

## **Kingston Ash Information**

**January 1, 2009**

TVA is continuing to take actions to stabilize, contain and recover the ash that was released on December 22, 2008, as a result of an ash pond dike failure at the Kingston Fossil Plant. The resulting ash slide resulted in the discharge of large quantities of fly ash into the environment and adjoining properties immediately north of the power plant. Work is ongoing to monitor the area, including the affected nearby properties, the adjacent waterway, and the downstream river system.

TVA is working closely with the Environmental Protection Agency (EPA), the Tennessee Department of Environment and Conservation (TDEC), the Tennessee Department of Health and others to assess potential effects of the ash release on the human health and the environment.

Information regarding air quality and water quality has already been published. Recent sampling and preliminary analysis of the ash has been completed and compared with historical data.

### **What is “fly ash”?**

- Fly ash is a by-product of the combustion of coal. Coal contains both naturally occurring organic and inorganic components, a portion of which remains in the ash after burning the coal.
- The major compounds in fly ash are inert materials primarily composed of silica particles, very similar to sand. Approximately 95 percent of the ash is made up of silicon, aluminum, iron, and calcium in their oxide forms. Fly ash is a gray powdery residue and generally occurs as silt-sized material (similar to flour). Trace amounts of arsenic, cadmium, lead, mercury, selenium and other metals which occur naturally in the coal also carry over to the ash after coal combustion.
- Fly ash is used in many products that may be encountered on a daily basis including Portland cement. Portland cement is the most common type of cement general use around the world, because it is a basic ingredient of concrete, mortar, stucco and most non-specialty grout. Fly ash is also used as a structural fill such as the base for road-beds, in some potting soils and as a soil conditioner in agricultural applications.

### **Is fly ash a “hazardous material”?**

- EPA was required by Congress to determine if coal combustion wastes were hazardous. In 2000 EPA published a decision that management of coal combustion wastes as hazardous wastes was not warranted. This decision was made in part due to the low toxicity of the coal combustion wastes.

### **What is the intent of the testing process used on the fly ash samples?**

- An analysis process known as “Toxicity Characteristic Leaching Procedure” (TCLP) is used on the samples of fly ash collected. The TCLP analysis

simulates landfill conditions. Over time, water and other liquids percolate through landfills. TCLP analyses are used to determine if the waste material will leach these chemicals or metals into the soil or groundwater. The TCLP analysis is one measurement used to determine which of the contaminants identified by the United States Environmental Protection Agency (EPA) are present and their respective concentrations.

#### **What is a hazardous material?**

- Solid waste is tested for eight different metals through the TCLP tests. If the solid waste sample exceeds maximum concentration limits for any of the toxicity characteristics, in general, the waste is considered to be a characteristic hazardous waste.
- There are four general categories of hazardous waste: ignitable, corrosive, reactive, and toxic. The fly ash is being tested for levels of toxicity, specifically toxic metals.

#### **Has the spilled ash been tested before?**

- TVA has sampled and analyzed the ash in the affected Kingston cells for TCLP metals in the past and these samples confirm that the ash is not hazardous. In fact, the results show that the metals concentrations are orders of magnitude lower than the regulatory levels for toxic metals.
- The ash pond cells that failed contain ash from 1958 up to 2008.

#### **What does the most recent third-party certified ash analysis show?**

- Preliminary TCLP metals results show that the ash is well below (on the order of 10-100 times) the limits for classification as a hazardous waste.
- The trace concentrations of toxic metals in the off-site material sampled are consistent with and generally lower than that of the historic sampling results and from the ash samples collected from the ash pond that failed.
- The data also show that the concentrations of most metals in the ash are not dramatically different from concentrations found in natural, non-agricultural soils in Tennessee.
  - Total Arsenic results were slightly above the average naturally - occurring background soil concentration for Tennessee; however, total arsenic levels are below levels found in soils that are well fertilized. Also, the TCLP results for arsenic were significantly below the TCLP limits to be classified as a hazardous waste.
  - Mercury and Lead ash concentrations are lower than the background soil concentration in Tennessee and were not detected in any of the offsite samples to date.

