



## *Vibration in the Workplace*

There are **two** types of vibration that employees are exposed to in the workplace. Both have potential to cause injury. The two different types are:

- 1) **Hand-arm Vibration** – This is vibration that is transferred to the body through hand tools, or hand/arm contact with anything that is vibrating.
- 2) **Whole Body Vibration** – This is vibration that is transferred to the body by standing or sitting on a vibrating surface.

### Hand-Arm Vibration

Hand-Arm vibration can cause a variety of symptoms which can include:

- tingling/numbness in the fingers;
- white fingers;
- decrease in sense of touch;
- pain and cold sensations in the hands; and
- loss of grip strength.

### Whole Body Vibration

Exposure to whole body vibration can contribute to the development of chronic back pain. Other factors in your work or personal life can also be contributing factors. Being exposed to elevated levels of whole body vibration can also cause a variety of other symptoms, including:

- Abdominal Pain
- Discomfort
- Chest Pain
- Nausea
- Loss of balance
- Disc displacement
- Disc degeneration

### Reducing Vibration Hazards Project

In October 2009 the Occupational Health and Safety Branch of the Saskatchewan Ministry of Advanced Education, Employment and Labour, in cooperation with several members of the Motor Safety Association, conducted two successful projects to:

- identify vibration hazards using a Quest HAVpro vibration monitor;
- test solutions to minimize these hazards in the workplace; and
- identify a cost effective solution for reducing vibration hazards.

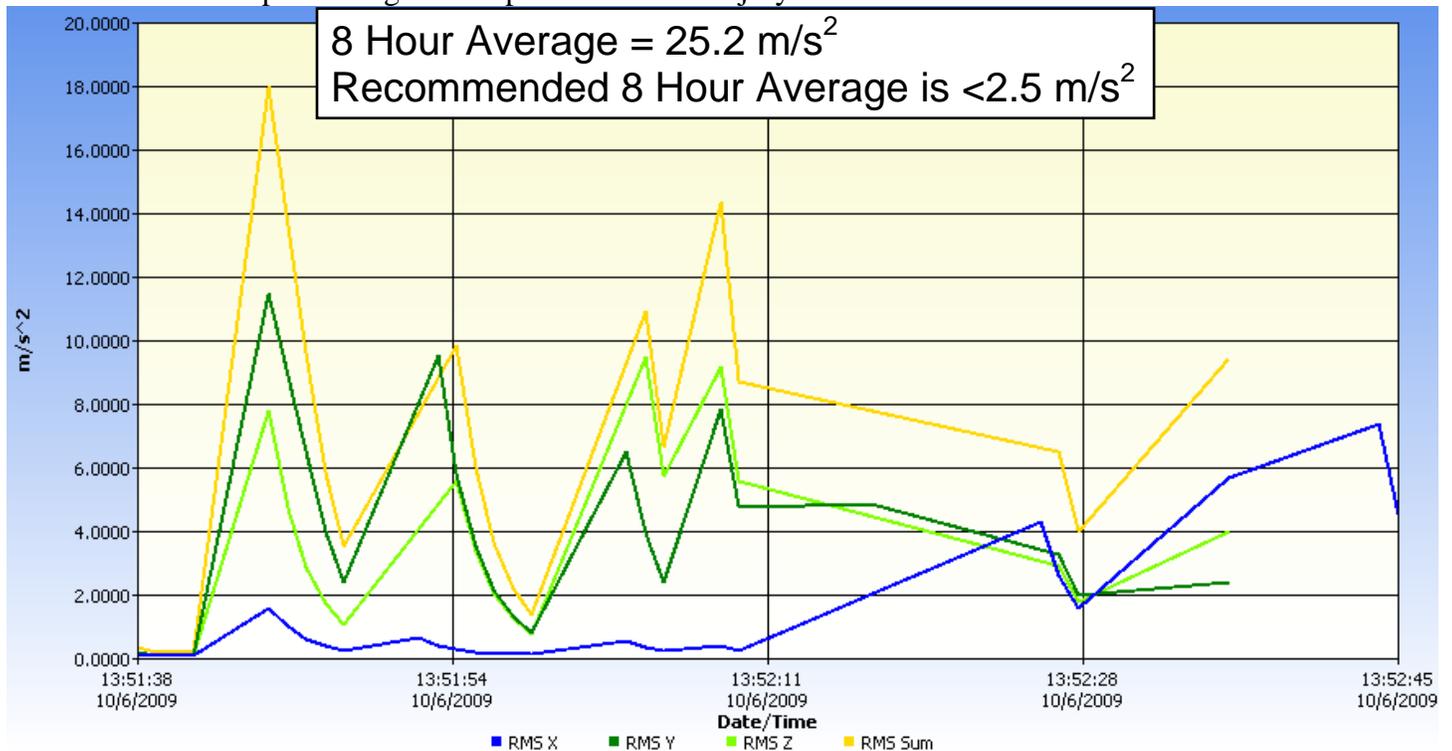
## Project One: Reducing Hand-Arm Vibration

Measurements were taken to assess hand-arm vibration levels to which employees were exposed while using a 1" pneumatic drill (pictured below). The drill was used to remove lug nuts from a truck tire.

