

## What is a Public Health Assessment?

A public health assessment is a formal government report. It is a review of available information about hazardous substances at a site. It evaluates whether exposure to chemicals might harm people. A public health assessment considers all environmental issues related to actual or possible human exposure. It is not the same thing as a medical exam or a community health study. A public health assessment can be prepared by either the Tennessee Department of Health's Environmental Epidemiology Program (EEP) or the federal Agency for Toxic Substances and Disease Registry (ATSDR). TDH is preparing this PHA, with review and certification by ATSDR.



Overview of the KIF TVA coal ash release

Photo taken 01/08/09 by TVA.

## What does a Public Health Assessment consider?

- How much of a hazardous substance is present at a site or in the community.
- Whether people have been or might become exposed to the hazardous substance.
- What exposure pathways, such as breathing, touching, eating, or drinking, are present at the site or in the community.

## What is exposure?

Exposure means that you have come into contact with a chemical and it has gotten into your body. You may be exposed to a hazardous substance by breathing, touching, eating or drinking it.



Air samplers at sample location 07.

*Source: TDH*

## How can a chemical get into your body?

If you come into contact with a chemical, there are three ways it can get into your body:

1. Breathing (inhalation) air that has a chemical in it. Some chemicals come in the form of dusts, mists, or gases.
2. Eating or drinking (ingestion) something with a chemical in it. Chemicals can be accidentally ingested by swallowing dust or soil.
3. Touching (contact) a chemical or something that has the chemical in or on it. Some chemicals can pass through your skin and enter your bloodstream. Other chemicals cannot pass through your skin.

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## Can coal ash be harmful?

When coal is burned, the metals in the coal become concentrated in the ash. The metals in the coal ash have the potential to cause harm to the environment and to people. For this reason, the Tennessee Valley Authority (TVA), the Environmental Protection Agency (EPA), the Tennessee Department of Environment and Conservation (TDEC), and the Tennessee Department of Health (TDH) immediately began sampling and analysis of the ash itself, surface water, groundwater, drinking water, and air. TDH reviewed all analytical results to make sure that public health was protected.

Compared with local soil sampled by TDEC, the coal ash at the Kingston Fossil Plant (KIF) is enriched in some metals and not in other metals. Aluminum, arsenic, barium, cadmium, calcium, and iron concentrations in KIF's coal ash were higher than in soil.

On average, concentrations of copper, magnesium, and manganese were lower in KIF's coal ash than in soil. Concentrations of antimony, chromium, lead, mercury, nickel, selenium, silver, thallium, and zinc were not much different in KIF's coal ash than in soil.



Source: TDEC

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## What do the environmental data indicate?

When the coal ash was released from the failed retention wall of one of the coal ash storage ponds, people in the path of the ash could have been harmed by the magnitude and suddenness of the ash release. If the release had occurred during a summer day when people were on the river or riverbanks, many people could have been harmed or killed.

Based on TDH's review of data, the coal ash at the site of the KIF coal ash release should not have caused harm to the community's health. The coal ash and the metals in coal ash have not:

- gotten into private well or spring water,
- impacted the municipal drinking water from the Kingston and Rockwood water treatment plants,
- limited recreational opportunities such as swimming and boating, except in the immediate vicinity of the coal ash release and clean up, nor
- increased particulate matter or metals concentrations in ambient air around the site.

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## What data sources did TDH use?

*All data were verified and validated.*

### Ash

TVA, EPA, and TDEC

### Surface Water

TVA, EPA, and TDEC

### Public Drinking Water

EPA and TDEC

### Private Wells and Springs

EPA and TDEC

### Ambient Air

TVA, EPA, and TDEC

### Radiological

TDEC

## What other data sources did TDH consider?

TVA's instantaneous air readings

Environmental sampling done by:

- Duke University
- Appalachian State University
- Appalachian Voices
- Tennessee Aquarium
- Wake Forest University
- United Mountain Defense
- Environmental Integrity Project
- Waterkeeper Alliance's Upper Watauga Riverkeeper Program

TDH's Syndromic Surveillance

TDH's Community Health Survey

TVA's Community Involvement Center

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## What are the conclusions in the Public Health Assessment?