### **What other ash testing is being done?**

- TVA and other agencies will continue to monitor and assess the spill area and the local environment. Additional solids and soil sampling to further characterize the impacts are planned along with ongoing routine sampling for potential contaminants in downstream areas.
- TVA is currently sampling the ash which remains onsite (including the remaining intact portion of the ash pond) in order to get the most up-to-date characterization of the ash. Sampling and analysis of ash that was released off-site will continue and results will be made available upon completion of analyses.

### **What is being done to contain the ash spill?**

- Initial efforts have focused on recovering spilled solids and controlling access to minimize further spreading of the material. Further activities are underway that are designed to recover ash and to stabilize the site to as part of the long term containment and recovery activities.
- TVA will start temporary dust control spraying this weekend as precaution to minimize dust and erosion. For any exposed ash that is easily accessible by air, TVA will spray seed and straw using a helicopter. For areas that can not be easily accessed by air, TVA will use an amphibious vehicle to spread the seed and straw. After the seed is sprayed, it will appear green in color for about two months. This process is similar to the one used by highway departments to provide ground cover.
- As previously reported, a temporary underwater rock containment weir is being constructed downstream of the site on the Emory River. This will further inhibit the downstream transfer of ash solids and sediment resulting from the spill.

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## **Water Sampling Fact Sheet** **January 1, 2008**

*TVA is continuing to stabilize and recover the ash released as a result of the dike failure at the Kingston Fossil Plant and is working with TDEC, EPA and others to assess potential effects of the release on human health and the environment. Results of water monitoring on December 22, 23, and 26 have been provided to the State of Tennessee and EPA. TVA is awaiting additional results from samples taken after those dates and will update appropriate documents and communications at that time.*

Coal ash consists mostly of inert material except for small quantities of metals. As part of the health and environmental assessment, water quality samples were collected by TVA on Monday, Tuesday, and Friday December 22, 23 and 26, at the site of the release, near the intake for the City of Kingston Water Treatment Plant and at several other locations. All samples were sent to a third-party laboratory to determine the level of contaminants in the water.

The preliminary water sampling results so far show that:

At the City of Kingston Water Department Treatment Plant, metal contaminants in the water samples are either below standards set for drinking water or were not detected in the samples.

At the Kingston power plant site, analysis of water samples taken on December 22 at the release area in the Emory River, which at that time contained high amounts of suspended material following the ash spill, showed that the metals were not detected or met state requirements for protection of fish and other aquatic life - except for lead in two samples nearest the slide (Emory River Miles 1.0 and 1.75).

Repeat testing on December 23 and 26 at Kingston power plant showed lower amounts of suspended material and the levels for metals met state requirements for protection of fish and aquatic life or were not detected in the sample at any location.

Results from other sites sampled on the Clinch and Tennessee River portions of Watts Bar Reservoir show metal contaminants at levels that meet requirements for safe drinking water or were below detection limits.

- Monitoring will continue.

TVA continues to manage river flows on the Clinch and Tennessee Rivers to minimize impact on recovery and monitoring activities associated with the ash release. The Kingston water supply intake is located on the Tennessee River about one-half mile upstream from its confluence with the Clinch River coming from the Kingston Fossil Plant. By managing river flows through the Kingston area, TVA expects to keep ash that might be flowing down the Clinch River from moving upstream toward the water intake.

Monitoring of other water conditions, such as visual appearance, pH, and dissolved oxygen, has been ongoing since the ash was released early on December 22.

The sudden release of such a large amount of material resulted in cloudiness and discoloration of the water in the Emory River near the failed ash pond. This condition dissipated quickly downstream of the power plant toward the junction with the Clinch River.

The force of the water during the initial event left some fish stranded out of the water along the bank of the Emory River where they subsequently died. No additional fish kills have been observed or reported.

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