

**DANDER ANALYSIS -
WEST ELGIN SENIOR ELEMENTARY SCHOOL
WEST LORNE, ON.**

Prepared by: _____

A handwritten signature in black ink, appearing to read "Shawn Muscutt", written over a horizontal line.

Date Prepared: _____

MARCH - 5, 2012

**Shawn Muscutt
Safety Specialist
Thames Valley District School Board**

INTRODUCTION

The Canadian Asthma Society states that up to 50% of children with asthma have symptoms triggered by pets. The asthmatic triggers from pets include dander, saliva, oil secretions, urine and fecal matter. Animal dander can be detected in outside air and not limited to those areas occupied by pets.

The above triggers contain proteins which act as allergens to an individual. When allergen is inhaled or comes in contact with eyes, nose, and sometimes skin; the particle begin to dissolve and eventually releases these proteins. The body's immune system recognizes these proteins as unwanted and releases antibodies which causes symptoms such as a rash, itchy eyes, nasal congestion and, in some, an asthma attack.

Contrary to some claims; there are no animals that are dander free. Some breeds do produce less dander, and other allergens, than other breeds of the same species and different types of animals produce a more potent allergen containing protein than others. Although there are many recommendations in controlling the amount of potential exposure to animal dander, there is no way to completely eliminate it. The best way for an individual to minimize a potential reaction is to avoid those areas that may contain the allergen. This is not always possible and some of the recommended methods of control are:

- regular washing and grooming of animals (1 to 2 times a week)
- frequent cleaning and vacuuming of areas where animals are kept
- when vacuuming, use a High Efficiency Particulate Arrest (HEPA) rated vacuum
- minimize contact with furniture, clothing, pillows, and other items which the animal has rested on or had frequent contact with.

Treatment for those suffering from symptoms of exposure to animal allergens will vary dependent on the individual and the severity of the reaction. In some cases removing the individual to an allergen free environment will be suffice. For other individuals, the administration of medication may be necessary. The medication can range from an over the counter antihistamine to a prescribed medical inhalant.

SAMPLING THEORY/TECHNIQUE

On January 30, 2012; two air samples were obtained from room 104 and room 117 at West Elgin Senior Elementary School in West Lorne, Ontario. This sampling was arranged at the request of the Principal on behalf of the families of two different students.

At the start of the school year the school began the process for introducing a Service Dog for the use of a student that was attending the school. The school had followed the process required by Thames Valley District School Policy and Procedure. During this process; the school was made aware of a student, that may come in contact with the Service Dog, which may have an allergic response. This student has had reactions in the past, but symptoms and severity varied dependant on exposure circumstances.

Shortly after the introduction of the Service Dog to the school, the allergic student began to suffer allergenic responses. The school immediately responded and implemented protocols to limit the potential exposure. Some steps taken were:

- isolating the Service Dog to room 104 and having the Educational Assistant and student using the dog work in the same room.
- when leaving room 104, the student and Educational Assistant would use a lint brush in an attempt to remove any animal hair and dander.
- an enhanced cleaning, including the use of a HEPA vacuum, was implemented for room 104 and the pathway which the Service Dog entered the building.

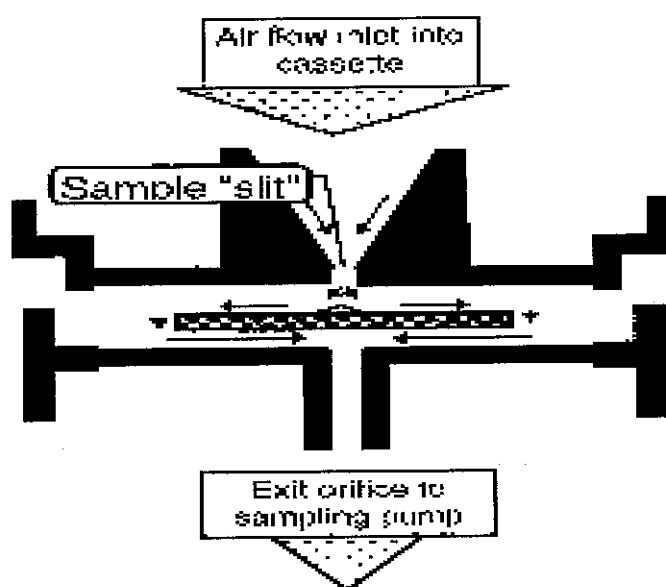
The theory behind the air sampling was to use room 104 where the Service Dog was isolated for the day as a reference sample. A second sample would be collected in room 117 would be collected to determine how much, if any dander was making its way out of room 104. Room 117 is the classroom were the two students are in the same room for a short time frame of the day.

Solely for the purpose of the sampling; both rooms had not been undergone the daily cleaning process until after the samples had been collected.

