

# Reactions

The newsletter of the Wisconsin Occupational Health Laboratory, the industrial hygiene arm of the Wisconsin State Laboratory of Hygiene

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## WOHL Changes to Reporting Levels

To better meet accreditation requirements, WOHL is changing the way it reports results at or near the quantifiable range.

We will no longer be referencing minimum detection level (MDL) and minimum quantitation level (MQL) but will be using reporting level (RL). The reporting level is a better representation of what the lab can actually report, because it is determined by analyzing media spikes.

In many instances the reporting level is the same as MQL but is quite different than the MDL level. Because of this change, the lab

will no longer be using "ND" (not detected) on our reports.

We will be reporting all samples below the reporting level as "<RL value". In some cases there may be unquantifiable traces that are present that are less than the reporting level. These samples will be reported as <RL with a comment indicating that a trace was detected.

We know some clients will miss seeing the ND on the reports, but we feel that this is a more uniform reporting structure that better reflects what the lab can verify. Please feel free to contact the lab with any questions or comments.

## WOHL Earns AIHA Re-Accreditation

Last fall, WOHL hosted two auditors from the American Industrial Hygiene Association (AIHA) for its biannual re-accreditation.

The auditors were onsite for most of a week and looked into all areas of analysis. The audit was conducted using the latest version of the ISO 17025 standard; 2005 and the AIHA policies.

It is always good to have an external person come and look at how things are done. We had some minor

deficiencies, primarily related to improving the clarity of the data and its' traceability to outside sources.

Once the resulting minor deficiencies were corrected and accepted by the auditor, our re-accreditation was voted on and approved by the AIHA Accreditation Board.

Our new certificate is good until 2010 and is available on our website at: [www.wohlab.com](http://www.wohlab.com) under Quality and then Accreditations.



## WOHL Online Orientation Course

Effective May 1, 2008, 21D consultants will be able to access an online training resource which has been developed to provide both an orientation to the Wisconsin Occupational Health Laboratory and a ready reference on lab related issues.

This online training resource provides information on laboratory staff, methods, instrumentation, sampling media, paperwork, quality assurance, shipping procedures and much more.

It can be used as a complete, sequential training course or as a ready reference on individual topics.

The resource can be accessed at: [www.wohlab.org/wohlworks](http://www.wohlab.org/wohlworks)

The WOHL  
**2008 SAMPLING GUIDE**  
is now available and can be  
accessed in three ways.

- Call or e-mail the laboratory to request a printed copy.

- Print a downloadable version from our website at:

[www.wohlab.org](http://www.wohlab.org)

(Click on Online Sampling Guide)

- Use the Online Sampling Guide also located at:

[www.wohlab.org](http://www.wohlab.org)

# Particulate Sampling and Analysis Issue

Assessment of personal exposure to aerosols and/or particulates is typically done on 37 mm or 25 mm polystyrene cassettes using MCE or PVC filters.

Ideally, all of the aerosols and/or particulates should be captured on the filters. However, studies have shown that significant amounts of aerosols and/or particulates may adhere to the interior surfaces of air filter cassettes. Failure to include the particulates adhering to the cassette walls may lead to low exposure estimates.

There is a debate currently occurring in the Industrial Hygiene community over the best way to deal with this problem. OSHA has

decided to wipe the interiors of the cassettes and include this wipe in the analysis of metals and Cr(VI).

The OSHA laboratory believes that including the material that adheres to the interior cassette walls better estimates personal exposure and therefore has included procedures for wiping cassette interiors into their methods.

NIOSH also says "Internal deposits in sampling cassettes should be included in the analysis," in Chapter O part 10.e of the NIOSH Manual of Analytical Methods.

WOHL has begun to wipe the interiors of air filter cassettes that we receive for metals, Cr(VI), silica, and others where it is possible.

Consequently, the analytical results include both the amount collected on the air filter as well as the amount that adhered to the interior surface of the cassette.

In some cases this may increase the levels of analyte reported. A side effect of the cassette wiping process is that it may lead to analytical results that exceed the total weight of the sample on the pre-weighed PVC air filter.

