

BACKGROUND

In December 2008, about five million cubic yards of fly-ash were released at the Kingston Fossil Plant in Roane County, Tennessee. The Tennessee Valley Authority sponsored Oak Ridge Associated Universities (ORAU) and Vanderbilt University Medical Center to provide free, independent health screenings for residents near the ash spill.

PROCESS

The medical screening was designed to provide participants with a baseline medical evaluation. The medical screening included

- health history
- chest x-ray
- physical exam
- urine tests
- breathing test
- blood tests

The blood and urine tests were chosen to test residents for exposure to the following components of fly-ash:

- aluminum
- arsenic
- barium
- beryllium
- chromium
- cobalt
- copper
- nickel
- selenium
- thallium
- vanadium

The fly-ash components (except selenium and thallium) were chosen because high levels were found in fly-ash-contaminated soil in Roane County. Selenium and thallium levels were not high but were included because of their potential health risks.

RESULTS

A total of 214 people from 112 households participated in the screening program. Screening occurred September 2009–April 2010. Approximately half of the participants lived within two miles of the spill. The most common symptoms reported were runny nose, cough, and congestion.

Physical exam results

The physical exams were normal for most participants. Most abnormal results were due to prior medical conditions that were not related to the fly-ash exposure (for example, diabetes).

Chest x-ray results

Chest x-rays did not reveal any medical conditions expected to be caused by fly-ash exposure.

Breathing test results

- 75% of participants had normal breathing test results.
- 17% of participants had mild to moderate abnormal results.
- 7.0% of participants had severe to very severe abnormal results.

Results showed that breathing problems were not more common in those who lived close to the plant than in residents who lived farther away.

Blood test results

There were no elevated levels found in the blood tests for arsenic, cobalt, and nickel. Some participants had levels above normal for the following components

- 8.3% for copper
- 3.0% for aluminum
- 0.5% for chromium
- 27% for selenium*

** Repeat tests for selenium after changes in diet and vitamin supplements showed normal or close to normal values for all who were re-tested.*

Urine test results

Urine samples were tested for beryllium, thallium, arsenic, vanadium, and barium. Results for all of these components (except barium) did not show elevated levels. One person's levels were above normal for barium.

Overall results of medical screening

Although some participants' results showed levels above normal, no one out of 214 participants had any levels requiring further medical attention. No long-term effects on physical health are expected. It is recommended that individuals repeat testing after a period of time to see if there have been changes in their health related to the fly-ash spill.

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Q & A

What were people screened for?

Individuals were screened for evidence of ingestion or inhalation of coal ash. Testing was conducted for the following components: aluminum, arsenic, barium, beryllium, chromium, cobalt, copper, nickel, selenium, thallium, and vanadium.

What is a toxic value for fly-ash components?

There is no one level that defines toxicity. Blood and urine levels may be done to determine if there has been an exposure to one of the components of the fly-ash; however, the patient needs to be evaluated with a physical examination in conjunction with the laboratory testing to determine if the exposure has caused a corresponding problem.

Overall, what were the results of the medical screening program?

The results of the medical screening program did not show any physical health effects related to the components identified in fly-ash.

Is a follow-up health assessment recommended?

Currently, no studies have been done on long-term health effects for people exposed to fly-ash. A repeat evaluation of the people who participated in the program could determine whether there has been any change in their health that may be related to the fly-ash spill.

For more details about the medical screening results, visit www.orau.org/kingstonproject

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Medical Screening Results

At a Glance