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**Bio-Safety in the Mail Room Using the  
SAMARI2005 Negative Pressure Room  
and ASAP II Automated  
Bio-Identification System**

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A WHITE PAPER

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## Introduction

September 11, 2001 made it clear that symbols of the United States' lead role in the business world are prime terrorist targets. One month later, the dispersion of anthrax in the mail along the Eastern Seaboard made the threat of bio-terrorism a reality. These events amply demonstrate the large and immediate need for equipment to detect bio-terrorism agents in businesses that are icons of western culture.

In light of these circumstances, Research International of Monroe, Washington and American Safe Air of Mountain Home, Arkansas recently installed two advanced **Safe Mail Screening Rooms** in the headquarters mailroom of a major commercial U.S. Bank. Although protection of government facilities and the U.S. Postal Service has, of necessity, been the U.S. government's primary focus, our financial institutions are also vulnerable through the mail. There is compelling evidence that banking facilities are being considered high-value targets by terrorists. Research International's ASAP II bio-detection system, in combination with American Safe Air's SAMARI negative pressure mail room, provide a cost effective solution for the protection of banking community personnel and assets.

These cutting-edge technologies provide a much safer environment for screening and opening incoming mail. The ASAP II detection system and SAMARI negative pressure room together offer:

- Downdraft air flow protection of mailroom employees;
- Isolation and containment of suspected bio-terrorism agents with cleanroom-style certainty;
- Real time identification (20 minutes) of the agents with minimal production delay;
- Easy and cost-effective clean up, should contamination occur; and
- Low initial capital cost and low operating costs.



**Figure 1: Research International's ASAP II system.**



**Figure 2: American Safe Air's Negative Pressure Mail Room.**

## **Research International's ASAP II Air Sampling and Bioassay System**

The ASAP II collection/detection system continuously monitors for the presence of aerosol biohazards and will identify biological agents ranging from protein toxins to whole cells and spores. It integrates the SASS 2000 Plus™ air sampler, which collects particulate agents from the air, with the RAPTOR™ bioassay system which detects and identifies the threat agent. ASAP II uses an environmental enclosure (see Figure 1) that maximizes reagent life and which is instrumental in providing unattended automated monitoring for up to 24 hours. RAPTOR provides an answer in 12-15 minutes and is the only such device in production and ready for market. Numerous agencies of the United States and several European governments have purchased and deployed these instruments over the past few years.

### **How ASAP II Works**

The SASS 2000 Plus collector samples air continuously at 265 LPM and transfers particulates in sampled air to a secondary water phase of about 5 ml volume. User modifiable software regulates the periodic transfer of fluid samples from the SASS2000 to the RAPTOR. The RAPTOR then automatically performs a multi-step bioassay for up to four bio-targets using a small disposable assay coupon. Each coupon may be reused from 20 to 50 times over a 24-hour unattended operating period (if no positives occur), providing extremely competitive per-assay costs. Coupons are offered for detecting ricin and anthrax. Assays are available to make coupons for a number of other BW agents including *Francisella tularensis*, *Y. pestis* F1 antigen, botulinum toxin, and *Staphylococcus enterotoxin B*. Many other pathogens and toxins may also be targeted with relative ease.

You can learn more about Research International's air sampler and bioassay products at [www.resrchintl.com](http://www.resrchintl.com).