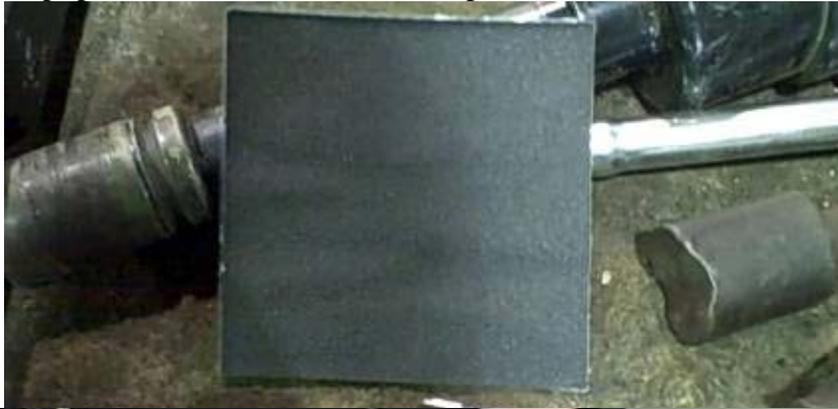


### 1" Pneumatic Drill – Trigger Handle

The following chart graphs the measurements that were taken over a short period of time. Using this information, worker exposure over an 8-hour time period can be calculated. In this instance, a worker using this tool for an 8-hour shift would be exposed to a vibration level of  $25.2 \text{ m/s}^2$  while the recommended level is less than  $2.5 \text{ m/s}^2$ . This poses a significant potential risk of injury to the worker.

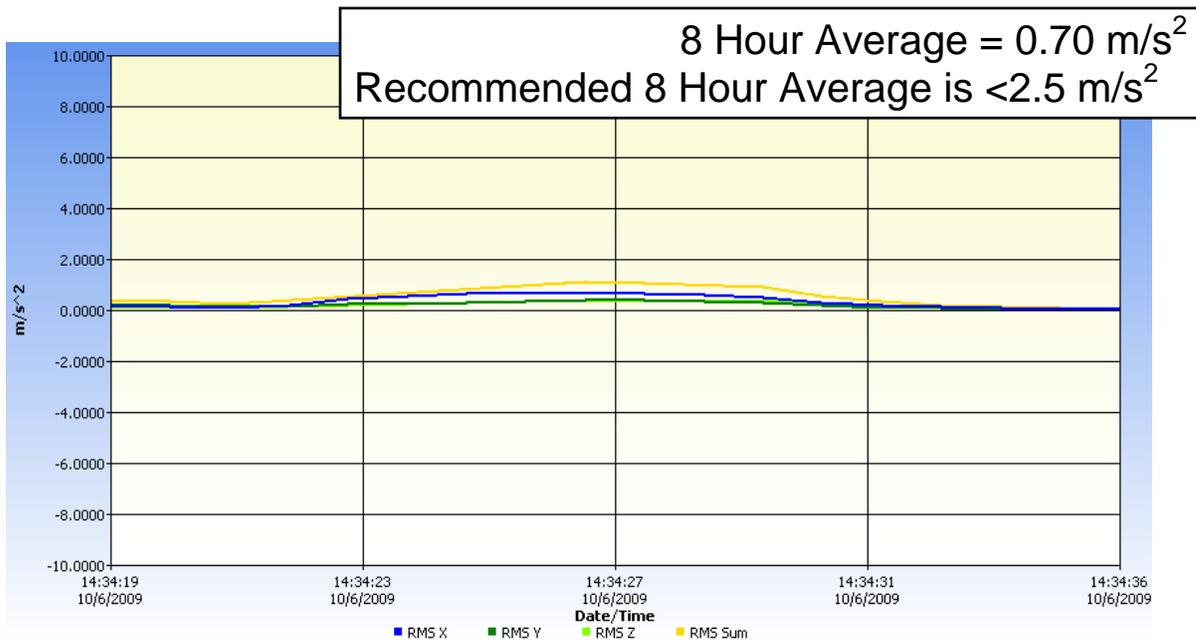


An anti-vibration tool wrap (pictured below) was used as a potential solution for the hazard.



### 1" Pneumatic Drill – Trigger Handle with Anti-Vibration wrap

The following chart illustrates how vibration levels measured for the same time period, with this tool wrap attached to the tools, were significantly reduced.



