Company ABC to perform sound level sampling at its location at 123 Toronto, Ontario.

Specifically, the project involved evaluating ambient levels of sound throughout the site. Specific locations are identified in the body of this report. This sampling was performed as a follow-up to a more extensive sound level sampling project completed earlier in the year.

Methodology

All samples were collected on October 4, 2004 during a time when the areas sampled were running at "regular productions levels". As part of a Hearing Conservation Program, sound level sampling should be performed on a scheduled basis, as well as after the completion of significant changes to the site or processes in order to maintain accurate sound level records.

The project was conducted using a Quest M-27 Noise Dosimeter. The measurements were taken with the parameters defined by the current Ontario legislation; an exchange rate of 5 db, a criterion level of 90 db and a threshold level of 80 db.

The instrumentation was calibrated prior to use via a quest CA-12B dynamic acoustic calibrator (i.e. 1000 hertz and 110 db).

Personal samples were collected via the worker (*i.e. they wore a dosimeter for a pre-determined period of time*) at approximately ear level at the prescribed angle recommended by the manufacturer and the CSA standard. Area (static) samples were collected by leaving the sound level meter in a specific area. Most samples (*area and personal*) were taken over a sampling period of approx. 1 hour which, based on the type of work performed, was felt to be representative of typical sound levels within the site.

Each day, the project was discussed with a management and labour representative. Specifically, this included Mr. A. Smith (Health & Safety Coordinator), Ms. J. Doe (Health & Safety Manager) and Mr. B. Chan (Certified Labour Safety Committee Representative).

- Production levels in the areas tested are noted on the enclosed charts.
- The results are valid for the date / times tested.

Applicable Standards

- Results were compared to the Section 139 of the Industrial Establishments Regulation made under Occupational Health & Safety Act of Ontario. Under Section 139, the current legal maximum exposure of an unprotected worker over an 8 hour period is 90 dbA.
- Internally, Company ABC sets an exposure criteria of 85 dbA over an 8 hour period. All workers working in areas in excess of 85 dbA are required to use suitable hearing protection.

Results & Observations - Summary

Generally speaking, the project indicated a mix of noise levels depending upon the specific tasks and work areas sampled. These levels cover a wide range, falling either below, at or above the current regulated standard (i.e. 90 dbA) and / or the Company ABC standard of hearing protection for areas at or above 85 dbA.

Only 3 areas, the Metal Shop, the Paint Shop and a specific line within the LVDE area consistently measured in excess of 85 dbA, and therefore are to be considered as mandatory hearing protection areas.

Specific details concerning the results recorded are provided in the attached report.

Results: December 18, 2002

Name / Work Location	Sampling Duration	Avg. Sound Level (dba)	Breaks During Sampling
LVDE Line 1 Packing Station	3 hr, 5 min.	74.3	10 min.
LVDE Line 1, Station #2	3 hr, 3 min.	89.4	10 min.
LVDE Line 2 Packing Station	3 hr, 1 min.	71.0	10 min.
LVDE Line 2, Station #3	3 hr, 0 min.	78.5	10 min.
Quality Control Inspection Station	2 hr, 59 min.	69.3	10 min.
Shipping Dept., Central Column opp. Door #2	2 hr, 59 min.	60.8	10 min.
Tapping Dept., Tapping Machine DP09	3 hr, 5 min.	62.8	30 min.
Tapping Dept., Tapping Machine DP02	3 hr, 4 min.	70.7	30 min.
Kits Area, Small Assembly Bench	3 hr, 0 min.	58.8	30 min.
Line 3 QMOB Hi Voltage Bench	3 hr, 2 min.	67.4	30 min.
Line 3 QMOB Assembly Bench	3 hr, 2 min.	64.7	30 min.
Line 6 Meter Stack Assembly Station #2	2 hr, 59 min.	67.6	30 min.
Auto-Caps Assembly, South end near Test Lab	42 min.	62.1	None
Auto-Caps Assembly, Central Work Bench	42 min.	67.2	None
H-3 Assembly Bench	41 min.	60.6	None
Panelboards 6100 Assembly Station	34 min	49.4	None
Panelboards Assembly Station	34 in.	60.8	None
Panelboards 6100 Electrical Test Area	32 min.	48.7	None

Comments: December 18, 2002

Production levels in all areas sampled were described as "typical". Equipment, processes and activities during the sampling period should be deemed representative of typical activities within the area sampled.

The only area that measured above Company ABC's internal noise limit of 85 dbA was the LVDE Line 1 Station #2 location. This elevated level is directly the result of a pneumatic ratchet used at that station. Additional comments regarding the pneumatic ratchet are provided in the recommendations section of this report.

Results: December 19, 2002

Name / Work Location	Sampling Duration	Avg. Sound Level (dba)	Breaks During Sampling
Metal Shop: Vipros 357 NC03 Operator Stn.	2 hr, 54 min.	78.7	10 min.
Metal Shop: Amada NC05 Operator Stn.	2 hr, 52 min.	75.9	10 min.
Metal Shop: Amada NC02 Operator Stn.	2 hr, 51 min.	81.9	10 min.
Metal Shop: Amada 8000 PB10	2 hr, 51 min.	82.7	10 min.
Metal Shop, Spot Welding, Central Welder	2 hr, 47 min.	81.4	10 min.
Metal Shop: Amada PMI Shear #2	3 hr, 2 min.	74.4	30 min.
Metal Shop: Brown & Boggs Press MP07	3 hr, 2 min.	76.1	30 min.
Metal Shop: Amada Coma NC08	3 hr, 2 min.	78.0	30 min.
Metal Shop: Minster 6 MP02	3 hr, 2 min.	74.6	30 min.
Metal Shop: Minster 6 AU03	3 hr, 3 min.	80.9	30 min.
Metal Shop: Brown & Boggs 110 MP11	51 min.	93.5	None
Switchboard Flow Line	55 min.	60.1	None
QDC Assembly Bench	55 min.	57.1	None
QDC Computer Area	54 min.	59.3	None
Parts Unloading Station for Paint Shop	54 min.	71.3	None
Parts Loading Station for Paint Shop	2 hr, 46 min.	81.6	10 min.
Receiving Area (central location)	55 min.	80.7	None

