

## Day in the Life of Rad Sample.

RadNet monitors environmental radiation in all 50 states. Since 1973, the system has continuously monitored air, precipitation, drinking water, and milk.

Air is the primary medium monitored by RadNet. Monitors are distributed across the United States according to population and geography.

In 2006 EPA began replacing all existing RadNet monitors with new, technologically updated monitors that can measure and transmit data in real time.

RadNet now includes mobile air monitors referred to as “deployables.” During a radiological emergency, these deployables can be sent anywhere in the nation and used to supplement RadNet’s fixed air monitoring network. Operators of the deployables will be recruited from EPA’s Response Support Corps (RSC), a group of EPA employees trained to support emergency operations.

Every fixed air monitor is tended by a designated operator at that location. Although operators are frequently members of a state or other government agency, they are all volunteers who have agreed to help EPA monitor radiation in their area. By hosting the monitor and attending to the air filters, these volunteers are a vital part of the RadNet system.

Monitors are sited in different kinds of locations—on rooftops or at ground level.

Air sample collection begins with inserting a clean filter into the monitor.

While a filter is in the monitor, on-board detectors record radiation collected on the filter and transmit data to NAREL.

Computers screen data continuously and flag abnormalities. Abnormalities are reviewed by RadNet staff. During an emergency RadNet staff are prepared to be on-duty 24/7.

Unusual levels or types of radiation trigger an automatic alert at NAREL that results in immediate data evaluation by scientific professionals and appropriate action if necessary.

Air filters are changed twice weekly and sent to NAREL for analysis. A field screening of each air filter is performed before it is mailed to help determine background radiation.

Air filters normally are delivered to NAREL by U.S. Mail or other couriers. Express couriers are used during an emergency.

Logging samples into the NAREL Laboratory Information Management System (LIMS) database requires transferring data from a sample report form prepared by the station operator.

A scannable label is attached to each air filter (sample) as part of the preparation for analysis.

Bar coding helps identify samples at the laboratory and enables chain-of-custody tracking. Chain-of-custody practices provide continuous awareness of sample location and status, which is especially important during an emergency.

After being bar coded and entered in the LIMS database, samples are transferred to the radioanalysis laboratory (the "counting room").

Air filters are analyzed routinely for gross beta radiation. If gross beta results are sufficiently high, the filters are scanned for gamma radiation. Emergency conditions may trigger specific additional analyses, depending on the nature of the incident.

After analyses are completed on individual air filters, they are archived.

Annually, the archived filters from each location are "ashed" (burned to ash) to provide a composite analytical picture of the radiation collected at that site in that year. Ashing of samples is accomplished in muffle furnaces.

Data produced from analysis of RadNet air filters are available at the Envirofacts and NAREL RadNet websites.

Real-time data are available to the public and decision makers at the CDX website.