Air-O-Cell Sampling Protocol

Principle of Operation

The Air-O-Cell operates on the well established principle of inertial impaction. Particles in the air stream are accelerated as they approach the tapered inlet opening and drawn through a small slit aimed directly at a glass slide. This glass slide contains a sticky and optically clear sampling media which can permanently collect and hold particles. As the particles come through the slit, the air velocity forces the particles to impact into the sampling media, while the air stream makes a sharp 90° turn and proceeds around the slide and out of the cassette.



Using the rotameter connected to the Zefon Pump, the pump is calibrated to draw 15 litres per minute (lpm). Because the cassette does not produce significantly measurable back pressure, the rotameter can optionally be connected directly to the pump (without the Air-O-Cell cassette in line) to calibrate the pump flow rate.

Sampling is begun by removing the tape seals covering the inlet and outlet and are placed aside so that they can be placed back on the cassette after sampling. The Air-O-Cell cassette is then connected to the sampling pump using flexible tubing. The cassette ID is recorded.

For the purpose of collecting skin cells and animal dander, the use of an air compressor is incorporated to disturb the air space within the room and make any potential contaminant airborne.

The sampling pump is then turned on for a 10 minute sampling time and both seals replaced after sampling is complete.

“Outdoor background” or other reference samples are collected in the same manner for comparison purposes.

Analysis

The received Air-O-Cell sample is received at the lab and the appropriate mounting and stain determined. The membrane is removed from the cassettes and mounted to a slide and then stained. This slide is then examined under a microscopic magnification and cells are counted. The total count is the divided by the total volume of air drawn over the cassette membrane.

STANDARDS/GUIDELINES

Each susceptible individual will experience different allergy thresholds (the point at which an allergic response will occur). As such there is no Legislative or recommended exposure to which an individual can be subjected to. However, dander or skin cell fragments are the most common and major source of particle debris in indoor samples and as such are a good combined surrogate indicator of effective fresh air transfer rates, occupant density, commensal bacteria potential, house-keeping and cleaning practices, and filtration of re-circulated air in the building.

Typical concentrations encountered in buildings are given below:

Typical Airborne Skin Cell Fragment Concentration Ranges

<u>DESCRIPTION</u>	<u>Cts/m³</u>
Outside air	50 - 1,000
Inside air "clean building"	1,000 - 10,000
Inside air " high human activity"	10,000 - 20,000
Inside air "high personnel density and/or poor house-keeping"	20,000 - 100,000

RESULTS

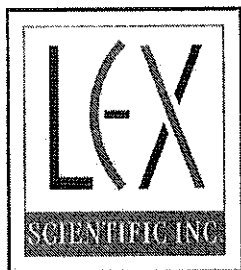
Table A : Results from West Elgin Senior Elementary School

Sample ID	Description	Volume (m³)	Dander Concentration (Counts/m³)
Wesesrm117 Sample	Air-O-Cell Cassette SN 17716850	0.150	560
Weserm 104 Reference	Air-O-cell Cassette SN 17715596	0.150	1890

CONCLUSIONS /RECOMMENDATIONS

When the results are compared to the those values listed in a typical airborne skin cell fragment concentration range, the following conclusions can be made.

- 1) The level of dander found in Room 117 is typical of that found in outside air.
- 2) The level of dander found in Room 104 is typical of that found inside in a clean room.
- 3) Current practice of isolation of the Service Dog, along with the practices exercised by individuals leaving Room 104, is not contributing to levels of potential airborne dander beyond those typically found in outdoor air.
- 4) With the continued enhanced cleaning practices, levels in Room 104 would be reduced further.



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February 24, 2012

ANALYTICAL REPORT

Microscopic Examination
Project name: WESES
LEX File # 08120111

Mr. Shawn Muscutt
Thames Valley District School Board
1250 Dundas Street, PO Box 5888
London, ON, N6A 5L1

Dear Mr. Muscutt:

On February 1, 2012, LEX Scientific Inc. received two Air-O-Cell cassette samples for dog dander counting and identification.

The requested work has been completed and the results are contained in this report.

If you have any questions about this report, please do not hesitate to contact me.

Yours sincerely,

A handwritten signature in cursive script, appearing to read "German Leal", is written over a horizontal line.

German Leal, B.Sc.
Lab Manager

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e-mail: admin@lexscientific.com Website: www.lexscientific.com

Introduction

Two Air-O-Cell samples were submitted for counting and identification of animal dander (dog dander). One of the samples taken from a room where a dog is isolated through the day is to be used as a reference.

Methods

Samples were analyzed according to Standard Operating Procedure for Zefon Air-O-Cell® cassettes. Particles consisting with dog's skin cells and hair were counted. Concentration of dander was calculated based on the volume sampled.

Results

Sample ID	Description	Volume (m ³)	Dander Concentration (Counts/m ³)
Weserm117 Sample	Air-O-Cell Cassette SN 17716850	0.150	560
Weserm 104 Reference	Air-O-cell Cassette SN 17715596	0.150	1890