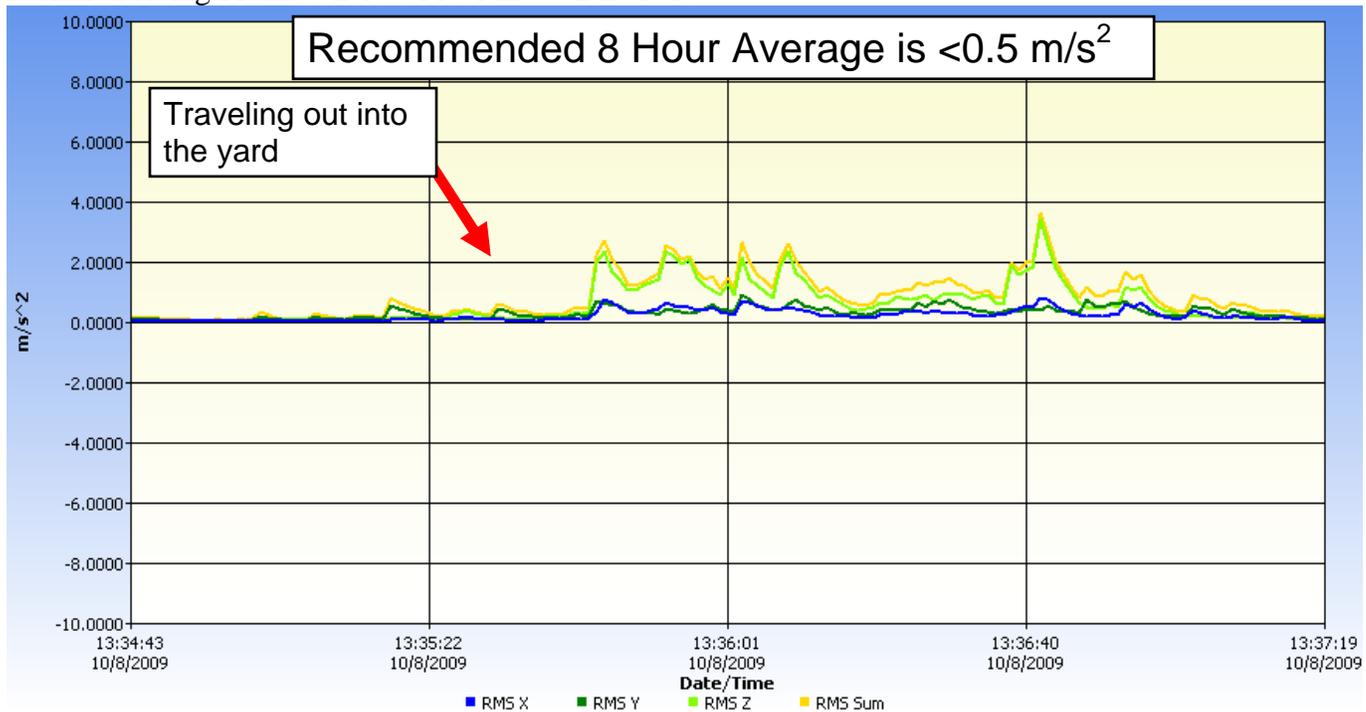
## Project Two: Reducing Whole Body Vibration

Worker exposure to whole body vibration while using a forklift was measured. Below is a picture of the forklift used. The forklift used was operated on a concrete surface, and then moved out into a dirt yard.



The graph shows a significant increase in vibration levels when the driver leaves the concrete indoor surface and begins traveling in the dirt yard.

Forklift Driving From Concrete Floor into a Dirt Yard



If you want more information on the testing that was done, or are interested in testing vibration levels in your workplace (in Saskatchewan) you can contact the Motor Safety Association via their website at: [www.motorsafety.ca](http://www.motorsafety.ca) or Kevin Mooney at [kmooney@motosafety.ca](mailto:kmooney@motosafety.ca).

To speak with the Ergonomic Specialist at the Ministry's OHS Branch, who participated in this project, please contact Aaron Unger at [aaron.unger@gov.sk.ca](mailto:aaron.unger@gov.sk.ca). For any other Occupational Health and Safety questions please call or visit:

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***References:***

Health and Safety Executive. Control the risks from hand-arm vibration. Sudbury, England: 2005.

International Organization for Standardization. Mechanical vibration and shock – evaluation of human exposure to whole-body vibration – Part 1: General requirements. ISO 2631-1:1997(E). Geneva, Switzerland : 1997.

International Organization for Standardization. Mechanical vibration and shock – evaluation of human exposure to whole-body vibration – Part 5: Method for evaluation of vibration containing multiple shocks. ISO 2631-5:2004(E). Geneva, Switzerland : 2004.

Occupational Health Clinics for Ontario Workers. Whole Body Vibration. Ontario: 2005.

Paschold, H.W., “Whole-Body Vibration: An emerging topic for the SH&E profession.” Professional Safety. June 2008: 52-57.

European Agency for Safety and Health at Work. Workplace exposure to vibration in Europe: an expert review. Belgium: 2008.