Comments: December 19, 2002

The general level of activity within the Metal Shop was described as "slightly slow" during the 3 hour sampling periods posted in the table above. The lower level of activity, combined with the 30 minute lunch break that occurred during the sampling period likely impacted the overall level of sound recorded (i.e. the levels in the area of 76-80 dbA may be lower than those levels typically experienced).

The sound level of 93.5 dbA, recorded over the course of a 51 minute sampling period is likely more representative of typical sound levels found in this area. For clarification, some additional direct-reading samples were taken within the metal shop, at the operator control location, while the following pieces of equipment were operating at a "typical" production rate. The sound levels were measured as a "direct reading" (slow response "A" weighted) as well as a "peak" (instantaneous) reading:

Area / Process Sampled	Direct Sound Level (dba)	Peak Sound Level (dba)
Brown & Boggs Press LP01	94.6	113.6
Brown & Boggs Press LP 03	88.9	112.1
Brown & Boggs 110 MP03	92.4	117.3
Amada Coma NC 07	88.7	104.6
Amada Coma NC 06	98.9	121.5
Amada Pega NC 02	82.3	109.5
Amada Pega 357 NC 09	90.6	108.3

Results: December 20, 2002

Name / Work Location	Sampling Duration	Avg. Sound Level (dbA)	Breaks During Sampling
LVDE Line 1 Operator "Panayiota"	1 hr, 1 min.	91.7	None.
Metal Shop Amada NC05 Operator "John"	2 hr, 21 min.	83.1	10 min.
Metal Shop MP05 Operator "Dave"	2 hr, 6 min.	85.8	10 min.
Metal Shop Amada PMI #2 Op. "Parameswata"	2 hr, 12 min.	81.1	10 min.
Metal Shop Amada Pega NC01 Op. "Lai Lin"	1 hr, 3 min.	86.7	None.
Metal Shop Minster 6 AU 04 Operator "Patrick"	2 hr, 4 min.	98.9	None.
Paint Line Operator "Mike"	2 hr, 3 min.	88.1	None.
Paint Room Central Location (Eyewash Station)	2 hr, 11 min.	85.7	10 min.
Panelboards Assembler "Donna"	1 hr, 41 min.	79.3	None.
Switchboards Assembler "Lence"	1 hr, 38 min.	74.2	None.
Switchboard Flow Line Assembler "Julie"	1 hr, 31 min.	76.4	None

Comments: December 20, 2002

In general, the Metal Shop sound levels recorded over the course of December 20, 2002 reinforce the need for hearing protection.

With the following exceptions, all area samples / personal samples were taken during a period when the work was described as "typical" (i.e. normal pace of work / work activities). The following exceptions are noted:

- Metal Shop NC 05 Operator "John"; the operator described the work as slightly slow during the sampling period.
- Metal Shop Minster 6 AU 04 Operator "Patrick"; the operator stated that a problem with the pneumatic system at the press has increased the level of sound generated.
- Panelboard and switchboard personal samples; all personnel described the work as "very slow" during the sampling period.

Interpretation:

Based on Company ABC's internal sound level exposure limit of 85 dbA, the following areas / activities require hearing protection:

- Metal Shop Sound levels recorded throughout the metal shop were recorded as high as 93.5 dbA based on dosimetry sampling, and as high as 121.5 dbA when measured as a peak or impact sample.
- LVDE Line 1, Station 2, as well as the 2 stations on each side of the Station 2 require hearing protection. The personal sample taken on the Line 1 Station 2 operator measured 91.7 dbA when taken over a period of approx. 1 hour. The pneumatic ratchet used at this location is almost solely responsible for this elevated level. As a result of this device, personnel in the immediate area of Station 2 will require hearing protection.
- Paint Shop Both the personal sample and area sample recorded levels in excess of 85 dbA, necessitating hearing protection within the paint shop.

Although there may be other specific activities that require hearing protection on an as-required basis, only the Metal Shop, Paint Shop and specific areas of LVDE Line 1 require protection on a full time basis. Other activities that may require hearing protection would include activities such as grinding, drilling, hammering, use of compressed air, etc.

Recommendations

Based on the results of the December 2002 sound level sampling, the following recommendations are submitted for consideration:

1. The pneumatic ratchet used in LVDE, Line 1 Station #2 is extremely loud in comparison to the other work / processes used in that work area. When measured directed, the ratchet operates at 124.4 dbA when measured at the operator's location, and measured 108.3 dbA when measured at the corresponding operator location at Line 2. Since the pneumatic ratchet is not used consistently, the "average" sound level in the LVDE area as a whole is below 85 dbA. However, the ratchet is loud enough that even with instantaneous levels, Nearby personnel along Line 1 must wear hearing protection. Efforts need to be considered to reduce the sound level of the ratchet, or perhaps seek alternate (quieter) tools altogether.
2. Additional coaching is recommended for associates to reinforce the consistent and proper use of hearing protection. During the course of the sound level project, numerous associates were noted without hearing protection, and many of those that were using hearing protection were not using it properly. The most common issue noted was the improper insertion of ear plugs; plugs were rarely seen inserted as deeply as required for a proper level of hearing protection.