## **American Safe Air's SAMARI2005 Negative Pressure Mail Room Technology**

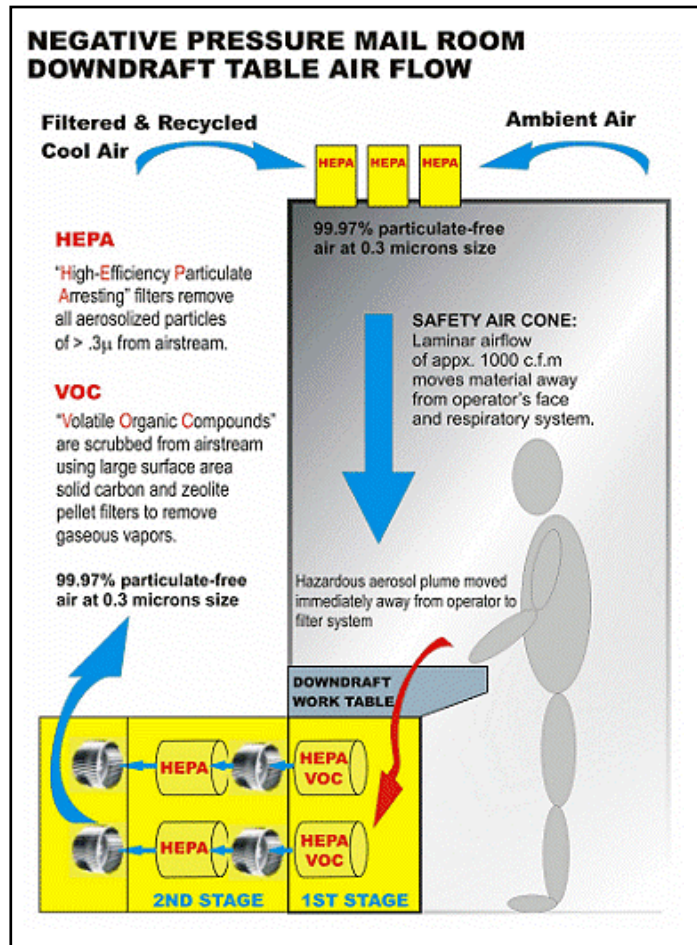
American Safe Air has designed a process to protect against biological and chemical attacks that provides a controlled, contained and constantly monitored 'clean room' environment in which the mail is opened. Air pressure is maintained slightly lower than atmospheric, to ensure that no harmful materials in the mail are released into the remainder of the facility. These custom-engineered Negative Pressure Mail Rooms (NPMRs) can be rapidly and easily retrofitted to an existing facility (see Figure 2). This approach is unique in that it requires only minor facility modifications eliminating the need for lengthy and expensive build-outs.

### **How the NPMR System Works**

These completely self-contained NPMR's are designed to contain chemical and biological agents, and to provide the maximum in protection to the operators within the NPMR. Additionally, by being freestanding structures, they reduce the impact on the greater facility in the event of an incident.

The solution to handling contaminated mail is not containment alone but containment paired with environmental control. American Safe Air Company, Inc., has pioneered a downdraft airflow strategy that combines HEPA high-efficiency filters on both incoming and outgoing air flows with engineered airflow paths and structures within the rooms (see Figure 3). These engineered airflows minimize exposure of personnel within the enclosures while the negative pressure environment provides complete isolation of potential contaminants within the room and prevents gross contamination of the entire facility: A hermetically sealed environment is created.

Learn more about American Safe Air's NPMR system at [www.americansafeair.com](http://www.americansafeair.com).



**Figure 3: Illustration of how the NPMR and the downdraft table work.**

## New NPMR Installation Photos



Installed Negative Pressure Mail Room (NPMR).



Downdraft table with open cabinet door where ASAP II system is located. The laptop computer on which ASAP II control software is installed is also shown.



**Cabinet space below downdraft table, which houses SASS air sampler on the left and environmental chamber where RAPTOR bioassay instrument is located, on the right.**

### **Contact Information:**

For more information about SAMARI2005 and ASAP II contact:

Jon Tobelmann, Marketing Director RI and ASA

Phone: 703-803-8380

Fax: 703-803-7432

E-mail: [tobelmann@cs.com](mailto:tobelmann@cs.com)

#### **Research International, Inc.**

17161 Beaton Road SE.

Monroe, WA 98272-1034

Phone: 360-805-4930

Fax: 360-863-0439

Toll Free: 800-927-7831

Web: [www.resrchintl.com](http://www.resrchintl.com)

E-mail: [info@resrchintl.com](mailto:info@resrchintl.com)

#### **American Safe Air, Inc.**

811 Shiras Street

Mountain Home, AR 72653

Phone: 870-425-4405

Toll Free: 888-492-6193

Web: [www.americansafeair.com](http://www.americansafeair.com)

E-mail: [asa@americansafeair.com](mailto:asa@americansafeair.com)