

# Lab Services Sample Testing Information

## Commitment to Excellence

Today's food industry is growing rapidly as it tries to address the global food challenge. With this growth comes an increase in demand for diagnostic testing. Food producers are able to source ingredients globally and with the passing of the Food Safety Modernization Act, plus the steady implementation of stricter food safety guidelines, they are finding it more critical every day to ensure the products they produce are safe for consumers. Neogen®'s Sample Testing Laboratory offers accurate and reliable results with fast turnaround times for all your testing on raw ingredients, finished products, and environmental swabs. Please see below for a quick reference guide to submitting samples and obtaining results.

### Quick Guide

#### I. Submitting Samples:

- a. **Suggested Sample size:** Please submit 100 grams of sample for each test requested.
- b. **Shipping Samples:** When submitting samples, please be sure to send in a sturdy container. Swabs, crustacean, and histamine samples must arrive cool in order to be validated and prevent sample degradation.
- c. **Shipping Address:** Samples should be addressed to: Attention Technical Lab Services, 301 N. Hosmer, Lansing, MI 48912. All samples submitted should be shipped with a sample submission form filled out in its entirety.

#### II. Testing Turnaround Times:

- a. **Standard Priority:** Results are guaranteed by the end of two business days from when sample is received by the lab.
- b. **Rush Priority:** Results are guaranteed by the end of one business day from when sample is received by the lab at an increased cost per test. Please contact Neogen for Rush Testing rates.
- c. **HPLC and LC/MS/MS results have a 5-day turnaround time only.**

Neogen requires a sample analysis request form to be completed and submitted before sample testing can be performed. New customers will be required to complete an account application form before testing can be performed. For further information contact Lab Services at 800-234-5333 ext 4401 or email at: [tservices@neogen.com](mailto:tservices@neogen.com).

## ALLERGENS

### What are Food Allergies??

An estimated 3.5 to 4% of adults, and 6 to 8% of children, are allergic to foods. More than 10 million people in the United States alone are known to have a food allergy. Although researchers have identified more than 160 foods that contain naturally-occurring proteins that have been shown to cause allergic reactions, researchers also estimate that 90% of all food allergic reactions are caused by just eight common foods: peanuts, eggs, milk, soy, wheat, crustaceans, fish and tree nuts (e.g., walnuts, hazelnuts, almonds, cashews, pistachios, pecans, etc.). Peanuts are the leading cause of severe food allergic reactions.

The most obvious reason for testing is to protect a company from staggering costs. If a product contains undeclared, potentially hazardous allergens, the company would contact the government and initiate a voluntary recall. Product recalls can cost food companies millions.



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## SAMPLING INGREDIENTS, PRODUCTS, LIQUIDS AND RINSES

Neogen's experience has shown the vast majority of errors associated with food testing can be attributed to how the original sample was obtained. Taking steps to ensure the sample to be tested is representative of the product as a whole will increase confidence in subsequent test results. What follows are generally recommended guidelines for ingredient and product sampling, according to material type. Please contact Neogen with questions about the adaptability of the guidelines to specific testing needs.

Neogen recommends submitting 100 g of sample for each test requested. For example, if you would like one sample tested for three different allergens, then please send in 300 g of sample.

Neogen conducts testing on the following allergens:

- Almond
- Casein
- Crustacea
- Egg
- Gliadin
- Mustard
- Peanut
- Hazelnut
- Sesame
- Soy
- Total Milk
- Walnut

Neogen conducts testing in a timely manner. Standard testing reports results for allergens in two business days. Rush testing will guarantee results back to you by the end of one business day from when the sample is received by the lab.

Neogen also offers the option for dilutions on samples submitted. Please check the box on the submission form in order to request sample dilution at no extra cost. Samples will be diluted up to 5,000 ppm. Samples not marked for dilution will be expressed as > Limit of Quantitation.

### ***Recommended procedures for obtaining a representative sample for testing:***

#### **A. Dry, blended or finished ingredients and products**

1. Obtain a 500 g sample from the ingredient or product to be tested and place in a clean container.
2. Thoroughly mix/blend the 500 g sample with a clean spatula or blender for at least 30 seconds.
3. Remove a 50 g subsample from the 500 g sample.
4. If the product has a large particle size, place the 50 g in a grinder and grind to a very fine particle size.
5. Thoroughly mix/blend the subsample with a spatula or blender for at least 30 seconds.
6. From the 50 g subsample, remove the appropriate size sample for testing with one of Neogen's food allergen test kits.  
**NOTE:** *Neogen recommends that the remainder of the sample be saved for confirmatory testing should a food allergen be detected.*
7. Thoroughly clean the grinder/blender and utensils between samples.