We cannot wipe the cassette interiors for gravimetric analysis (total or respirable dust samples) as there is no way to include interior wall deposits in the gravimetric portion of the analysis.

This situation is more prevalent on samples with a large particulate load such as those from welding operations. In these instances, a significant amount of particulate matter can adhere to the interior walls of the cassette.

WOHL does offer a couple of alternatives for gravimetric analysis using a cartridge type sample cassette. These samplers insure all particulate is included in the gravimetric results. They are our SAUCER (WOHL media # 152) and our ESF (WOHL media #102) cassettes.

The SAUCER can be subsequently analyzed for silica and/or metals; however it does use an aluminum shield which can affect aluminum and other metal results.

The ESF filter cassette can only be used for weight analysis. Laboratory staff will be happy to help customers select appropriate sampling media and evaluate their data on a case by case basis.

## Allergen Testing

It is known that indoor allergens may have a significant impact on human health and can be an important focus for industrial hygienists.

Asthma, allergic rhinitis, conjunctivitis, dermatitis, and hypersensitivity pneumonitis are among some of the reactions to sensitization to indoor allergens. It is possible to identify and measure these allergens. Quantitation of allergens may also be used to determine if there is effective control of the allergen source to reduce exposure.

The Bioaerosol Unit of the Wisconsin Occupational Health Lab is now offering allergen testing. A quantitative ELISA based assay is available to detect specific common allergens found in the home and workplace.

Among the allergens WOHL will provide testing for are:

- Dust Mite, Der p 1 and Der f 1 (dust mite specific fecal protein)
- Cockroach, Bla g 1 and Bla g 2 (cockroach specific fecal protein)

- Mouse, Mus m 1 (mouse specific urine protein)
- Rat, Rat n 1 (rat specific urine protein)

Dust samples may be collected by a Mitest™ dust collector (available at the WOHL media department), mixed cellulose ester (MCE) filter, (polycarbonate (PVC) filter, vacuum sock, or similar collection devices.

A common household vacuum with attachment hose or a high volume pump (10 – 20 L/min) may be used for sample collection. Collect dust by sampling for approximately 2 minutes or an area of 0.25m<sup>2</sup>. The volume of bulk dust should be about the size of a thimble. The lab will need approximately 1g of bulk dust to perform this analysis.

For air sampling, please contact the Bioaerosol Unit for further information (800.446.0403 or 608.224.6261).

# WOHL Analytical Method Updates

## Natural Gas Analysis

In general, natural gas is a mixture of low-molecular weight hydrocarbons (C1-C5) as well as nitrogen, carbon dioxide, and helium. An odorant indicator (usually a mercaptan or thiol compound) is added as a safety precaution.

WOHL recommends the following tests as indicators of the presence of natural gas: methane, ethane, and propane (C1-C3) analysis plus a mercaptan (thiol) screen for identifying the odorant. All of these can be collected into the same MiniCan™ for ease of sampling.

## Sewer Gas Analysis

Sewer gas contains a complex mixture of VOCs. Highly toxic compounds include ammonia and hydrogen sulfide. In addition, methane and carbon dioxide are also generally present, as well as oxides of nitrogen, sulfur dioxide, and biologically derived compounds.

WOHL recommends the following tests as indicators of the presence of sewer gas: hydrogen sulfide analysis using ORBO 34 tubes, ammonia analysis using sulfuric acid treated carbon bead tubes, and methane and carbon dioxide analysis using MiniCans.

## Diacetyl Analysis

Diacetyl is a natural byproduct of fermentation and is one of the chemicals that gives popcorn its butter taste.

The National Institute for Occupational Safety and Health has long advised that when used as an artificial butter flavoring one should avoid inhaling it over a long period.

OSHA recently launched a national emphasis program to address the hazards and control measures associated with working in the microwave popcorn industry.

At this time there are two methods for the collection of diacetyl in air. WOHL recommends following the OSHA PV2118 method. This method uses 2 silica gel tubes in series which are collected at a slow flow rate of 0.05 lpm. The recommended sampling time is 1 hour.

