national diagnostics

- **Environmental Wipe Testing**
- **Surface and Equipment Decontamination**

Protocols for the use of National Diagnostics

**Nuc-Wipes**™ and **Nuclean**™

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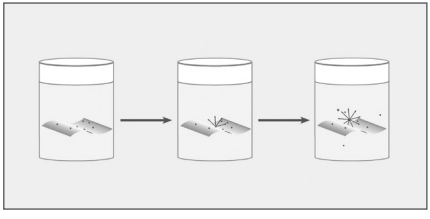
USA: 1-800-526-3867
EUROPE: 0115 982 1111


# NUC-WIPES (NW-300)

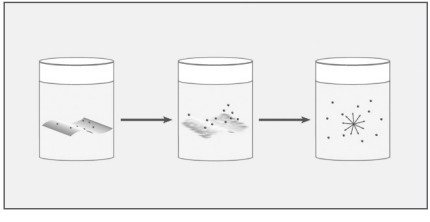
Nuc-Wipes are dissolvable pads which assure superior environmental wipe tests. Nuc-Wipes are completely soluble in any scintillation solution. Also, due to Nuc-Wipes' ability to dissolve completely, no emitted beta ray can be hindered or absorbed by an undissolved portion of the wipe. Nuc-Wipes allow full $4\pi$ counting efficiencies, thereby eliminating the possibility of lost counts due to absorption of beta rays by the filter itself.

Using intact filters for environmental wipe tests leads to inaccurate, erratic results.



Beta rays originating from particles on intact filters are attenuated and absorbed by the filter. Furthermore, depending on the relative affinity of the material for the solution, as material leaves the filter for the solution, counts change over time, giving results that are not reproducible.

Nuc-Wipes dissolve in scintillation fluid, so there is no intact filter to absorb or attenuate beta emissions. Reproducible $4\pi$ counting efficiency is always achieved. Reliability of results is improved, thereby improving safety.



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## OVERVIEW OF ENVIRONMENTAL WIPE TESTING

Environmental wipe testing is an integral part of standard radiation monitoring protocols. In contrast to direct monitoring with devices such as a Geiger counter, wipe testing is an indirect survey method. Contamination is detected by wiping the surface with a pad, such as Nuc-Wipes from National Diagnostics. The amount of radiation present on the pad—and indirectly the degree of contamination of the surface—is determined by liquid scintillation counting. Ordinarilly, any area or item with radioactive contamination three times background is isolated and decontaminated. A typical schedule for environmental wipe testing includes testing of the specific work area after each use of radioactivity and testing of the entire laboratory on a biweekly basis.

## WIPE TEST PROTOCOL

*The following protocol is intended as a helpful resource. Your Radiation Safety Office may require special procedures not included in this method.*

1. Create a detailed floor plan of the laboratory work area and equipment to be monitored, including bench tops, protective bench paper, shields, pipeters, door handles, clothing, etc. as well as all devices or apparatus used in radionuclide work.

2. Mark locations to be tested on a dated copy of the floor plan. Use a simple alphanumeric code to uniquely identify each location on the map.

3. Using a system of labels corresponding to your alphanumeric code, label a 20ml scintillation vial to correspond to each wipe location.

4. Label an additional vial for use for the background count.

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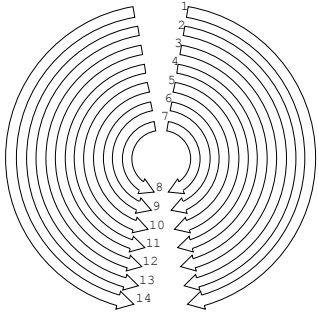
## WIPE TEST PROTOCOL (continued)

5. Use a Nuc-Wipe moistened with 65% – 75% ethanol to wipe each area to be tested. Wipe an area approximately of 100 $cm^2$ applying moderate pressure. Because consistency in wipe technique is essential for reliable results, we recommend wiping with the same, easily repeatable pattern at each location.




6. Place the wipe in the corresponding labelled scintillation vial and allow to air dry. Repeat process for each location to be monitored.

7. Place a clean Nuc-Wipe in vial labelled for background determination.

8. Add 10ml of emulsifying scintillation fluid to each vial. (For this application we recommend National Diagnostics Ecoscint H (LS-275), which combines

high counting efficiency, biodegradability, and the capability to emulsify or dissolve both polar and nonpolar residues.) Agitate for 5 minutes or until Nuc-Wipes have completely dissolved.

9. Measure the radioactivity on each wipe using a liquid scintillation counter. Record the results in the manner preferred by your Radiation Safety Office.

10. Decontaminate any areas that are determined to be contaminated with radioactivity*, then rewipe. Decontaminate the area(s) until the measured levels are below guidelines. (see the following pages for decontamination methods).

*Your radiation safety office will provide the guidelines regarding the threshold of contamination in your work area. A common standard is to consider any location that measures greater than 3 times background to be contaminated.

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# NUCLEAN (NC-200)

- Safe and Effective Radioactive Decontamination
- Superior Cleaner
- Biodegradable
- pH Neutral
- Will Not Damage Metal Instruments

Nuclean is a concentrated, economical and highly efficient solution for safe and fast removal of radioactivity from laboratory glassware, equipment and laboratory surfaces. It is also a superior general laboratory cleaner and degreaser.

Nuclean is biodegradable and mild to the skin when diluted 1:50. Nuclean is not only more effective than chromic acid but is safer to use as well. Quart containers are supplied with a spray-head.

In normal use, Nuclean is diluted 1:50 with water, and the glassware allowed to soak overnight and rinsed clean with distilled water. Faster decontamination is effected by increasing the concentration to 1:20 and elevating the temperature. Agitation will greatly accelerate the process.

For surface decontamination, such as lab benches and tops, Nuclean can be used diluted or undiluted, depending on the difficulty of decontamination.

## SURFACE DECONTAMINATION

1. Wipe from the outside (to avoid spreading contaminants) with dilute (20:1) Nuclean. Rinse with water. Resurvey.

2. If contamination persists, repeat with concentrated Nuclean (wear double gloves).

3. If contamination continues to persist, label areas using radioactive label tape, and notify the Radiation Safety Office.

4. Dispose of all contaminated materials (such as paper towels, gloves, etc.) in the appropriate radioactive waste containers.

5. Monitor personal effects such as shoes and clothing before leaving the area.

## EQUIPMENT DECONTAMINATION

1. If possible, soak in dilute 50:1 Nuclean overnight in a bin labeled for radioactive materials. Rinse with water and resurvey.

2. If soaking is not possible, wipe from the outside (to avoid spreading contaminants) with dilute (20:1) Nuclean. Rinse with water. Resurvey.

3. If contamination persists, repeat with concentrated Nuclean (wear double gloves).

# Ordering Information

| | |
|---|---|
| Nuc-Wipes<br>Order No. NW-300 | Box of 100 wipes |
| Nuclean (50X)<br>Order No. NC-200 | 1 quart<br>1 gallon |
| Ecoscint H<br>Order No. LS-275 | 4 liter<br>20 liter |

## For Additional Information And Order Placement:


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