#### **B. Liquids and CIP rinses**

For homogenous liquids, it is not necessary to sample a large quantity. Simply draw the sample from the product or rinse to be tested for use with one of Neogen's food allergen test kits, and add to the extraction solution.

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## ENVIRONMENTAL SAMPLING AND EXTRACTION

Environmental sampling for food allergen detection should be performed after equipment has been thoroughly cleaned, and before production of the following lot has begun. Because environmental sampling requires the use of swabs and a specialized extraction of possible allergens from the swabs, Neogen recommends the use of the Allergen Environmental Swabbing Kit (Neogen item 8432S) for use with one of Neogen's Veratox® Test Kits. Please contact your Neogen Sales Representative for information on purchasing. If you are not using one of Neogen's environmental swabs, alternate swabs should be tested to ensure they do not cross-react with Neogen's food allergen test kits and the swab will release the bound protein during extraction. The Laboratory Services Team requests that only Neogen swabs are sent in for testing to ensure accurate results that will be validated. Do not use swabs intended for microbial sampling that contain growth media. Do not use sponges.

Whether or not the Neogen swabs are used, sampling should include areas known to be hard to clean in the environment to be tested. These may include equipment and conveyor nooks and crevices, scarred work surfaces, or any area where food residue buildup is a known concern.

Neogen recommends the following procedure for environmental testing with the use of a Neogen Allergen Environmental Swabbing Kit:

### How to Properly Swab

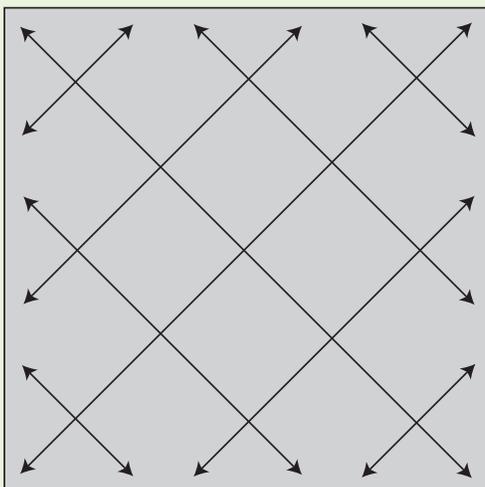
#### A. Prepare Extraction Solution (PBS)

1. Prepare extraction solution by adding contents of foil pouch extraction solution (10 mM) to 1.0 L of deionized or distilled water. Store at 2–8°C. Verify that the solution is still clear before using.

#### B. Sampling/Swabbing

1. Pre-moisten sterile swab by dipping the swab in the extraction solution.
2. Using a sterile swab, sample an area 10 cm x 10 cm (or 4" x 4") using a crosshatch technique.

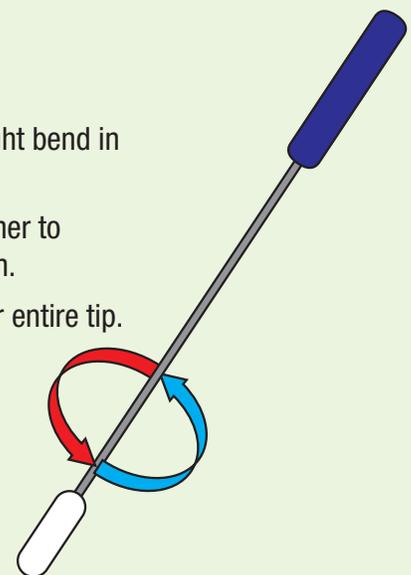
### Proper Swabbing Technique



#### Proper Swabbing Technique

- A. Pressure so that there is a slight bend in the swab shaft.
- B. Area: 4" x 4" square from corner to corner in a cross-hatch pattern.
- C. Rotate the swab 360° to cover entire tip.