## Going Green

Beginning June 1, we will no longer be routinely sending printed reports to those consultants who are receiving e-mailed reports.

This is both an environmentally-driven decision and a response to multiple requests from you, our clients.

Please let us know if you wish to continue to receive printed reports in addition to the e-mail report. We will be happy to accommodate your request.

If you are not presently receiving your reports via e-mail and wish to do so, please contact the lab so we can update your information.

## Combustible Dust Analysis

In response to OSHA's Combustible Dust National Emphasis Program (NEP) announced in October 18, 2007, we have received many inquiries related to evaluating workplaces that create or handle combustible dusts.

The Wisconsin Laboratory (WOHL) does not have the equipment necessary to do the complete range of testing necessary to determine whether a dust has the potential for deflagration or explosion.

One prerequisite for a material to be explosive is that significant amounts of the material have a particle size less than 425 Micrometers. This is the fraction that will pass through a 40 mesh sieve.

WOHL can perform this analysis. WOHL can also determine if the material is combustible (ashable) and determine moisture content. The consultant should be aware however that the results of these tests will not necessarily answer the question of whether a deflagration or explosion hazard exists.

The Salt Lake City Technical Center has agreed to run a few explosivity samples for consultation. The process for requesting this analysis was explained in a memorandum to project managers from Paula White and Ruth McCully dated 2-22-08.

If the material being used is well characterized the explosivity hazard may be deduced through literature references. Refer to OSHA Bulletin SHIB 07-31-2005 or CPL 03-00-006 for more information on characterizing potentially explosive situations.

# Changes & Reminders Concerning Air Sampling Media

Three-piece cassettes are required for use with SKC cyclones in the collection of respirable dust fractions. Two-piece cassettes should never be used with an SKC cyclone. There is usually leakage apparent around the filter when clients try to use two-piece media with SKC cyclones, making results suspect.

We have three types of media available for hexavalent chromium analysis. Cr6 ACID media (#159) is for chrome plating or chromic acid environments. Cr6 WELD media (#161) is a 25mm cassette for hexavalent chromium in welding fumes, when the cassette must be placed in a welding helmet. Na/K/Cr6 media (#86) is for all other hexavalent chromium settings.

Two-piece red-banded media (#126) will only be available as long as our current supply lasts. It contains a 0.8um PVC filter which is no longer being manufactured. However, two-piece yellow cas-

ettes (#15) with a 5.0um PVC filter may be used for total weight and metal analysis. Two-piece 25mm red-taped media (#94), which contains a 0.8um PVC filter, is also no longer available due to discontinued manufacture. We recommend the goblet-type 25mm cassette wrapped with yellow tape (#160) to replace media #93. This is also a 5.0 micron PVC filter. NIOSH method 7300 lists 5.0um PVC as one of the medias to use for metals analysis.

The shelf life (expiration date) for preweighed filter media is currently three years from the date of manufacture. We have tested filters which are being reweighed at increasing time intervals so the recommended expiration date for preweighed filters may increase as we gather more data to justify a longer shelf life. We do, however, recommend using a field blank of the same approximate age as those used for sampling. Ideally, the blank should be from the same month of

manufacture as the other cassettes used for sampling. The last three characters of WOHL barcodes contain the month and year of manufacture. Position nine in the barcode is the month (for last three months of the year we use A,B,C instead of a number); position 10 is the year (e.g., 2009 = 9, 2010 = A). Position 11 corresponds to the type of filter in the cassette.

ESF media (#102) can only be used for gravimetric analysis because the PVC filter is bonded to a plastic capsule which fits inside the 37mm polystyrene cassette. Use ESF media for dusts which are expected to be electrostatically charged (e.g., fine cellulosic dusts or powdered paints), which you would expect to stick to the inlet housing of a usual weighed 5.0um PVC filter (yellow-banded cassettes). ESF media can be used with Dorr-Oliver cyclones for sampling respirable fractions.

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