WINNIPEG Air Testing

Practical Health and Safety Solutions

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Measuring Worker Exposure to Wood Dust

Studies have shown that breathing small, inhalable wood particles may cause asthma, respiratory tract irritation, and for some types of wood, cancer. The following information outlines how testing is performed for wood dust.

Sampling Procedure

Testing is performed to measure workers' exposure to airborne wood dust during normal work operations. Personal monitoring, which provides the most accurate measurement of worker exposure, is used. A small air sampling device is worn by the workers and collects air from their breathing zones (see image on right).

As the occupational exposure limit for wood dust is based on inhalable dust, wood dust samples are collected using inhalable samplers. These samplers allow only the inhalable fraction of airborne dust to be collected, so that the testing results can be compared directly to the occupational exposure limit.

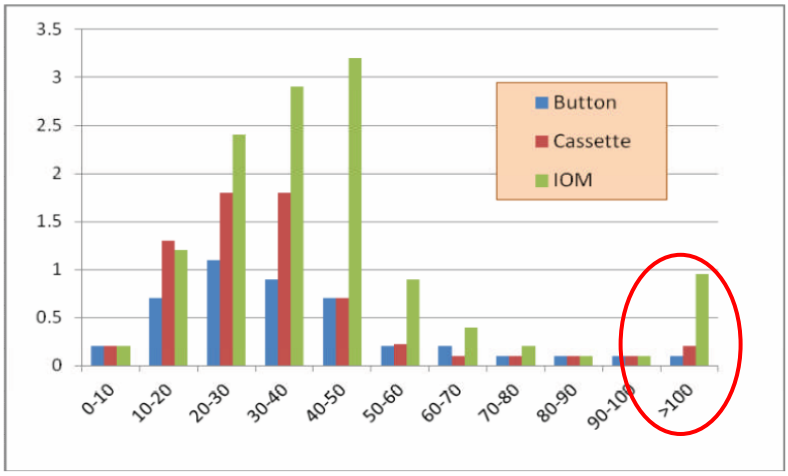
Winnipeg Air Testing performs wood dust testing using the SKC button samplers. Studies have shown that other inhalable samplers give significantly higher results due to the collection of larger particles that are outside of the inhalable dust range. Pictures of the two most common inhalable samplers used, IOM and SKC button samplers, are provided below.

IOM sampler used by other consultants

SKC button sampler used by Winnipeg Air Testing

The picture of the IOM sampler used by other consultants clearly indicates a large inlet that can easily collect larger sized particulate. The SKC button sampler inlet is covered with a stainless-steel screen that only allows inhalable sized particulate to enter the sampler.

The following graph is from a study performed by Dr. M. Harper of the National Institute of Occupational Safety and Health (NIOSH), which compares the SKC button sampler, the IOM sampler and the closed face cassette. The graph clearly shows that the IOM sampler may collect particles beyond the inhalable range (i.e., greater than 100 µm).



Source: Comparison of wood-dust aerosol size-distributions collected by air samplers, J. Environ. Monit. 2004

This oversampling of particles larger than 100 µm can produce falsely high sample results – perhaps as much as twice as high. The large particles have a lot of mass and greatly contribute to the overall weight in the sampler. False high results from improper sampling can result in expensive ventilation upgrades and respiratory protection.

Report

The results are provided in a comprehensive report that outlines the testing methodology, the workers / locations tested, the wood dust results for each sample, a correction for respiratory protection worn by any worker, and any recommendations arising from the sampling results and observations in the field. The results are compared to current occupational exposure limit for Manitoba and the report complies with the requirements under Provincial regulations.

Field Investigators

All fieldwork, data interpretation, and report preparation will be performed by an experienced occupational hygienist. Our staff is familiar with the Manitoba requirements of Occupational Health and Safety legislation. All work is performed under a professional Occupational Hygienist who is/has:

- Certified by the American Board of Industrial Hygiene
- Registered by the Canadian Registration Board of Occupational Hygienists
- Registered by the Association of Registered Safety Professionals
- 30+ years of professional experience
- A former government inspector for the Provincial Workplace Safety and Health Division