Swab area = 4" x 4"  
(16 square inches)



3. Place swab into original tube once sampling is complete. Remember to label each tube.

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## C. For wet surfaces

1. Open a new swab and swab a 10 x 10 cm area by using the crosshatch technique. Do not moisten swab prior to use.

**NOTE:** When testing equipment, the swabbing area should be chosen carefully. Areas to swab should be potential food hang-up areas, such as scarred surfaces, corners, angles, and any known food buildup area. An effective swabbing procedure, such as the crosshatch technique (illustrated previously), should be used to ensure detection of any present allergen proteins by covering virtually 100% of the chosen area.

## MYCOTOXINS

### What are Mycotoxins?

Mycotoxins are toxins produced by organisms categorized as fungi, including mushrooms, yeasts and molds. Fungi of one species or another, or their spores, can be found virtually everywhere. When the growth conditions are right for specific fungi, they will grow very rapidly into colonies, and produce toxins specific to that fungus as a by-product. Growth conditions, which include temperature, humidity, and available organic food sources, can not only affect whether or not a specific fungus will grow, but also the characteristics of the mycotoxin that it may produce.

### WHAT IS A PPM?

“One part per million” is a lot to think about. Here are some facts that put 1 ppm into perspective.

- There are approximately 13,960 kernels of wheat in 1 pound. One kernel in 71 pounds is equal to 1 ppm.
- There are approximately 3,500,000–4,000,000 grains of sand per pound. If you take 4 grains out of the pound you have removed 1 ppm.
- There are 2,678,400 seconds in August. In the time it took to read this, approximately 10 ppm has gone by.

“One part per billion” is 1,000 times smaller than 1 ppm. For example, one second in 32 years is 1 ppb.

### HOW DO YOU OBTAIN A REPRESENTATIVE SAMPLE FROM A VERY LARGE QUANTITY, SUCH AS A HOPPER CAR?

Since mycotoxins are not dispersed homogenously throughout a receptacle (truck, train car, shipping container), it is critical that the sample analyzed is representative of the whole vessel to ensure accuracy. This is typically done using a multi-tiered probe and a published (GIPSA) sampling pattern. Sampling is responsible for as much as 90% of analytical error when performing mycotoxin analysis. When performing side by side method comparisons or confirmations, it is critical that the same ground sample be used to remove the effects of sampling variability.

Not even the best, most accurate test systems can detect the accurate level of possible mycotoxin contamination in a large load of a commodity if the sample tested is not representative of the entire load. Representative samples for mycotoxin testing are much more difficult to achieve because mycotoxin contamination tends not to be as evenly distributed in a load as other testing targets, such as protein, moisture, and fiber.

## Preparing Swab for Shipping

Add a few drops of extraction solution to the bottom of the tube (do not fill higher than the bottom of the swab bud - see arrow at left).

Replace swab in tube making sure it is sealed tightly. Store swabs in the refrigerator (2–8°C) until ready to ship.

Ship prepared swabs to their final destination using overnight service. Include an ice pack with the swabs to keep them cool during shipping.

**NOTE:** Swabs should arrive at the testing destination within 24 hours of collection.



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## HOW MANY TIMES SHOULD I PROBE A TRUCK OF GRAIN TO GET A REPRESENTATIVE SAMPLE?

GIPSA recommends that a multi-tier probe be used, and that each of those probes have individual compartments within them. Depending on the size of the vessel, the number of compartments can vary.

To obtain a representative sample, a truck should be probed according to the pattern in the diagram below. Following this will ensure you have a representative sample and results generated are reliable.

Carrier	Probe Length	Probes Per Compartment
Barges	12 feet	1
Hopper car	10–12 feet	1
Boxcar	6 feet	5
Truck	5–6 feet	8
Hopper-bottom truck	6–10 feet	2



## Neogen Laboratory Mycotoxin Testing Services

Neogen requires a sample analysis request form to be completed and submitted before sample testing can be performed. New customers will be required to complete an account application form before testing can be performed. For further information contact Lab Services at 800-234-5333 ext 4401 or email at: [tsservices@neogen.com](mailto:tsservices@neogen.com).

## Mycotoxin Test Options

Neogen Laboratory conducts testing for the following mycotoxins:

- Aflatoxin
- Vomitoxin (DON)
- Ochratoxin
- Fumonisin
- T-2/HT-2
- Zearalenone

Neogen conducts testing in a timely manner. Standard testing reports results for mycotoxins in two business days. Rush testing will guarantee results back to you by the end of one business day from when the sample is received by the lab. Please note that HPLC or LC/MC/MS will have a 5 business day turn-around time from when the sample is received.



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