1. When the coal ash was released from the failed retention wall of one of the coal ash storage ponds, people in the path of the ash could have been harmed by the magnitude and suddenness of the ash release. If the release had occurred during a summer day when people were on the river or riverbanks, many people could have been harmed or killed.
2. It is unlikely that harm occurred to people from touching the coal ash when they had to climb out of their damaged houses on the morning of December 22, 2008, and to those who returned to retrieve personal property. Even though touching the coal ash could cause local skin irritation, the metals in the coal ash are not likely to get into people's bodies from touching the ash.
3. No harm to the community's health is expected from touching the coal ash. This includes children who might touch the ash while playing. Even though touching the coal ash could cause local skin irritation, the metals in the ash are not likely to get into people's bodies from merely touching the coal ash. The ash has been fenced, clearly marking the areas with coal ash. The opportunity for people, especially children, to touch the ash is currently minimal.
4. No harm to people's health is expected from accidentally eating a small amount of coal ash.
5. Using the Emory River at the site of the coal ash release (near Emory River mile 2) could result in harm to residents or trespassers from physical hazards associated with cleanup efforts and from the volume of ash present, if residents or trespassers entered the area.
6. Using municipal drinking water from the Kingston and Rockwood water treatment plants will not harm people's health because the raw and finished water have continuously met drinking water standards.
7. Using well or spring water within four miles of the coal ash release will not harm people's health from exposure to coal ash or metals in the coal ash because no evidence has been found for groundwater contamination by coal ash.
8. No harm to people's health should result from recreational use of the Emory, Clinch, and Tennessee Rivers outside the area of the lower Emory River down to the confluence of the Emory and Clinch Rivers, as specified in the recreational advisory and river closure. Previous fish advisories should be followed.
9. Cannot conclude whether breathing coal ash from December 22, 2008, through December 27, 2008, harmed people's health. However, any dust that may have been inhaled could have aggravated symptoms in sensitive populations, that is, people with asthma, emphysema, and other respiratory conditions.

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## What are the conclusions in the Public Health Assessment?

10. Breathing ambient air near the coal ash release is not expected to harm people's health as long as adequate dust suppression measures are in place.  
No harm to people's health is expected from occasionally breathing coal ash if it should become airborne for short periods of time.  
If dust suppression measures should fail and particulate matter is present in concentrations greater than National Ambient Air Quality Standards due to the coal ash becoming airborne for periods longer than one day, the Tennessee Department of Health concludes that particulate matter from airborne coal ash could harm people's health, especially for those persons with pre-existing respiratory or heart conditions. Such harm could include upper airway irritation and aggravation of pre-existing conditions such as asthma, emphysema, and other respiratory conditions.
11. Cannot conclude whether breathing dust near the quarry and along the routes of the quarry trucks has or will harm people's health. Such dust can be irritating to upper airways and can aggravate pre-existing conditions such as asthma, emphysema, and other respiratory conditions.
12. The small amount of radiation from the coal ash is not expected to harm people's health.
13. Data collected by non-governmental organizations were of limited usefulness in establishing the long-term public health implications of the coal ash release.
14. Based on the Community Health Survey, many residents living in the area of the coal ash release experienced stress and anxiety. Some residents reported respiratory symptoms after the ash release.
15. Community members living near the quarry and along the routes that quarry trucks traveled made complaints specific to dust at the Tennessee Valley Authority's Community Involvement Center. Complaints about respiratory symptoms were widespread and were not oriented toward either the site of the coal ash release or the route that quarry trucks took.
16. Screening people's blood or urine for metals would not be helpful.

## The Future

The Tennessee Department of Health understands that people are concerned about whether the coal ash may be a health hazard in the future. The Tennessee Department of Health will continue to consult with the Tennessee Department of Environment and Conservation and the U.S. Environmental Protection Agency to make sure that future sampling will be adequate in all respects to make determinations about the health of the people living near the coal ash release. The Tennessee Department of Health will continue to follow all sampling and analysis activities and will inform the Tennessee Department of Environment and Conservation and the U.S. Environmental Protection Agency immediately if any results might be a cause of health concern. The Tennessee Department of Health, the Agency for Toxic Substances and Disease Registry, the U.S. Environmental Protection Agency, the Tennessee Department of Environment and Conservation, the Tennessee Valley Authority, Oak Ridge Associated Universities, and the Tennessee Poison Center will continue to work together to ensure that public health is protected during the long cleanup process.

The Tennessee Department of Health will continue to keep people informed about any new issues or any new findings through the Environmental Epidemiology Program's website, reports, community meetings, and press releases.

**If you have comments or questions during the public comment period, please call TDH's Environmental Epidemiology Program at 615-741-7247 or 1-800-404-3006 or write them at:**



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**You may email comments or questions to [EEP.Health@tn.gov](mailto:EEP.Health@tn.gov)**